SONAR

Reference Guide

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Getting started

If you want to get up and running quickly, please use the following tutorials, which are tailored to learning specific tasks in SONAR. If you are new to Cakewalk products, you may want to start at Tutorial 1. If you have used previous versions of Cakewalk, or you want to do a specific task, choose from the following tutorials:

Tutorial 1 – Creating, playing, and saving projects

Tutorial 2 – Using the Media Browser

Tutorial 3 – Recording vocals and musical instruments

Tutorial 4 – Playing and recording software instruments

Tutorial 5 – Working with music notation

Tutorial 6 – Editing your music

Tutorial 7 – Mixing and adding effects

Tutorial 8 – Working with video

Tutorial 9 – Exporting, CD burning and sharing

Glossary. A list of defined terms.

Introduction. An overview of SONAR's features and functionality.

Troubleshooting. Answers to some frequently asked questions.

New features in SONAR 8.5. Descriptions of new features in SONAR 8.5.

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Introduction

SONAR is a professional tool for authoring sound and music on your personal computer. It's designed for musicians, composers, arrangers, audio and production engineers, multimedia and game developers, and recording engineers. SONAR supports Wave, MP3, ACIDized waves, WMA, AIFF and other popular formats, providing all the tools you need to do professional-quality work rapidly and efficiently.

SONAR is more than an integrated MIDI and digital audio authoring software package—it's an expandable platform that can function as the central nervous system of your recording studio. With drivers for common high-end audio hardware, full support for audio plug-ins, software synthesizers, StudioWare, MFX MIDI plug-ins, and MIDI Machine Control (MMC) of external MIDI gear, SONAR can handle your most demanding projects.

About SONAR

SONAR lets you work with music on your own level. Here are some of the ways you can make music with SONAR:

Publish

Publish

Publishing usually means printing your music; it's one way to share your finished product with other performers. After you've recorded and arranged a song in SONAR, you can produce printed lead sheets and small scores with lyrics for sharing. You can also share the music files themselves. SONAR will save your music in a format that you can put on a web site or email to other people.

SONAR is the flagship product of the Cakewalk line of integrated MIDI and digital audio sequencers for the Windows platform. SONAR has a comprehensive feature set that makes it the single most productive tool for sound and music authoring. Here are some of the ways you can use SONAR.

Next topic: Music Composition and Exploration.

Music Composition and Exploration

SONAR is a powerful music-composition application, providing tools to record your own musical performances; enhance or improve the quality of those performances; and edit, arrange, and experiment with the music. With a few simple clicks of the mouse, you can arrange, orchestrate, and audition your composition. Fully integrated sequencing allows you to combine the convenience and flexibility of MIDI composition with the high-quality sound and subtlety of digital audio sound recording and reproduction. Change the feel of a piece by locking it to a musical groove, or add delicate delays, anticipations, or echoes that add richness to the music.

SONAR displays and lets you edit your music using standard musical notation and guitar tablature, so you can adjust individual notes, add performance markings, and print individual parts or full scores. You can graphically draw tempo and volume changes, or add lyrics to display on-screen or to include with printed scores.

Next topic: Remixing.

Remixing

SONAR's Groove clips allow you to import, create, export and edit loops, making it possible to quickly change tempos and keys for an entire project. The Media Browser view lets you preview loops in the project's tempo and key before dragging and dropping them onto a track.

Next topic: Game Sound Development.

Game Sound Development

There's no better tool than SONAR for composing music for electronic games. Clip-based sequencing lets you create and reuse musical themes freely, so you can associate musical sections with game characters, locations, objects, and actions. Your creations can be saved and replayed using the compact MIDI file format, which adapts its sound automatically to the target hardware for the best possible sound reproduction.

Next topic: Sound Production and Engineering.

Sound Production and Engineering

If you want to produce music CDs or master tapes, SONAR has virtually everything you need from recording to mixing and mastering. Multichannel recording lets you capture studio or live performances track by track. Reconfigurable buses provide full control over your mix. Real-time stereo effects like chorus, flange, reverb, and delay/echo can be applied as track inserts, in effects loops, or to the master mix. SONAR supports 44.1 KHz sampling for CD-quality sound, 24-bit/96 kHz sound for DVD-quality sound, and lets you choose from lower or higher sample rates as well. All

audio effects are 32-bit floating point for faster processing and high-quality sound reproduction. Many effects now support 64-bit processing for pristine quality.

Next topic: Web Authoring.

Web Authoring

SONAR is the ideal tool for developing and producing music and sound for the World Wide Web, because it lets you save your work in the formats that are most commonly used on web sites: MIDI, MP3, and Windows Media Advanced Streaming Format. Any SONAR project—musical composition, audio clip, commercial spot, jingle with voice-over—can be stored in a web-compatible format with a few simple mouse clicks.

Next topic: Film and Video Scoring and Production.

Film and Video Scoring and Production

SONAR has many of the tools you need to execute audio post-production projects quickly and efficiently. SONAR provides chase lock sync to time code for frame-by-frame accuracy when synchronizing audio or MIDI to film or video. Or, you can turn chase lock off to conserve CPU power. SONAR provides high-quality time stretching and sample-accurate editing with zero-crossing detection so you can make the fine adjustments you need very quickly and easily. In addition, SONAR's support for video files gives you convenient synchronized access to digitized video, making film and video scoring easier than ever.

Next topic: Publishing Music on the Internet.

Publishing Music on the Internet

Cakewalk Publisher allows you to easily present and share your music online. With Cakewalk Publisher, you can create a customized streaming music player with a playlist of your music, upload it to your personal or band's website, and embed it in any other website. You can also update your playlist with album art, links (URLs), and artist, track, & album information.

Next topic: Burning Audio CDs.

Burning Audio CDs

SONAR has integrated Audio CD burning, which allows you to write your audio tracks to an audio CD that can be played in any standard CD player.

Next topic: Flexibility.

Flexibility

SONAR works the way you want to work—you can customize screen layouts, toolbars, and audio and MIDI system configurations to make your work more efficient. SONAR integrates with other sound editing tools so you can access them in an instant without leaving SONAR. There are custom software modules to support specialized audio devices from Roland and Yamaha. SONAR's unique StudioWare technology provides software interfaces for common studio hardware.

Next topic: SONAR basics.

Computers, Sound, and Music

This section provides some background on the different ways that computers store and play sound and music. Computers work with sound and music in two different forms: *MIDI* and *digital audio*.

Next topic: MIDI.

MIDI

MIDI (short for Musical Instrument Digital Interface) is the way computers communicate with most sound cards, keyboards, and other electronic instruments. MIDI refers to both the type of cables and plugs used to connect the computers and instruments, and to the language those computers and instruments use to talk to each other. The MIDI standard is accepted and used worldwide. Almost any electronic instrument you buy today will have MIDI connectors and can be used with other MIDI instruments and with your computer's MIDI interface. To record MIDI in SONAR, you have to have a MIDI cable connecting the MIDI OUT port on your MIDI instrument to a MIDI IN port on either your sound card or your MIDI interface. You must also make sure that you have installed the software MIDI driver that came with your sound card or MIDI interface.

The MIDI language conveys information and instructions, both from the computer to the instrument and from the instrument to the computer. For example, if your computer wants your keyboard to play a note, it sends a MIDI "Note On" message and tells the keyboard which note to play. When your computer wants the keyboard to stop playing that note, it sends another message that stops the note from playing.

The MIDI language has many other instructions, such as messages to change the sound that is used to play the notes (the bank and patch), messages that enable working with the sustain pedal and the pitch-bend wheel, and others. By sending the right messages at the right times, your computer can control your electronic instrument and make it play music.

MIDI information can be sent on 16 different channels. You can set up your MIDI equipment to listen for messages on all channels or on only a few.

MIDI files contain all the MIDI messages and timing information that are needed to play a song. MIDI files can be read and played by many different programs, including SONAR, and can even be played by programs on other types of computers. MIDI files have the extension .mid.

There are several important advantages of the MIDI format:

- Large amounts of music can be stored in a very compact form
- Different parts of a piece can easily be assigned to any instrument you can imagine
- The music contains information on notes, tempos, and key signatures that makes it possible to display and edit the piece using standard musical notation

The primary disadvantage of MIDI is that the quality of the sound a listener hears will vary depending on the MIDI equipment the listener is using. For example, MIDI usually sounds much better on an expensive synthesizer than it does on an inexpensive sound card.

Next topic: Digital audio.

Digital audio

Digital audio (frequently referred to here as just “audio”) is a simple way to record and play sounds of any type. It works like a tape recorder—you record something, then later play it back. Digital audio stores the sound as a long series of numbers. To record audio in SONAR, you have to have an audio cable connecting the audio output of your electronic instrument to the audio input on your sound card or audio hardware. If you’re recording vocals or an acoustic instrument, you need to connect a microphone to the audio input on your sound card or audio hardware.

Sound Waves

Sound waves are vibrations in the air. Sound waves are generated by anything that vibrates; a vibrating object causes the air next to it to vibrate, and the vibration is passed through the air in all directions. When the vibrating air enters your ear, it makes your eardrum vibrate, and you hear a sound. Likewise, if the vibrating air hits a microphone, it causes the microphone to vibrate and send electrical signals to whatever it's connected to.

These vibrations are very fast. The slowest vibration frequency you can hear is about 20 vibrations per second, and the fastest is around 16,000 to 20,000 vibrations per second.

Recording digital audio

To record digital audio, your computer monitors the electrical signal generated by a microphone, an electric guitar, or another source. At equal intervals of time (for CD-quality sound, this means 44,100 times a second), the computer measures and saves the strength of the electrical signal from the microphone, on a scale from 0 to 65,535.

That's it. Digital audio data is just a long series of numbers. The computer sends these numbers, in the form of electrical signals, to a speaker. The speaker then vibrates and generates the same sound that was recorded.

The primary advantage of digital audio is the quality of the sound. Unlike MIDI, a digital audio recording is very rich, capturing all the nuances, overtones, and other characteristics of the sound exactly as performed. The main drawback of digital audio is that it takes up a lot of disk space. To

record a 1-minute segment of stereo, CD-quality digital audio, you need about 10 megabytes of disk space.

On the PC, digital audio is usually stored in Wave files (extension .wav). There are many programs available that let you create, play, and edit these files. SONAR reads, writes, and lets you edit Wave files.

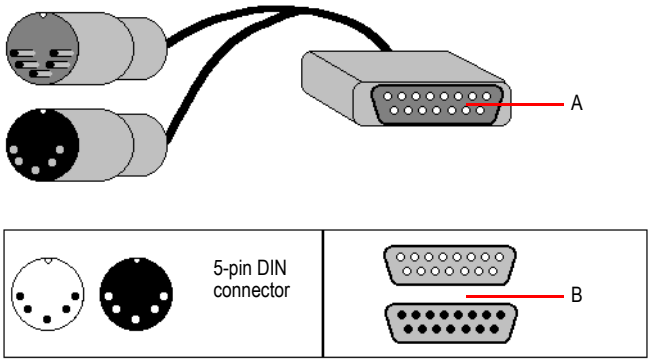
Next topic: Setup

Setup

You can install SONAR on any computer that runs Windows XP or x64 and has a sound card or built-in sound module. If you want to hook up other devices, like a MIDI keyboard, an electric guitar, or a microphone, you need the right cables, and you need to find the right connectors on your computer.

Before you install SONAR, take a minute to register the software so we can let you know when updates become available and provide you with technical support. To register anytime log onto www.cakewalk.com/register, or call 888-CAKEWALK (U.S.) or +(617)-423-9004 (outside the U.S.) between 9 AM and 8 PM Eastern Standard Time. If you live outside of North America, please visit our distributor's page at www.cakewalk.com/Dealers/International.asp to get the telephone number of your local distributor. You'll need to supply your serial number, your name, and a valid email address.

To connect a MIDI keyboard to your computer, you need standard MIDI cables or a MIDI adapter cable (joystick connector), such as the one available in Cakewalk's PC Music Pack. One end of the adapter cable should have two 5-pin DIN connectors that connect to your keyboard or other MIDI device. At the other end, you need a 15-pin connector to connect to a sound card through its MIDI/ joystick port.



A. *MIDI to 15 Pin Connector* ***B.*** *15-pin connector (DB15)*

If you have a dedicated MIDI interface, lots of electronic music gear, or work with many different music software packages, see the online help topic “Hardware Setup.”

Before you attach or detach any cables from your computer, you should shut down your computer and turn off the power to all your equipment. This greatly reduces the chance of electrical damage to your equipment while plugging and unplugging cables.

User accounts

Previous versions of SONAR required a user to have Windows Administrator status. This is no longer the case. Any level of user can now install and run SONAR. Only one copy of SONAR per machine is necessary for multiple users to run SONAR with each user’s personal settings.

When you first install SONAR, all application data files and .ini files are installed to the system-specified “all users” application data folders:

Windows XP:

`C:\Documents and Settings\All Users\Application Data\Cakewalk`

Windows Vista:

`C:\ProgramData\Cakewalk`

When you launch SONAR for the first time, all content files (such as track templates and project templates) will be copied from the global application data folder (All Users) to the user application data folder (User Account), before the program launches.

If you install a SONAR patch on top of the original installation, any updated content files in the patch will *not* overwrite existing content files in your personal user application data folder. However, you can force SONAR to update the default content files in your personal user data folder.

Warning: *The following action will overwrite any SONAR data files such as track templates and project templates that you may have customized. A message box will prompt you if you wish to continue or cancel. Only proceed if you are certain that you will not overwrite any important customized files.*

To force SONAR to update and overwrite any default content files, hold down the CTRL key while starting SONAR.

Data in the Program Files folder will be common to all users.

Next topic: Audio connections

Audio connections

There are several types of audio interfaces (soundcards). CardBus (PCI), USB/USB2 and FireWire are the most common. Laptops can use an audio PCMCIA card. Many audio interfaces also have MIDI inputs and some have built in MIDI synthesizers as well. This section covers the various audio connection options.

Analog and digital Inputs

There are two basic types of audio inputs, analog and digital. Analog inputs allow you to connect a guitar, mic or other instrument to your computer directly. The audio interface converts the analog input to digital. Digital inputs allow other digital devices to connect directly to your computer. Common digital inputs include external analog to digital converters, popular guitar processors like the Line 6 POD, and other digital recording systems like the ADAT decks. Analog inputs are very common, and are standard in virtually all consumer sound cards (the ones that come with your PC). Digital inputs are becoming more popular and are very common on professional and mid-level, “prosumer” interfaces. Analog inputs allow you to record a mono or stereo signal (assuming you have a stereo input) while digital inputs allow you to record 1 to 8 signals depending on the type of digital connection.

The following table describes the various analog inputs and outputs:

Type of analog input/output	Description
Balanced (XLR, phono or RCA)	A mono input/output
Unbalanced (TRS)	A stereo or mono input/output

Table 1.

The following table describes the various digital inputs and outputs:

Type of digital input/output	Description
S/PDIF	Sony/Philips Digital Interface capable of carrying a stereo signal, S/PDIF is transmitted via RCA, Toslink or more rarely BNC jacks (single-pin cable-TV connections).
ADAT Lightpipe	Up to 8 channels of simultaneous transfer. If you want to import your old ADAT material without any signal degradation, this is the connection you should use.
TDIF	Tascam Digital Interface up to 8 channels of simultaneous transfer.
AES/EBU	Often referred to as simply AES, this type of digital connection uses a modified XLR cable to transfer a stereo signal.

Table 2.

Read your hardware documentation carefully to determine what kind of digital connections, if any, you have on your audio interface.

To connect an electric guitar or keyboard to your computer

- If your sound card has a 1/8 inch input jack (built-in sound cards that come with your PC usually do), plug your 1/4 inch mono guitar or audio cable into a 1/8 inch stereo adapter, and then plug the 1/8 inch adapter into the microphone input or line input jack on your computer sound card. If you are connecting a keyboard, the audio cable must go from the keyboard’s audio out or line out

jack to the sound card input jack. 1/8 inch stereo adapters are available at consumer electronic supply stores.

Or

- If you use a professional or “prosumer” sound card, there is probably a 1/4 inch input jack on your sound card or audio hardware interface that you can plug your guitar cable or audio cable into.

To connect a microphone to your computer

- If your sound card has a 1/8 inch input jack (built-in sound cards that come with your PC usually do), and your microphone cable has a 1/4 inch plug on the end, plug the mic cable into a 1/8 inch stereo adapter, and then plug the 1/8 inch adapter into the microphone input jack on your computer sound card. 1/8 inch stereo adapters are available at consumer electronic supply stores.
- If you use a professional or “prosumer” sound card, there is probably a 1/4 inch input jack on your sound card or audio hardware interface that you can plug your mic cable into.
- If your mic has a cable with an XLR plug on the end, and your sound card or audio hardware interface has a 1/4 inch input jack, plug the mic cable into an XLR-to-quarter inch adapter, and then plug your mic cable into your audio hardware. If your audio hardware has an XLR input, of course it’s better to use that.
- You can also plug your mic into a mixer or pre-amp, and connect the mixer or pre-amp to an input jack on your audio hardware. This is usually the best method.

That's it! Now that your instruments are all set to go, you can restart your computer and turn on your keyboard, guitar, and microphone.

For a complete description of audio input options, see the online help topic “Hardware Setup.”

Next topic: MIDI Connections

See:

“Changing I/O devices” on page 60

MIDI Connections

There are three types of MIDI cables in common use. Here’s how to connect each of the three types:

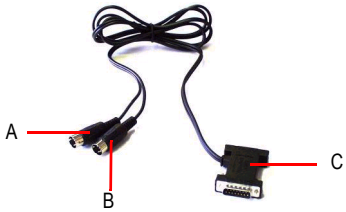
- **USB cable**. This is extremely common. Many electronic keyboards and stand-alone MIDI interfaces use this type of connection. To use this type of connection, simply plug one end of the USB cable into the USB jack on your MDI keyboard or stand-alone MIDI interface, and plug the other end into your computer. If you are using a stand-alone USB MIDI interface, you then need to connect standard MIDI cables between your MIDI keyboard and your stand-alone MIDI interface (see the next procedure, below). If you haven’t already installed the software MIDI driver that came with your keyboard or interface, make sure you do so.
- **Standard MIDI cable**. This is also very common. MIDI keyboards usually have jacks for these cables even if they have a USB connection. You need two of these cables. To use this type of cable, use one cable to connect the MIDI OUT jack on your MIDI instrument to the MIDI IN jack

on your stand-alone MIDI interface or sound card, and one to connect the MIDI IN jack on your MIDI instrument to the MIDI OUT jack on your stand-alone MIDI interface or sound card. Many stand-alone MIDI interfaces and audio interfaces use this type of connector.

Figure 1. *Standard MIDI cable—use this if your MIDI interface has standard 5-pin input and output ports*

- **Joystick connector.** This is becoming less common. This is the type of connection seen on older SoundBlaster type sound cards. To use this type of connection, find the end of one of the MIDI cables that is labeled OUT. Plug this connector into the MIDI IN jack on your electronic keyboard. The other 5-pin connector on the MIDI cable is labeled IN. Plug this connector into the MIDI OUT jack on your electronic keyboard. Plug the 15-pin connector on the MIDI cable into the MIDI/joystick port on your sound card. If you have a joystick, unplug it, plug in the MIDI cable, and plug the joystick into the pass-through connector on the MIDI cable.

Figure 2. *Joystick connector—use this if your MIDI interface is the joystick port on your sound card.*



A. *Insert this MIDI IN plug into the MIDI OUT port on your MIDI instrument* ***B.*** *Insert this MIIDI OUT plug into the MIDI IN port on your MIDI instrument* ***C.*** *Insert this plug into the joystick port on your sound card*

See:

"Changing I/O devices" on page 60

Changing I/O devices

You can add or remove USB/FireWire audio and MIDI devices while SONAR is running, and the audio and MIDI engines will dynamically respond to any changes.

When a device is added or removed, SONAR prompts you to confirm or cancel the change. If you click **Yes**, playback stops and the audio and MIDI engines reload.

Preserve selected audio devices on device changes

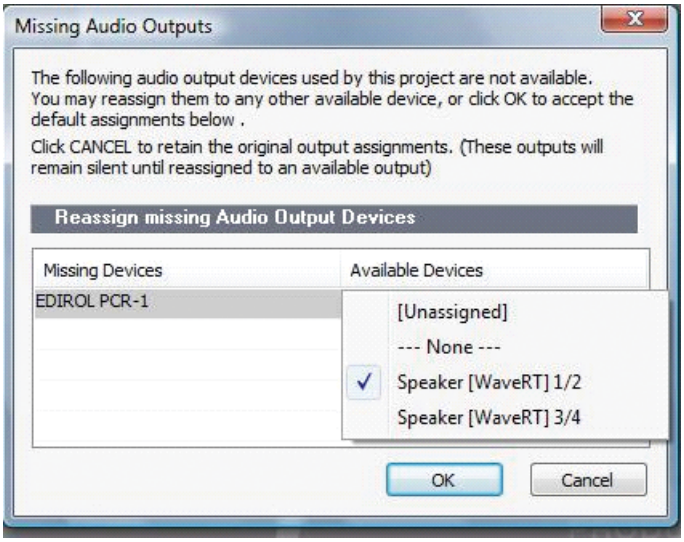
Enabled inputs and outputs are persisted per device and per driver mode. This prevents audio ports from shifting around and causing unwanted devices to become selected as active audio inputs and outputs. You can add a device back at any time and SONAR will remember the last set of enabled inputs and outputs for that device.

You can freely add or remove devices without impacting the current working set of enabled devices. Adding a device back will remember its last selected inputs and outputs. You can also switch driver modes and the existing enabled devices will be remembered for the next time when you switch back to that mode.

Loading a project after changing audio devices

When loading a project after changing audio devices, SONAR will attempt to automatically remap any missing device to an equivalent new device. If an equivalent match is not found, the **Missing Audio Outputs** dialog appears, allowing you to manually reassign any unresolved output ports.

The **Missing Audio Outputs** dialog will suggest default assignments for any missing devices. You can click **OK** to accept the assignments, or click **Cancel** to preserve the original missing device assignments. You can also preserve the original missing device by selecting **[Unassigned]** from the **Available Devices** list. If you choose not to reassign a missing device, the **Output** port selection in SONAR will show the missing device name prefixed by **MISSING**.



Note: *The **Missing Audio Outputs** dialog is not shown if there is only a single missing output port and only one available output port. In this case, SONAR will automatically assign the missing output port to the available output port.*

Remapping using friendly driver names

When **Use friendly names to represent audio drivers** is selected in **Options > Audio > Drivers**, SONAR can intelligently remap devices across different hardware configurations or driver models by using your assigned friendly driver names, even if the hardware names do not match.

This can be very useful if you switch driver modes and load projects you worked on earlier in another driver mode, or if you collaborate with other people who have different hardware configurations. As long as you set up friendly names that match, all outputs will be automatically remapped.

Note: *Remapping with friendly names takes precedence over the actual hardware device names.*

Automatic MIDI port remapping for control surfaces

SONAR persists the names of MIDI ports that are assigned to control surfaces. This ensures that the correct MIDI ports are assigned to control surfaces, even if you add or remove other MIDI devices.

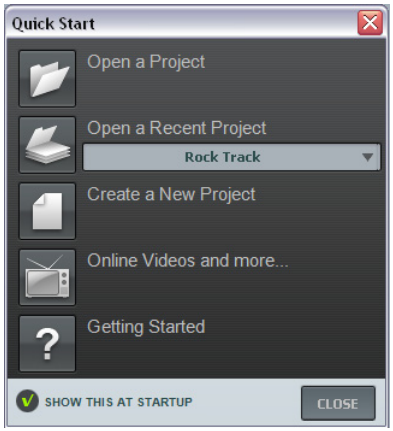
Starting SONAR

There are many different ways to start SONAR. Here are a few:

- Double-click the SONAR icon on your desktop.
- Click the **Start** button, and choose **Programs > Cakewalk > *SONAR 8.5*** (Studio or Producer **> *SONAR 8.5*** (Studio or Producer).
- Click the **Start** button, point to **Documents**, and choose a SONAR project from the menu.
- Double-click the SONAR program or any SONAR document from the Windows Explorer or the **Find** menu.

When starting SONAR, you will see the **Quick Start** dialog box.

Figure 3. *The **Quick Start** dialog*



The **Quick Start** dialog box has several options:

Option	How to use it
Open a Project	Choose a project from the **Open File** dialog box to open it
Open a Recent Project	Select a project from the list, and click this button to open it
Create a New Project	Click here to create a new project.
Online Videos and more	Click this link to view our tutorial videos online. An active Internet connection is needed in order to access this content.
Getting Started	Click here to view the Getting started topic in the Help file. This topic has links to a glossary of terms, as well as some basic procedures.

Table 3.

If you don't want to see the **Quick Start** dialog box in the future, uncheck the box at the bottom of the dialog box, and click **Close**. You can see the **Quick Start** dialog box later by choosing **Help > Quick Start**.

RIFF/MID will not launch SONAR when double-clicked

Note: *Double-clicking RIFF MIDI files and Standard MIDI files will fail to launch SONAR even if these file types are associated with SONAR.*

Migrating preferences

If you have a previous version of Cakewalk installed, SONAR will detect it and give you the option of migrating certain preferences from a single earlier version.

When you choose to migrate preferences, SONAR migrates the following settings from an earlier Cakewalk version:

Setting	Description
Global Options	Settings in the **Global Options** dialog. Open by selecting **Options > Global.**
Key Bindings	Your customized key bindings for controlling SONAR using your MIDI keyboard or computer keyboard.
Instrument Definitions	Files used to control specific MIDI instruments.
Audio data directory (WaveData folder) and Picture Cache directory locations	SONAR uses the Data directory and Picture Cache directories from the previous Cakewalk version for storing project wave files and their waveform image files.

Table 4.

Running Wave Profiler

The first time you start SONAR, it automatically runs the Wave Profiler utility. Wave Profiler determines the proper MIDI and Audio timings for your sound card and writes them to a file that SONAR refers to when using the card. Wave Profiler does not change the sound card's DMA, IRQ, or port address settings.

Wave Profiler detects the make and model of your sound card, which determine the card's audio characteristics. If Wave Profiler finds a card that has a WDM driver, it only profiles that card. If you want to use more than one sound card at a time, and they don't both have WDM drivers, you must force the one with the WDM driver to use that driver as an older, MME driver. It is not necessary to run the Wave Profiler for a sound card using an ASIO driver. For more information about Wave Profiler, WDM, and MME, see The Wave Profiler.

When Wave Profiler determines the kind of card you have, always accept the default settings.

Note: *You can run the Wave Profiler again at a later time (for example, if you install a new sound card or driver) by choosing the* ***Options > Audio General*** *tab command and clicking* ***Wave Profiler****.*

Setting up the MIDI In and MIDI Out devices

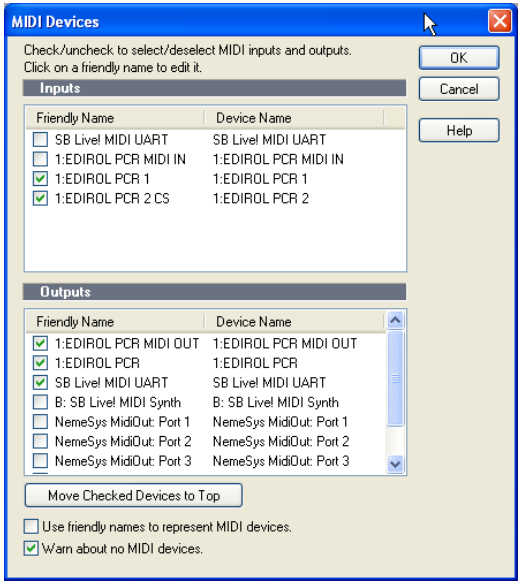
When you start SONAR for the first time, it checks your computer to find all the MIDI input and output devices you have installed (such as sound cards and MIDI interfaces). However, sometimes you need to tell SONAR exactly which devices you want it to use. If you're not getting sound from

your sound card or MIDI keyboard, or if you just want to change the MIDI outputs and devices that you are using, follow the steps in this section.

Choose **Options > MIDI Devices** to open a dialog box in which you select the MIDI In and MIDI Out devices that SONAR will use. Each item in the list is a MIDI Input or MIDI Output from drivers installed using the Windows Control Panel.

1. Select **Options > MIDI Devices.** You will see the **MIDI Devices** dialog box, which lets you choose instruments on MIDI inputs and outputs.

Figure 4. *The **MIDI Devices** dialog*



2. Look at the top window. Notice that it shows devices on MIDI **Inputs**; make sure that all devices in this window are checked. If a device isn't checked, click on it once to select it for MIDI Input.
3. Look at the window on the bottom. Notice that it shows devices on MIDI **Outputs**. SONAR numbers its MIDI Outputs by the order of the devices in this window. The device on top is on Output 1, the one below it is on Output 2, and so on.
4. Check one device at a time in the **Outputs** window and click **Move Selected Devices to Top** to change its order. Then check all the devices that appear in the window to select them for output.

Tip: *Be sure to enable (check) MIDI output devices in the **MIDI Devices** dialog (use the **Options > MIDI Devices** command). If you don't do this, you won't hear any of your MIDI instruments when you play songs in SONAR.*

See MIDI Devices dialog.

Using MIDI devices after making driver changes

If you later add or remove drivers using the **Drivers** icon of the Windows Control Panel, SONAR reacts in the following way:

- If you remove a Control Panel driver, SONAR will not use the device it belongs to the next time you run the program. Any other devices you had selected using the **Options > MIDI Devices** command will remain selected.
- If you add a driver through the Control Panel, SONAR does *not* automatically use it. You must use the **Options > MIDI Devices** command to enable the new driver in SONAR's list.

Note: *After you add or remove a driver with the **Drivers** icon in the Windows Control Panel, you must restart Windows for the change to take effect.*

Defining your MIDI instrument or sound card

Once you have selected your MIDI Input and Output devices, SONAR, by default, plays back MIDI sequences using a General MIDI instrument definition. If you are using a synthesizer or sound card that does not adhere to the General MIDI standard, you may want to define that instrument. See the online help topic: Instrument Definitions for more information.

SONAR basics

SONAR's menus and toolbars give you quick access to all the features of SONAR. Some menu choices and tools display dialog boxes that let you choose among various options, or type in the values you want. If you click in most views, in time rulers, or on certain other items with the right mouse button, you see a pop-up menu that provides quick access to many common operations.

The *project* is the center of your work in SONAR. If you're a musician, a project might contain a song, a jingle, or a movement of a symphony. If you're a post-production engineer, a project might contain a 30-second radio commercial or a lengthy soundtrack for a film or videotape production. By default, every project is stored in a file (known as a *project file*). The normal file extension for a SONAR work file is .cwp.

SONAR organizes the sound and music in your project into tracks, clips, and events.

Tracks are used to store the sound or music made by each instrument or voice in a project. For example, a song that is arranged for four instruments and one vocalist may have 5 tracks—one for each instrument and one for the vocals. Each project can have an unlimited number of tracks. Some of these tracks may be used in your finished project, while others can hold alternate takes, backup tracks, and variations that you might want to keep for future use. Each track can be made up of one or many clips.

Clips are the pieces of sound and music that make up your tracks. A clip might contain a horn solo, a drum break, a bass or guitar riff, a voice-over, a sound effect like the hoot of an owl, or an entire keyboard performance. A track can contain a single clip or dozens of different clips, and you can easily move clips from one track to another.

Groove clips are audio clips which have tempo and pitch information embedded within them, allowing them to follow changes to the project tempo or project pitch. You can click on either edge of a Groove clip and drag out repetitions in the track.

Events are MIDI data (in MIDI tracks) or automation data.

See:

SONAR file types

Opening a file

Views

Working on a project

SONAR file types

Projects in SONAR can be saved as a project file with the extension .cwp or as a Bundle file with the extension .cwb.

For a complete description of the differences between project files and bundle files, see the online help topic Project Files and Bundle Files.

Other types of files

SONAR lets you create and work with several other types of files, in addition to project (.cwp) and bundle (.cwb) files that store your projects:

File type	Description
MIDI files (extension .mid)	Standard MIDI files.
Template files (extension .tpl)	Templates for new files you create
StudioWare (extension .CakewalkStudioware)	To control external MIDI devices from SONAR
OMF (extension .omf)	Open Media Framework format files.

Table 5.

Opening a file

Use the following procedure to open a file.

To open a file in SONAR

1. If you haven't already done so, start SONAR.
2. Choose **File > Open**.
3. In the **Open** dialog box, navigate to the directory where the project you want to open is located and select it.

4. Click the **Open** button.
5. If you are opening an OMF file, the **Unpack OMF** dialog appears. Set the initial tempo and specify the directory where you want to save the file and its audio. For more information about opening OMF files, see Unpack OMF dialog in the online help.

SONAR loads the project.

See:

Working on a project

File Recovery mode

Views

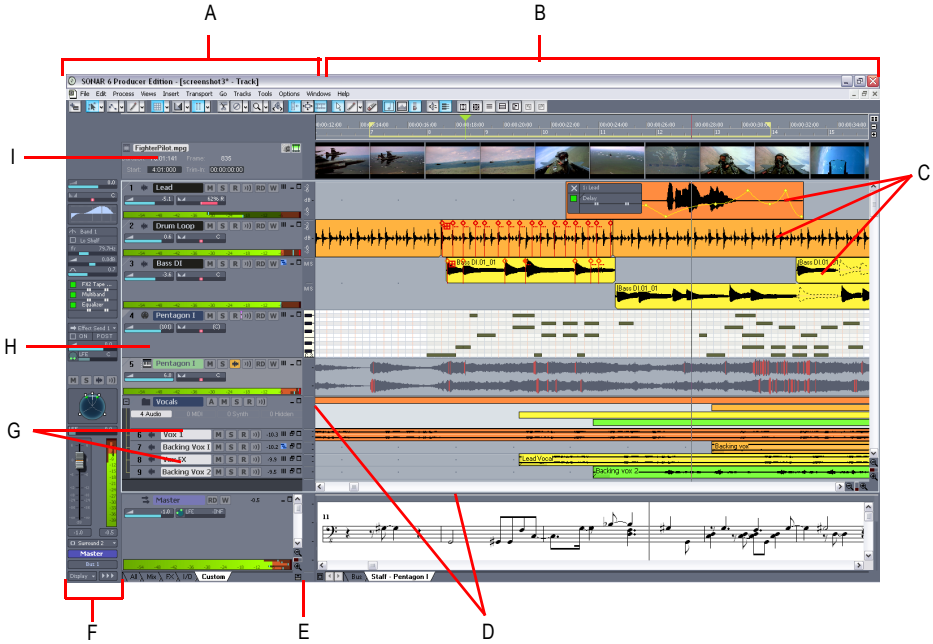
SONAR displays your project in windows on the screen that are known as views. You can have many views open at once, all showing the same project. When you edit a project in one view, the other related views are updated automatically.

The Track View

Track view is the main window that you use to create, display, and work with a project. When you open a project file, SONAR displays the Track view for the project. When you close the Track view for a project, SONAR closes the file.

The Track view is divided into several sections: toolbars (at the top), the **Navigator** pane, the **Video Thumbnails** pane, the **Track** pane**,** the **Track/Bus Inspector,** the **Clips** pane**,** and the **Bus** pane. You can change the size of the panes by dragging the vertical or horizontal splitter bars that separate them.

Figure 5. *The Track view*



A. *The Track Pane* ***B.*** *The Clips Pane* ***C.*** *Clips* ***D.*** *Splitter bars* ***E.*** *Show/hide bus pane* ***F.*** *Track/Bus Inspector* ***G.*** *Minimized tracks* ***H.*** *Expanded track* ***I.*** *The Video Thumbnails Pane*

All of the current track's controls, plus a few that are only available in the Console view, are contained in the **Track/Bus Inspector** which is an expanded version of the current track's controls located on the far left side of the Track view. You can hide or show the **Track/Bus Inspector** by pressing I on your keyboard (see "Track/Bus Inspector" on page 70, for more information).

The **Track** pane lets you see and change the initial settings for each track. By default, the current track is displayed in gold. To change the current track, move the highlight using the mouse or the keyboard as follows:

What it does	Key
Moves the highlight to the next or previous control.	LEFT/RIGHT ARROW
Moves to the same control in the adjacent track, or the next track of the same type if the control only applies to a specific track type (for example, the Patch control only applies to MIDI tracks).	UP/DOWN ARROW
Displays the next page of tracks.	PAGE DOWN
Displays the previous page of tracks.	PAGE UP

Table 6.

What it does	Key
Moves the focus to the first track.	HOME
Moves the focus to the last track.	END

Table 6.

The current track's controls are contained in the **Track/Bus Inspector**.

The **Clips** pane shows the clips in your project on a horizontal timeline called the Time Ruler that helps you visualize how your project is organized. Clips contain markings that indicate their contents. The **Clips** pane lets you select, move, cut and copy clips from place to place to change the arrangement of music and sound in your project.

The **Bus** pane shows the buses in the project, and also shows any editing views that are in tabbed (docked) format. The **Show/Hide Bus pane** button allows you to show or hide the Bus pane at the bottom of the Track view.

The **Navigator** pane displays a large part of your project so you can see an overview of your song. The **Navigator** pane displays all of your project's tracks.

The Track view makes it easy to select tracks, clips, and ranges of time in a project. These are the most common selection methods:

To	Do this
Select tracks	Click on the track number, or drag over several track numbers
Select clips	Click on the clip, or drag a rectangle around several clips
Select time ranges	Drag in the Time Ruler, or click between two markers
Select partial clips	Hold down the ALT key while dragging over a clip

Table 7.

As with most other Windows programs, you can also use the SHIFT-click and CTRL-click combinations when selecting tracks and clips. Holding the SHIFT key while you click adds tracks or clips to the current selection. Holding the CTRL key while you click lets you toggle the selection status of tracks or clips. For more information, see Track View and Configuring the Display of Tracks in the Track View.

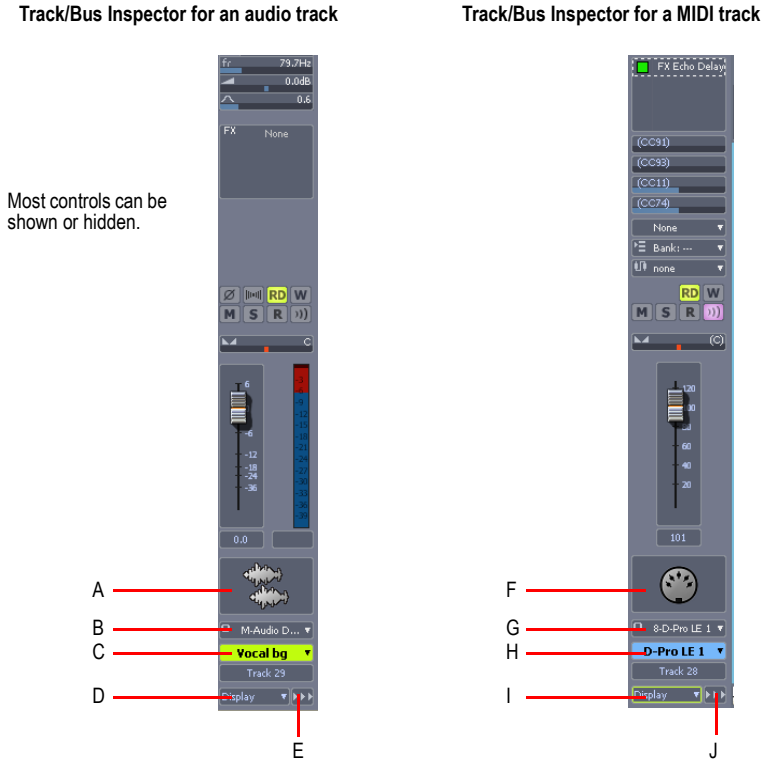
Track/Bus Inspector

The Track/Bus Inspector makes it easy to adjust the current track's (or bus's) controls, because it's a greatly expanded version of the current track's controls that is located on the left side of the Track pane.

In addition to the controls that a track or bus displays in the Track view, the Track/Bus Inspector also contains a built-in 4-band EQ. See the online help topic "Using the Per-track EQ" for more information.

The following graphic shows most of the Track/Bus Inspector's controls (there may not be room to display all of a track's controls on the Track/Bus Inspector, depending on the resolution of your monitor):

Figure 6. *The Track/Bus Inspector*



A. *Audio icon* ***B.*** *Output routing* ***C.*** *Track name* ***D.*** *Display menu* ***E.*** *Module menu* ***F.*** *MIDI icon* ***G.*** *Output routing* ***H.*** *Track name* ***I.*** *Display menu* ***J.*** *Module menu*

You can hide or show any of the Track/Bus Inspector's controls, and use it to display the controls from any track or bus. The following table shows you how.

To do this	Do this
Hide or show the Track/Bus Inspector	Press I on your keyboard.
Display a certain track's or bus's controls in the Track/Bus Inspector	Click the track or bus to make it current, or choose the track or bus in the track/bus drop-down menu that's at the bottom of the Track/Bus Inspector.

Table 8.

To do this	Do this
Hide or show any of the Track/Bus Inspector's controls	Click the **Display** menu or **Module** menu, and choose **Options**. **Note**: you can not display a MIDI track's Time + or Key + controls in the Track/Bus Inspector.
Reassign MIDI controller sliders in a MIDI Track's Fx bin	Right-click the slider you want to reassign and choose **Reassign Control** from the pop-up menu, choose the new parameter, and click **OK**.
Display the parameters of a different automatable effect	Click the name of the effect you want to select.
Assign a control to a group, arm it for automation, take an automation snapshot, or set up remote control	Right-click the control and choose options from the pop-up menu.
Bypass the FX bin	Right-click the FX bin and choose **Bypass Bin** from the pop-up menu.

Table 8.

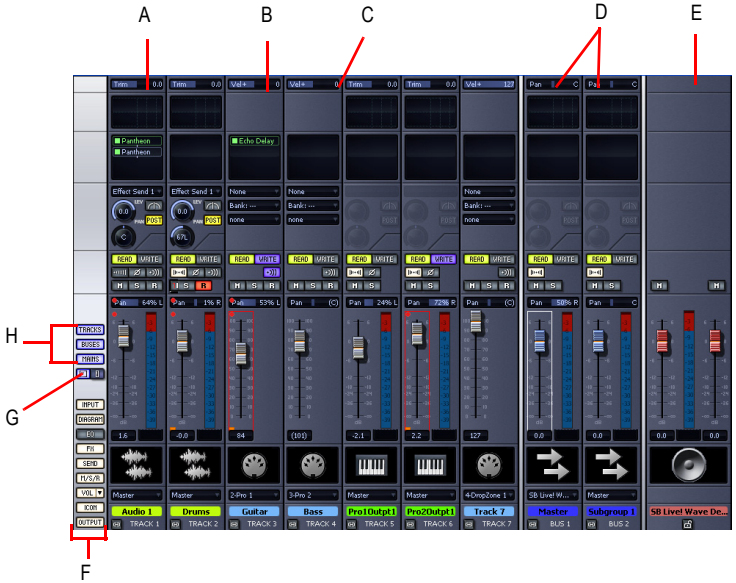
The Console View

The **Console view** is where you can mix the sounds on all the different tracks to create the final mix of your project. While the Track view provides most of the same controls, you may want to use the more familiar interface of the Console view for mixing.

You use the Console view to adjust the levels of sound for the different tracks in your project, to change the stereo panning, and to apply real-time effects to an individual track, combinations of tracks, or the final mix.

The Console view contains several groups of controls. There is one module for each track in your project, and one module for each bus. You can use bus sends to direct certain tracks to special modules that are known as *buses*.

Figure 7. *The Console view*



A. *Audio module* ***B.*** *MIDI module* ***C.*** *MIDI velocity* ***D.*** *Bus out* ***E.*** *Main out* ***F.*** *Show/hide strip controls buttons* ***G.*** *Widen all strips* ***H.*** *Show/hide for tracks, buses, mains*

As in the Track view, you can change track settings or record new music or sound in the Console view. You may choose to use one view or the other, or the choice you make may depend on which project you are working on.

Other views

SONAR has a number of other views you can use to display and work on your project. To display these views, select one or more tracks, by CTRL-clicking their track numbers and:

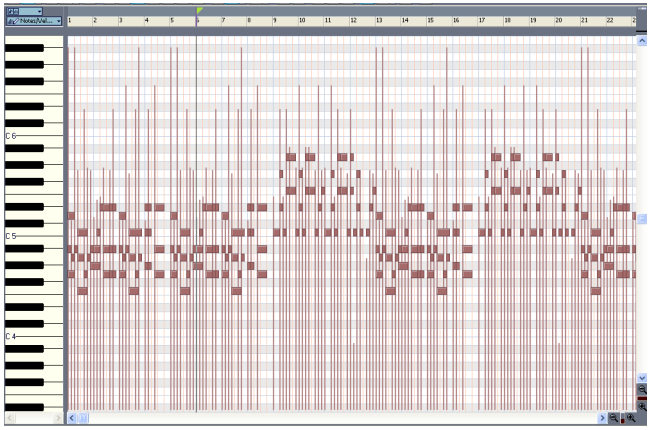
- Click the icon for the view in the **Views** toolbar

  Or

- Choose the view you want from the **View** menu

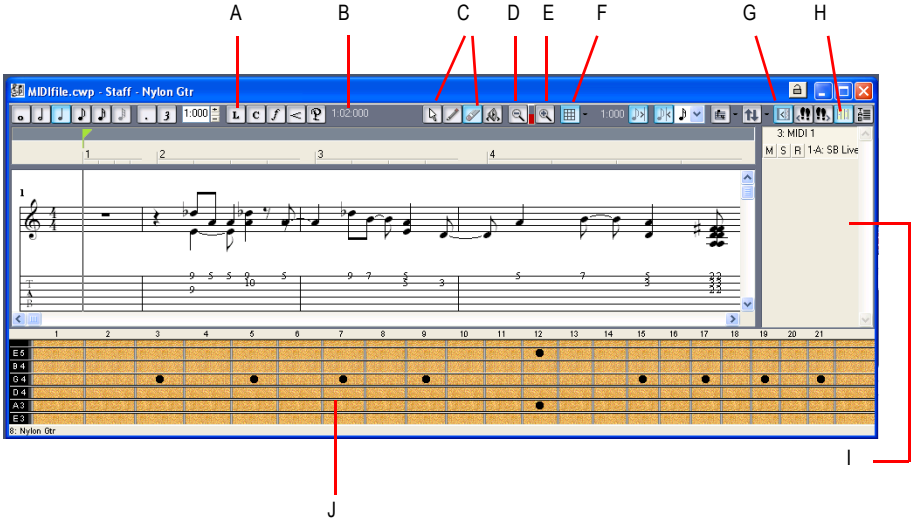
The **Piano Roll view** : shows the notes from a MIDI track or tracks as they would appear on a player-piano roll. You can move the notes around, make them longer or shorter, and change their pitches by just dragging them with the mouse. You can also use the Piano Roll view to display and edit MIDI velocity, controllers, and other types of information. The Piano Roll view also contains the Drum Editor, which allows you to “paint” drum patterns using the **Pattern Brush** tool and play different drum modules from a single track. For more information, see Piano Roll View.

Figure 8. *The Piano Roll view*



The Staff view : displays the notes from one or more MIDI tracks using standard music notation, similar to the way the notation would appear on a printed page. You can add, edit, or delete notes; create percussion parts; add guitar chords and other notation markings; display guitar tablature; display the Fretboard pane; and print whole scores or individual parts to share with other musicians.

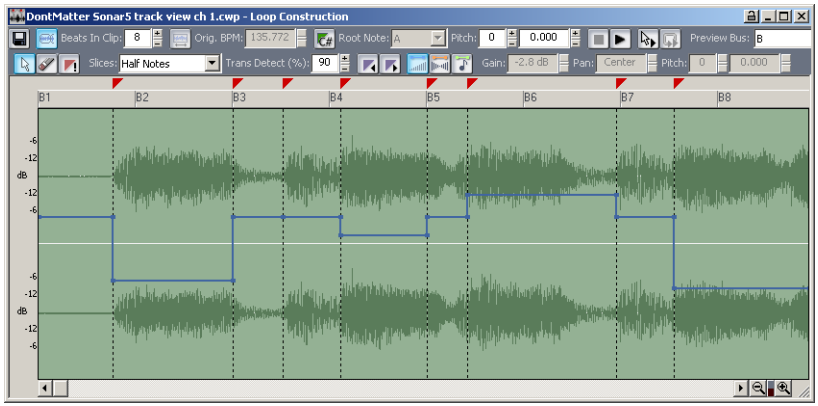
Figure 9. *The Staff view*



A. *Dynamics and markings* ***B.*** *Time and pitch locator* ***C.*** *Editing tools* ***D.*** *Zoom out* ***E.*** *Zoom in* ***F.*** *Snap to Grid* ***G.*** *Show/hide track pane* ***H.*** *Fretboard display* ***I.*** *Track list pane* ***J.*** *Fretboard pane*

The Loop Construction view : allows you to create and edit Groove clips (SONAR loops that “know” the tempo and key in which they were recorded), and export these clips as ACIDized files. For more information, see Loop Construction view.

Figure 10. *The Loop Construction view*

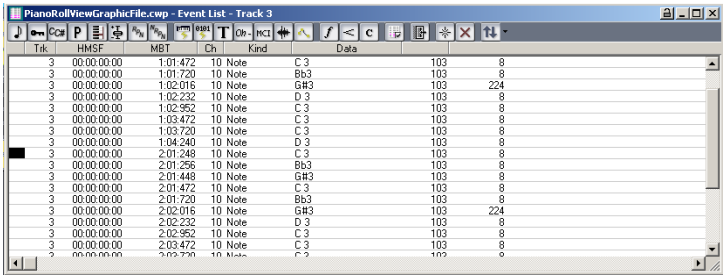


The Media Browser view : allows you to preview ACIDized files and other Wave files; and drag and drop them into your project. For more information, see Media Browser View.

Figure 11. *The Media Browser view*

The Event List view : displays the events in a project individually, so that you can make changes at a very detailed level. For more information, see Event List View.

Figure 12. *The Event List view*



SONAR has several other views that are used for very specific purposes:

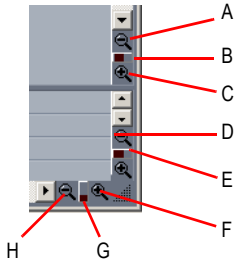
View	How you use it
Meter/Key	To change the meter (time signature) or key signature, or to insert changes in the meter or key signature at specific times in a project. For more information, see Meter/Key View.
Big Time	To display the Now time in a large, resizable font that you can read more easily. For more information, see Big Time View.
Markers	To add, move, rename, or delete labels for parts of your project that make it easier to move from one point to another. For more information, see Markers View.
Lyrics	To add and display lyrics for a track. For more information, see Lyrics view.
Video	To display a loaded video file. For more information, see Video View.
Synth Rack	Manage your soft synths
Navigator	Manage the Now Time in a project
Surround Panner (Producer version only)	Pan a surround track
Sysx	To create, display, store, and edit System Exclusive MIDI messages used to control instruments and other gear that are MIDI capable. For more information, see SYSX View.
Tempo	To view and edit the project's tempo changes. For more information, see Tempo View.
Step Sequencer	Lets you compose patterns by clicking cells in a grid to turn notes on or off. For more information, see Step Sequencer View.
Matrix	Lets you trigger multiple audio and MIDI patterns, either with a mouse or via MIDI remote control. For more information, see Matrix view.

Table 9.

Zoom controls

Many of the views contain Zoom tools that let you change the horizontal and vertical scale of the view.

Figure 13. *Zoom controls*



A. *Zoom Clips pane out vertically* ***B.*** *Vertical Zoom fader for Clips pane* ***C.*** *Zoom Clips pane in vertically* ***D.*** *Zoom Bus pane out vertically* ***E.*** *Vertical Zoom fader for Bus pane* ***F.*** *Zoom in horizontally* ***G.*** *Horizontal zoom fader* ***H.*** *Zoom out horizontally*

The **Track view** toolbar contains the Zoom tool:

The Zoom tools are used as described in the following table:

Tool	How you use it
Zoom out (Clips pane or Bus pane)	Click to zoom out incrementally, or press SHIFT and click to zoom all the way out
Zoom in (Clips pane or Bus pane)	Click to zoom in incrementally, or press SHIFT and click to zoom all the way in
Zoom fader	Click and drag to zoom continuously
Zoom tool	Click to arm, then click and drag in the view to select the zoom area. Click the drop-down arrow to display a menu of zoom and view options.

Table 10.

You can also zoom with the keyboard:

Key	What it does
CTRL+UP ARROW	Zoom out vertically
CTRL+DOWN ARROW	Zoom in vertically
CTRL+RIGHT ARROW	Zoom in horizontally
CTRL+LEFT ARROW	Zoom out horizontally
G	Go to (center) the Now time, without zooming

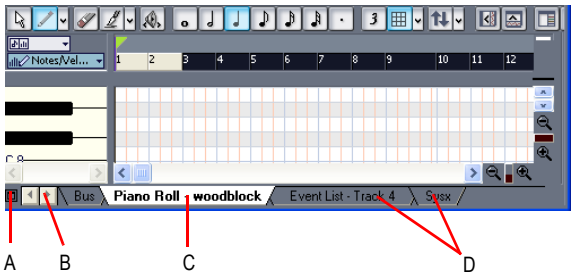
Table 11.

Key	What it does
Hold down Z	Arm the Zoom tool
U	Undo the current zoom
F	Fit tracks to window
A	Show all tracks
SHIFT+F	Fit project to window
SHIFT+double-click a clip	Maximize track height

Table 11.

Docking views

You can dock any view other than the Console view in the lower-right corner of the Track view by enabling a view's **Enable Tabbed** option. You can have as many views open in tabbed format as you want. You can toggle through the different views by clicking the tab of the view you want to see (or use the CTRL+SHIFT+LEFT/RIGHT ARROW shortcut). You can also maximize the pane to do detailed work in a view, or drag the splitter bar at the top of the view to enlarge the tabbed view area. For step-by-step instructions, see the procedures below.



***A.** Maximize pane **B.** Scroll left or right to view tabs **C.** Active view **D.** Tabs*

To do this	Do this
Display a view in tabbed format	Click the upper left corner of a view, and choose **Enable Tabbed** from the pop-up menu
Disable tabbed format for a view	Right-click the view's tab, and choose **Disable Tabbed** from the pop-up menu.
Enable or disable tabbed format for all open views	Use the **View > Enable Tabbing for Open Views** command.

Table 12.

To do this	Do this
Maximize a tabbed view	Click the **Maximize/Restore** button that's just to the left of the tabs.
Restore tabbed view	Click the **Restore** button that's in the lower left corner of the view that you're restoring.
Close a view that is in tabbed format	Right-click the view's tab, and choose **Close** from the pop-up menu

Table 12.

Locking views

By default SONAR allows only one instance of each view, but you can lock the contents of most views, preserving the current view by forcing a new instance of the view to appear if necessary. Locking views is the only way you can have multiple instances of the same view open. Only the Track and Console views cannot be locked.

To lock a view, just click the **Lock** button at the top right of the view. An unlocked view looks like this , and a locked view looks like this . A view can be locked automatically by pressing the CTRL key when opening the view.

Floating views

When a view is float enabled, you can move it outside of the confines of SONAR. This is particularly useful if you take advantage of SONAR's dual monitor support. Using dual monitor support, you can keep the Track or Console view on one monitor and "float" other views to the other monitor by dragging them to the second screen.

For more information, see the online help topic "Floating Views and Dual Monitor Support."

X-Ray windows

The X-Ray Windows feature eliminates the need to constantly minimize, move, or close windows in order to work in other windows. It works by decreasing the opacity of the current window enough so that you can see and work with the window that's behind the current window. You activate the feature by pressing a keyboard shortcut (default shortcut is SHIFT+X) when the mouse cursor is over a window you want to x-ray. You can choose to X-Ray whichever window is underneath the mouse cursor, or automatically X-Ray all FX/synth property pages in one step (**Note**: the mouse cursor does not need to be over any plug-in property pages).

The X-Ray Windows feature works on the following windows:

- AudioSnap palette
- Synth Rack
- Piano Roll view (when float-enabled)
- **Snap To Grid** dialog
- Plug-in effects and synths
- Controller/Surface plug-ins

To select key bindings for X-Ray windows

1. Use the **Options > Key Bindings** command to open the **Key Bindings** dialog.
2. If you want to use currently unassigned keys or key combinations, scroll through the options in the **Key** window until the **Global Key Assignment** field that is just under the window reads **Unassigned**. It's a good idea to find two unassigned options that are next to each other or easy to remember.

Note: *For best results with X-Ray Windows, avoid using ALT key combinations.*

3. Once you've decided on two keys or key combinations that you want to use, select Global Bindings in the **Bind Context** field, and scroll to the bottom of the list of commands that are in the window below that field.
4. In the **Key** window, highlight the key or key combination that you want to use for the X-Ray command, then highlight **X-Ray** in the function column of the list of commands, then click the **Bind** button to bind them together.
5. Now highlight the key or key combination that you want to use for the **X-Ray All FX/Synths** command, then highlight **X-Ray All FX/Synths** in the function column of the list of commands, then click the **Bind** button to bind them together.
6. Click **OK** to close the dialog.

To use X-Ray windows

1. Use the **Options > Global** command to open the **Global Options** dialog, and on the **General** tab, make sure that the **Enable X-Ray** check box is enabled.
2. Make sure that the view windows you want to X-Ray are in the Floating-enabled state: to check this, click the view or fx icon that's in the upper left corner of a window, and select **Enable Floating** from the drop-down menu. If **Disable Floating** is in the menu, then the **Floating** option is already enabled.

Note: *All FX/Synth/Control surface property pages are float-enabled by default.*

3. To X-Ray or un-X-Ray a single window, move the mouse cursor over the window, and press the keyboard shortcut (default is SHIFT+X) for the X-Ray command. The window does not need to have focus (does not need to be the highlighted window).
4. To X-Ray or un-X-Ray all plug-in windows at once, press the key binding for the **X-Ray All FX/ Synths** command.

Note: *If a window has focus, and the window's* ***Give All Keystrokes To Plug-in*** *button is enabled, X-Ray keyboard commands won't work.*

To Adjust X-Ray Windows Options

1. Use the **Options > Global** command to open the **Global Options** dialog.

2. On the General tab, you can adust these options:
   - **Enable X-Ray.** Enable or disable this check box to turn the X-Ray Windows feature on or off.
   - **Opacity.** Adjust this value by typing in a value, or by clicking and holding the **+** or **-** button to adjust the final opacity percentage value that an X-Rayed window reaches.
   - **Fade Out Time.** Adjust this value by typing in a value, or by clicking and holding the **+** or **-** button to adjust the amount of time that an X-Rayed window takes to reach its final opacity percentage value.
   - **Fade In Time.** Adjust this value by clicking and holding the **+** or **-** button to adjust the amount of time that an X-Rayed window takes to restore its original opacity.
3. Click **OK** to close the dialog and accept your changes.

To exclude a plug-in from X-Ray capablity

Some plug-ins (very few) use DirectDraw to create their windows. These windows appear jittery when x-rayed.

To exclude a plug-in from X-Ray capablity, follow these steps:

1. Open the Cakewalk Plug-in Manager: use the **Tools >Cakewalk Plug- in Manager** command.
2. In the **Plug-in Categories** window, select the category that the plug-in you want to exclude is in.
3. In the **Registered Plug-ins** window, select the plug-in that you want to exclude.
4. If the plug-in is a DirectX effect or an MFX, write down (or select and copy) the CLSID value that's in the **CLSID** field at the bottom of the dialog.
5. If the plug-in is a VST or VSTi, write down the VST ID value that's in the **VST ID** field at the bottom of the dialog.
6. Close the **Plug-in Manager** dialog.
7. Open the `Xrayexclude.ini` file that's in your SONAR program folder (use Notepad).
8. At the end of the file, find the `[EffectProps View]` section.

   You will see entries such as the following:

```
; Waves SSL EQ Stereo
XRayExclude11=1397510483
XRayExclude12={E451379E-F7E1-4E82-98D9-BEB87AC45E90}
```

9. Exclude your plug-in by creating a blank line below the last entry in the `[EffectProps View]` section, and then typing:

```
;[name of your plug-in, but withour brackets]
```

XRayExclude[type the next available number in XRayExclude list, but without brackets]=[VST ID number, with no brackets, or CLSID number, with curly braces at start and finish]

   For example, if the last entry in the `[EffectProps View]` section was:

```
; Waves SSL EQ Stereo
XRayExclude11=1397510483
XRayExclude12={E451379E-F7E1-4E82-98D9-BEB87AC45E90}
```

And you wanted to exclude the Cakewalk FxDelay from the X-Ray Windows feature, after creating a blank line you would type:

```
; Cakewalk FxDelay
XRayExclude13={985DAF67-589F-4B8D-8BBC-D7AD651B9022}
```

If there was also a VST version of the Cakewalk FxDelay, you would add another line:

```
XRayExclude14=[some VST ID number, with no brackets]
```

10. Save and close the `Xrayexclude.ini` file, and restart SONAR to implement your changes.

Customizable menus

All main menus and context menus are customizable. You can fine-tune your workflow by hiding menu items that are rarely used and reordering commands that you use frequently. You can even design and save menu layouts specific to different tasks.

Caution: *You can move commands completely out of their default menus. For example, you can move commands out of the **Edit** menu into the **Process** menu. Keep in mind that this manual describes commands by their original menu locations, so if you're looking for help about the **Process > Nudge** command, and you've moved the **Nudge** command to the **Edit** menu, the documentation for this command will still refer to the command as **Process > Nudge**. You can always load the default menu layout to restore the original command structure.*

- To open the **Menu Editor** dialog, choose **Options > Menu Editor.**
- In the **Menu Editor** dialog, to choose a menu to edit, select one from the **Menu** drop-down list.

To do this	Do this
Hide items in a menu	Click a menu Item (CTRL-click to select multiple items) and press the **Hide** button. The hidden command(s) will only be visible in the submenu that is automatically created at the bottom of the menu. You can display the submenu by clicking one of the arrows at the bottom of the menu.
Show items in a menu	Click a menu Item (CTRL-click to select multiple items) and press the **Show** button. The command(s) will reappear in its original location.
Reorder items in a menu	Click and drag menu Items up or down to change their position in the menu order. **Note:** You can also click and drag Menu Items in and out of submenus.
Create a new submenu	Right-click an item in the Menu Items list and select **Create Submenu**. That item will now appear in its own new submenu. Or Select one or more items from the list and press the **Create New** button in the **Submenus** section of the dialog.

Table 13.

To do this	Do this
Rename a menu item or submenu	Right-click a menu Item or submenu and select **Rename**, then enter a new name. Or Select a menu Item and press F2, then enter a new name.
Create a new separator bar	Right-click a menu item and select **Insert Separator.** The separator bar will appear above the menu item you right-clicked.
Remove a submenu or separator bar	Right-click the submenu or separator and select **Remove Submenu** or **Remove Separator**.
Save a new menu layout	Enter a new name into the **Menu Layout** field and press the **Save** button.
Delete an existing menu layout	Select the menu layout you wish to delete and press the **Delete** button
Edit a menu layout	Launch the Menu Editor and choose the menu layout you wish to edit from the drop-down menu, then make your changes.
Load a different menu layout	Launch the Menu Editor and choose a different **Menu Layout** from the drop-down menu, then close the dialog. OR Use the **Options > Menu Layouts** command, and select a layout from the available options.

Table 13.

Note 1: *Keep in mind that the factory default menu layout cannot be overwritten. If you want to change this layout, save your changes under a new layout name.*

Note 2: *If you change your menu layout so much that you can't find some commands, you can always load the factory default menu layout.*

Altering your menus may affect your menus' hotkeys, which allow you to navigate through the application's menus without using a mouse. You can view the hotkeys in your menus by pressing ALT and observing the underlined letters. Pressing the underlined letter on your keyboard will launch that menu command. In order to ensure you have no duplicates hotkeys in your customized menu, do the following.

1. Launch the Menu Editor and select the menu or submenu you wish to check for duplicate hotkeys. Right-click the menu item and select **Check Hotkeys**. The Menu Editor will then report back if duplicate hotkeys are found, or if a command has no hotkey at all.

Note: *The **Check Hotkeys** command examines only commands on the menu that you right-clicked, at the menu level that you right-clicked. It does not examine submenus of that menu.*

2. If missing or duplicate hotkeys are found, right-click again and select **Generate Hotkeys**. New non-duplicate hotkeys will be assigned for each item in that menu or submenu (but only on the menu level where you right-clicked, not on any submenus of the menu or submenu that you right-clicked).

Note: *Hotkeys are indicated within the Menu Editor by ampersands ("&") in each menu item's name. The ampersand is placed directly before the letter that represents the menu item's hotkey. If you wish to assign hotkeys manually, you can do so by when you rename a hotkey by placing the ampersand before your preferred hotkey letter for that command or submenu.*

3. If necessary, re-save your layout to preserve these changes.

Customizable toolbars

You can customize each toolbar in SONAR. You can hide or reorder each component of a toolbar, or add buttons to a toolbar from other toolbars. You can create up to three new toolbars from components of other toolbars. You can also hide or show all toolbars with a single command, and dock toolbars vertically if you want.

- To choose what toolbars you want to see, use the **View >Toolbars** command, and check the toolbars that you want to see in the dialog box.
- To hide or show all toolbars, use the **View > Show Toolbars** command. This command is available in the **Key Bindings** dialog (**Options > Key Bindings** command).

To customize a toolbar:

1. Right-click the toolbar that you want to customize, and choose **Customize** from the pop-up menu to open the **Customize Toolbar** dialog.
2. In the **Available Toolbar Buttons** field, select a component that you want to see in the toolbar, and click the **Add** button to move the component to the **Current Toolbar Buttons** field.
3. Repeat step 2 for any additional components you would like to display.
4. In the **Current Toolbar Buttons** field, select a component that you do not want to see in the toolbar, and click the **Remove** button to move the component to the **Available Toolbar Buttons** field.
5. Repeat step 4 for any additional components you would like to remove.
6. If you would like to move a toolbar component to a different location in the toolbar, select the component in the **Current Toolbar Buttons** field, and click the **Move Up** button or the **Move Down** button to change the button's location in the toolbar.
7. Repeat step 7 for any additional components.
8. If you want to restore the toolbar to its default appearance, click the **Reset** button.
9. Click **Close** when you want to close the dialog.

To create a toolbar:

1. Use the **View > Toolbars** command, and check one of the User “n” options.

   A toolbar appears, with a default set of controls.
2. Right-click the toolbar, and choose **Customize** from the pop-up menu to open the **Customize Toolbar** dialog.
3. Customize the toolbar the in the same way as the previous procedure.

To rename a toolbar:

1. Right-click the toolbar, and choose **Rename** from the pop-up menu to open the **Rename Toolbar** dialog
2. Fill in the **New Name** field, and click **OK**.

Now when you open the **Toolbars** dialog, the name you chose is listed in the dialog.

To dock or undock a toolbar:

- To dock a toolbar horizontally, drag it to the top or bottom of the interface.
- To dock a toolbar vertically, drag it to the left or right side of the interface.
- To undock a toolbar, drag it to the part of the interface where you want it, or entirely away from the interface.

Layouts

You may spend a lot of time making sure that all the views are laid out on the screen just the way you want. When you save your work, you can save the screen layout along with it. You can also save the layout by itself and then use the layout with other projects. For more information, see the online help topic “Layouts.”

Next topic: Working on a project.

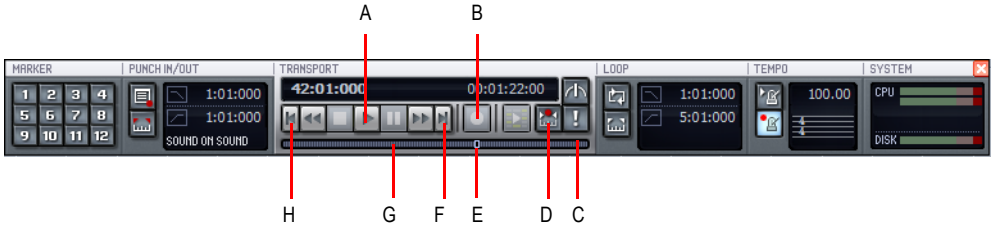
Working on a project

Much of your time in SONAR is spent recording and listening to your project as it develops. The **Transport** toolbar, shown below, contains the most important tools and other pieces of information you’ll need to record and play back your project.

Every project has a current time, known as the Now time (see: The Now time and how to use it). As you record or play back a project, the Now time shows your current location in the project. When you create a project, the Now time is set to the beginning of the project. The current Now time is saved with your project.

You control recording and playback using tools on the **Large Transport** toolbar (press F4 to show or hide), which work a lot like the ones on your tape deck or CD player:

Figure 14. *The Large Transport toolbar*



A. *Play* ***B.*** *Record* ***C.*** *Click to move ahead one measure* ***D.*** *Auto-punch toggle* ***E.*** *Drag Now Time to any desired position* ***F.*** *Click to jump to the end* ***G.*** *Click to back up one measure* ***H.*** *Click to jump to the beginning*

As you work with a project, you can use SONAR's mute and solo features to choose which tracks are played, or you can create loops to play a particular section over and over again. You can also create *markers*, which are named time points you add to your project to make it easy to jump to a particular location.

Next topic: SONAR file types.

Windows taskbar indicators

When SONAR is running, you'll normally see two indicators in your Windows taskbar, right next to the clock.

The MIDI activity monitor contains two lights that indicate MIDI input and output. When you play your MIDI keyboard, the first light flashes when each note is pressed, and it flashes again when each note is released. When you play back a project that contains MIDI, the second indicator lights up.

The volume control is used to control the playback and record volumes on your sound card. Double-click on this indicator to open a dialog box that lets you control the levels for audio, MIDI, CD playback, and record.

The volume control is available only if your sound card is using a native Windows driver. If your sound card does not use a native Windows driver, no volume control will be displayed in the taskbar. In this case, your sound card probably came with a separate program to control input and output levels. See your sound card documentation for more information.

Screen colors and wallpaper

SONAR lets you customize the colors that are used for virtually all parts of the program using the **Options > Colors** command. This command also lets you change the background bitmap that is displayed in the SONAR window.

For any SONAR screen element, you can assign a color in two ways:

- Choose one of the colors that is part of your Windows color scheme.
- Assign a custom color.

To Assign Custom Colors

1. Choose **Options > Colors** to display the **Configure Colors** dialog box.
2. Choose the screen element whose color you want to change from the **Screen Element** list.
3. Assign a color to the screen element in one of two ways:
   - To use a color from the Windows color scheme, choose one of the options in the **Follow System Color** list
   - To use a custom color, check **Use Specific Color**, click the **Choose Color** button, and select the color you want
4. To save these changes from session to session, check the **Save Changes for Next Session** box.
5. Click **OK** when you are done.

   SONAR uses the colors you have chosen.

To restore the default colors

1. Choose **Options > Colors** to display the **Configure Colors** dialog box.
2. In the **Screen Elements** window, select the elements that you want to restore; you can CTRL-click or SHIFT-click to select multiple elements.
3. Click the **Defaults** button.
4. Click **OK**.

SONAR uses the default colors for all selected screen elements.

To change the wallpaper

1. Choose **Options > Colors** to display the **Configure Colors** dialog box.
2. Choose the desired wallpaper according to the table:

To do this	Do this
Use the default wallpaper	Check **Default** in the Wallpaper list
Not use any wallpaper	Check **None** in the Wallpaper list
Use a custom bitmap	Check **Custom**, choose a bitmap, and click **Open**

Table 14.

3. Click **OK** when you are done.

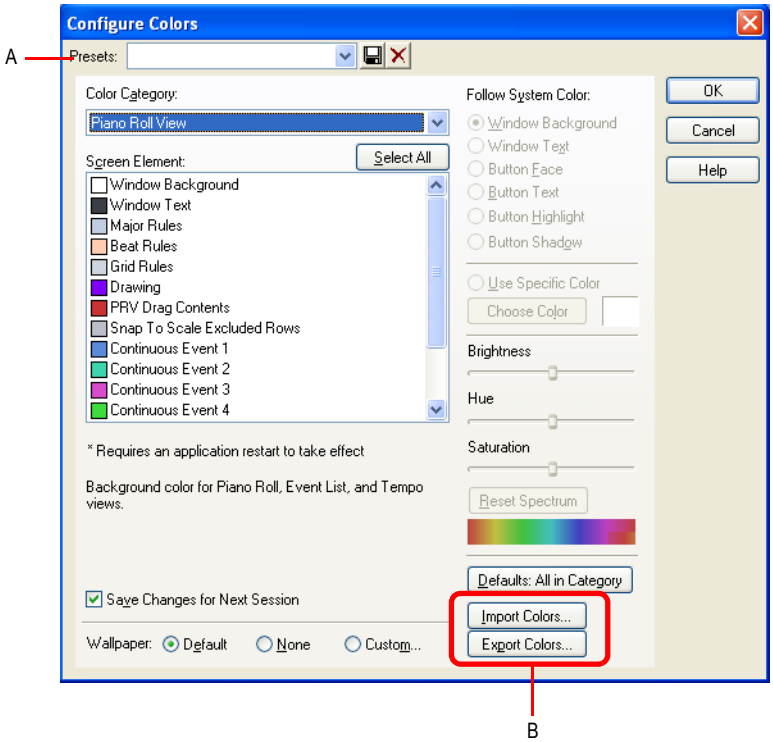
See also:

Color presets

Once you create a color arrangement that you like, you can save it as a preset, and then load it whenever you want to use that arrangement. You can also load any of the many factory presets, some of which duplicate the colors of earlier versions of SONAR. You can also import and export color arrangements in the form of .clr files so that SONAR users can share color layouts. And you can back up or export all of your presets with a single command, and import a group of presets that you or another SONAR user created.

Note: *Both single color presets, and collections of presets use the file extension .clr, so when you export either the current color arrangement, or all of your presets at once, give the exported file a name that clearly labels it as either a single preset, or as a collection of presets.*

Figure 15. *The **Configure Colors** dialog*



***A.** Presets menu **B.** Import and Export buttons*

To load a color preset

1. Open the **Configure Colors** dialog by using the **Options > Colors** command.
2. Click the drop-down arrow on the **Presets** menu to display the list of presets, then click the name of the preset you want to load.

To save a color preset

1. Open the **Configure Colors** dialog by using the **Options > Colors** command.
2. Adjust the color settings you want to save.
3. Type a name for your preset in the **Presets** menu.
4. Click the floppy disk icon that's next to the **Presets** menu to save your preset.

To export the current color arrangement

1. Open the **Configure Colors** dialog by using the **Options > Colors** command.
2. Arrange or load the color arrangement you want to export.
3. Click the **Export Colors** button [Export Colors...] in the **Configure Colors** dialog.

   The **Export Color Set** dialog appears.
4. Navigate to the folder where you want to store your new color set file.
5. Type a name for your color set file in the **File Name** field.
6. Make sure that the **Export Current Color Set** check box is enabled.
7. Click the **Save** button.

To import one or more color presets

1. Open the **Configure Colors** dialog by using the **Options > Colors** command.
2. Click the **Import Colors** button [Import Colors...] in the **Configure Colors** dialog.

   The **Import Color Set** dialog appears.
3. Navigate to the folder where the color set file you want to import is. Both single presets and groups of presets are stored in color set files, which use the .clr file extension.
4. Click the file that you want to import.
5. Click the **Open** button.
6. If your **Preset** menu in SONAR already contains a preset that is included in the preset collection file you are importing, SONAR asks you if you want to overwrite the file. This happens for each file that has the same name as a preset in the preset collection you are importing. Click **Yes** or **No** for each file in question, or **Yes All** or **No All** to either overwrite or protect all of your current preset files.

To export all your color presets

1. Open the **Configure Colors** dialog by using the **Options > Colors** command.

2. Click the **Export Colors** button [Export Colors...] in the **Configure Colors** dialog.

   The **Export Color Set** dialog appears.

3. Navigate to the folder where you want to store your the exported file. This file will contain all or your color presets.
4. Type a name for your file in the **File Name** field. Use a file name that you will recognize as a collection of presets, rather than as a single color arrangement.
5. Make sure that the **Export Color Presets** check box is enabled.
6. Click the **Save** button.

Note: *A file of color presets can be large, and might take a minute or so to export.*

Installing SONAR

SONAR is easy to install. All you need to do is choose the folder where the program and sample project files should be stored. Before you start, make sure you have your serial number handy. Your serial number is located on the back of your DVD case.

Note: *If you choose to not install the Sample files, you will not have the necessary content to use the tutorials in Chapter 2.*

To install SONAR

1. Start your computer.
2. Close any open programs you have running.
3. Place the SONAR installation disc in your disc drive.

   If you have autorun enabled, the SONAR **AutoRun** menu opens automatically, showing you a dialog box with several buttons. If autorun is not enabled, you can open the SONAR **AutoRun** menu by selecting **Start > Run** and entering **d:\AutoRun.exe** (where d:\ is your disc drive).

4. Click the **Install SONAR** button.

Note: *If you exit Setup without completing the installation, choose **Start > Run**, type* `D:\AutoRun.exe` *(where* `D:\` *is your DVD drive), and click **OK**. This will reopen the **AutoRun** window, and you can click **Install** to start installation again.*

5. Follow the installation instructions on the screen.

You can also install SONAR by choosing **Start > Run** and running the application named SETUP.EXE from the DVD.

Uninstalling SONAR

When you installed SONAR, the setup program placed an **Uninstall** icon in the **Start** menu. To uninstall SONAR, click the **Start** button and choose **Programs > Cakewalk > SONAR 8.5** (Studio or Producer) **> Uninstall SONAR 8.5** (Studio or Producer).

Starting to use SONAR

This chapter has provided you with an overview of SONAR and basic information on how to install the software and configure your system.

The following tutorials will give you some hands-on practice in playing, recording, and mixing your projects. If you have not already done so, you may want to refer to SONAR basics to get the most out of these tutorials.

Note: *If, during installation, you chose in the **Select Components** dialog not to install the Tutorials folder (part of the Sample files), you will not have access to the sample tutorial files needed to follow the tutorials in this chapter. If you didn't install these files, insert your product disc and copy the files to your hard drive.*

Tutorial 1 – Creating, playing, and saving projects

Tutorial 2 – Using the Media Browser

Tutorial 3 – Recording vocals and musical instruments

Tutorial 4 – Playing and recording software instruments

Tutorial 5 – Working with music notation

Tutorial 6 – Editing your music

Tutorial 7 – Mixing and adding effects

Tutorial 8 – Working with video

Tutorial 9 – Exporting, CD burning and sharing

Tutorial 1 – Creating, playing, and saving projects

Understanding and managing project files is central to your work flow in SONAR. In this tutorial, we are going to cover the basics of getting started with project files and some of the operations that can be performed with them. Whenever you write or record music in SONAR, you are writing it to be saved into a project. A project can contain a variety of elements, including:

- Audio tracks
- MIDI tracks
- Instrument tracks
- DirectX and VST audio effects
- Project settings such as Tempo, Key and Meter changes
- Lyrics

See:

Creating a new project

Opening project files

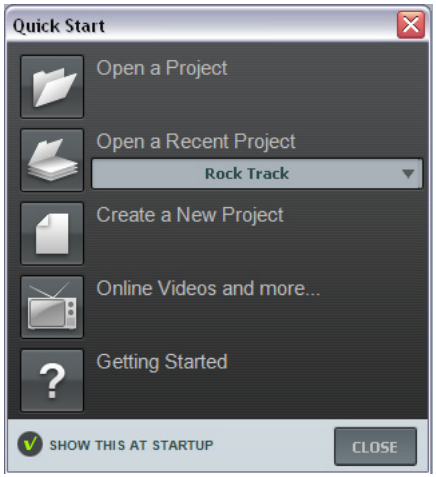
Playing project files

Looping project files

Saving project files

Creating a new project

There are several ways to get started with a project in SONAR. When SONAR is opened, you will be greeted with the **Quick Start** dialog. Let's take a look at the options available in this dialog.



Open a Project. Opens a standard **File Open** dialog, which lets you select the project that you want to open.

Open a Recent Project. The drop-down list shows the most recent projects that have been opened in SONAR. Select the desired project from the list and click the button to the left of the list to open the project.

Create a New Project. Click this button to open the **New Project File** dialog, which lets you create a new project based on any available template.

Online Videos and more. Click this link to view our tutorial videos online. An active Internet connection is needed in order to access this content.

Getting Started. Click this button to open the SONAR online Help.

Show this at Startup. Clear this check box if you don't want the **Quick Start** dialog to launch the next time you start SONAR.

Close. Use this button to close the **Quick Start** dialog.

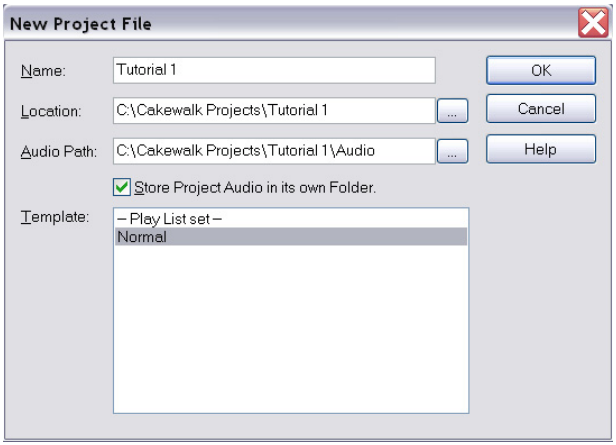
For this tutorial, we want to create a new project.

- Click the **Create a New Project** button .

Tip: *You can also perform this same operation by clicking **File > New** from the main menu across the top of SONAR's screen.*

The **New Project File** dialog appears. Whenever you create a new project, you will be presented with this dialog.

Let's explore some of the things you can do in this window.



Name. Type the name of your project in the **Name** box. For this exercise, let's name your project `Tutorial 1`.

Location. Use the **Location** box to specify where the project should be saved. Click ... to browse to a specific location. For this tutorial, use the default, as shown in the preceding figure.

Audio Path. Use the **Audio Path** box to specify where to save audio recordings for your project. Click ... to browse to a specific location.

Store Project Audio in its own Folder. Select this check box if you want to store the project's audio files in a separate folder. It is recommended that you select this option.

Template. This list shows all available pre-made templates that are included with SONAR. This list will also include any custom templates that you create. Your **Template** list may vary from the preceding figure. For this tutorial, select the template named **Normal**.

OK. Click **OK** to create a new project based on the specified settings.

Cancel. Click **Cancel** to close the **New Project File** dialog.

Help. Click **Help** to open the online Help topic for the **New Project File** dialog.

Click **OK** now to move forward with this tutorial.

Congratulations, you have just created a new project in SONAR!

See:

Opening project files

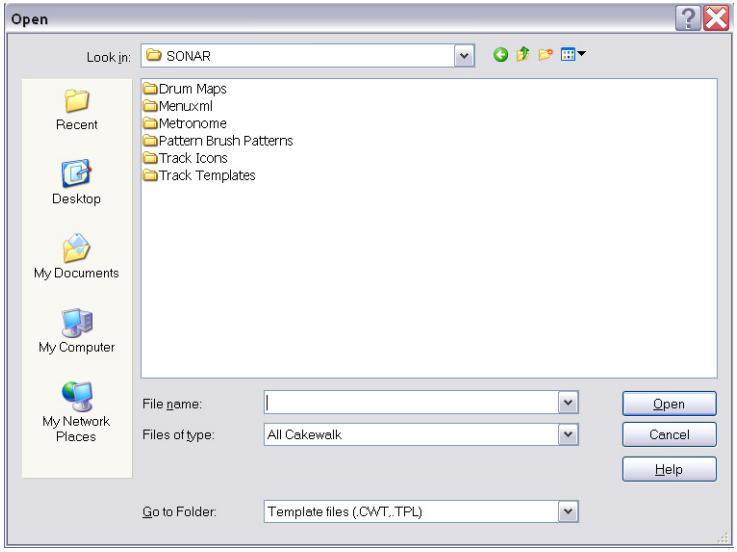
Playing project files
Looping project files
Saving project files

Opening project files

Next we are going to talk about opening existing project files. There are two ways this can be done in SONAR:

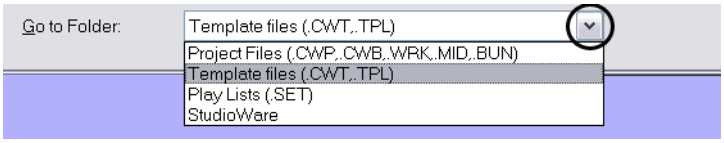
- Click the **Open a Project** button in the **Quick Start** dialog that is first presented when SONAR starts.
- Select **File > Open** from the menu bar across the top of SONAR's screen.

Let's go ahead and try one of the above methods. Either of them will bring you to the **Open** dialog as shown in the following figure. The **Open** dialog functions like any other file browsing dialog in Microsoft Windows.



- The vertical navigation buttons let you jump to popular locations on your computer's hard disk.
- The browsing pane lists all the project files and folders that are available in the selected folder.
- The **Go to Folder** dropdown list allows you to quickly move to commonly used folders for project files in SONAR. Typically, you can get to your projects by selecting **Project Files**.
- For more detailed information about all of the options and functions in this dialog, click **Help**.

For this tutorial we want to open one of the sample project files that are included with SONAR. To do so, select **Template Files** in the **Go to Folder** list. This option appears when clicking on the little arrow to the right of the dropdown list.



This will refresh the browsing pane to display all the files and folders in the Template Files directory. Double-click on the *Tutorials* folder to open it and then Locate the project named `SONAR_AudioDemo1.cwp`.

You can load project files into SONAR in one of two ways:

- Select a file by clicking on it so that it is selected, then click **Open**.
- Double-click the file from the browsing pane.

Let's now use one of these methods to open the project file `SONAR_AudioDemo1.cwp`. When the project opens, the File Information window appears. This window can be used for storing notes, comments, credits and other helpful information about a project. For now, close File Information window by clicking the **Close** button in the upper right corner of the window.

See:

Creating a new project

Playing project files

Looping project files

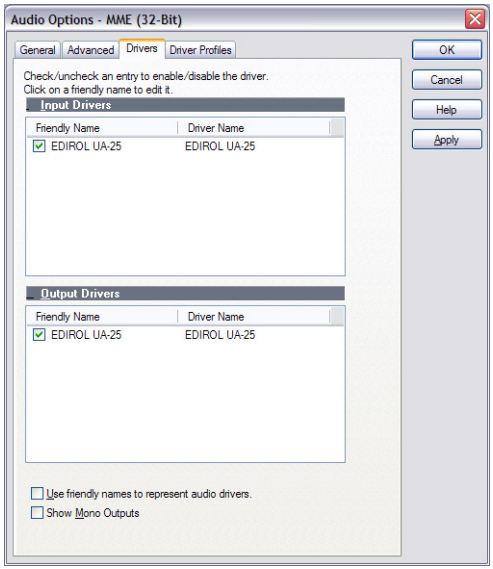
Saving project files

Playing project files

For this next section we are going to configure the project named `SONAR_AudioDemo1.cwp` for playback in SONAR. If you have not opened the project yet using the steps from the previous section *Opening project files*, do so before continuing.

Configuring your sound device

Before we can get any sound, we need to ensure that SONAR is communicating with your computer's sound card or audio interface. To do so, click on the **Options** menu across the top of SONAR's screen and choose **Audio**. For this tutorial, there are two pages of this window we are concerned with. The first is the **Drivers** tab shown in the following image. To get to this page, click the **Drivers** tab. Before you can hear any sound play in SONAR, you have to ensure that the devices you want to use are selected. An Edirol audio interface is used in the following example, so all the **Input Drivers** and **Output Drivers** check boxes for the Edirol device are selected. Your device list will most likely be different from the following image.



After you have selected the desired Input and Output devices that you plan to use with SONAR, click the **General** tab. In the **Playback Timing Master** list, select the audio output device that you want SONAR to treat as the default or main output device. This should be the output on your sound card that has either speakers or headphones connected to it. In the **Record Timing Master** list, select the input on your sound card that you plan to plug devices into, such as a microphone, keyboard or other instrument.

If you are having trouble with any of the steps in the last section thus far, we have created a helpful set-up guide on our web site that provides step-by-step instructions for configuring your audio hardware. You can find it here: www.cakewalk.com/Support/hardwaresetup/

Setting the tracks outputs

The next important step is telling SONAR which output on your sound device you would like audio tracks to play on. In some cases, it is desirable to have tracks playing different outputs (such as if you are using external hardware processing for effects). In this scenario, you'll want to set all of the audio tracks to the same output.

Let's start with the Bass track. Locate the track named **Upright Bass** in the project. Let's take a closer look at a few of the track's controls. If the track controls are not all visible, you may need to expand the track to see them all.

To expand a track to make all of its controls visible

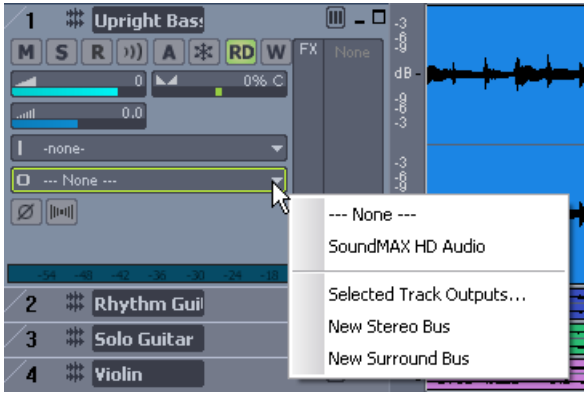
1. Point the cursor to the bottom edge of the track.
2. Click and drag down to reveal all track controls.

Tip: *If you find the number of track controls overwhelming, you can show/hide specific types of track controls by using the tabs located at the bottom of the Track view.*

Control	Description
M	This is the **Mute** button. It is used to silence a track during playback. Any tracks that are muted will not be heard.
S	This is the **Solo** button. It is used to silence every track except the one that is soloed. This can be handy for isolating a particular performance or recording for monitoring or mixing purposes. SONAR allows you to solo multiple tracks simultaneously.

Control	Description
R	This is the **Arm** or **Record Enable** button, which must be enabled on any track that you want to record onto. For more details, see *Tutorial 3 – Recording vocals and musical instruments.*
)))	This is the **Input Echo** or **Input Monitor** button. When clicked, this enables the track's input to be heard directly through its output. For more details, see *Tutorial 3 – Recording vocals and musical instruments.*
W	This is the **Write Automation** button. When enabled, changes to adjustable track parameters during playback are recorded. For more details, see *Tutorial 7 – Mixing and adding effects.*
❄	This is the **Freeze** button. It is used to temporarily convert a synth or instrument track into an audio track to conserve CPU power.

Locate the dropdown list for **Output** and click the small arrow to show all available outputs. Select the output that your speakers or headphones are connected to. If you can't find the **Output** dropdown list, make sure you have expanded the track fully by dragging it down.



Note: *Your options will be different from the preceding image. Select the output that corresponds to your sound card or audio device.*

Next, you will want to repeat the above process for all of the tracks in your project.

Tip: *If you need to change multiple outputs simultaneously, you can also do it by clicking* ***Edit > Select > All*** *and then* ***Tracks > Property > Outputs.*** *This will bring up a dialog that will allow you to change the Audio and MIDI outputs of all selected tracks.*

Playing the project

Now that all of the track's outputs are set to the appropriate device, the next step is to play the project to make sure it can be heard and sounds right.

Locate the **Transport** tool bar at the top of SONAR's screen. If you can't find this toolbar, press F4 to show the **Large Transport** toolbar.

The transport contains many useful functions related to projects in SONAR. For now, simply click the **Play** button to hear the project.

Experiment with the **Mute** M and **Solo** S buttons on each track. If you solo multiple tracks you will hear all of the soloed tracks. If you mute any tracks, they will not be heard.

Tip: *You can also use your keyboard's SPACEBAR key to start and stop playback in SONAR.*

Once you are done listening, click the **Stop** button .

See:

Creating a new project

Opening project files

Looping project files

Saving project files

Looping project files

SONAR features a really handy tool that allows you to repeat specified sections of a project file. You may want to do this for many reasons, such as to rehearse a part or phase or to listen closely to a specific section. Perhaps you might set up a loop just because it's your favorite part of the song and you want to hear it over and over again. For all of the above, you will need to loop a section of the song.

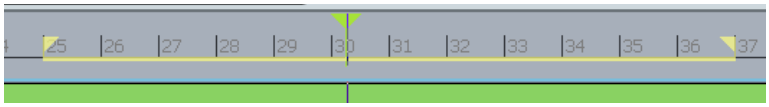
You may have noticed this demo file is an example of swing or jazz music. Let's pretend for a second that you are the guitar player and you wanted to practice your solo section right before the Violin soloist begins. This requires you do two things:

1. Create a looped section of the **Bass** and **Rhythm Guitar** for you to practice with.
2. Mute the existing **Solo Guitar** track.

To enable looping in SONAR is easy. Simply click the **Loop** button in the **Loop/Auto Shuttle** toolbar. You can also find this button in the **Large Transport** toolbar by pressing F4. When enabled, the **Loop** button is lit.

Take note of the measure numbers displayed in the preceding image. The first number (2:01:000) indicates the start of the loop region and second number (38:01:000) indicates the end of the loop region.

When looping is enabled, the time ruler across the top of SONAR's track view displays yellow flag markers that indicate where the loop region starts and ends. If you want to change the loop region, you can drag the loop markers to a new location. Drag the loop start marker to measure 25 and the loop end marker to measure 37. This will create a 12 bar loop.



Finally, mute both the **Solo Guitar** and **Violin** tracks and click **Play** to audition the loop region. You will now hear only the **Upright Bass** and **Rhythm Guitar** tracks so that you, the guitarist in our scenario, can practice your solo section.

See:

Creating a new project

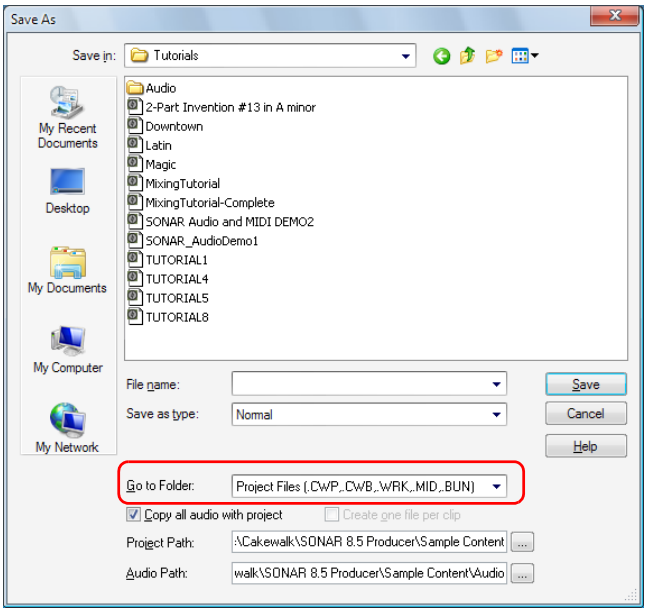
Opening project files

Playing project files

Saving project files

Saving project files

SONAR offers you many options for saving your work. To investigate these options, click on the **File** menu and choose **Save As**. This opens the **Save As** dialog. Before doing anything in this window, the first thing you should do is select **Project Files** in the **Go to Folder** list. Even if it already says **Project Files**, click it anyway.



You will notice this window looks very familiar to the **Open** dialog we looked at earlier in this tutorial. The **Save As** dialog navigates files much in the same way as Windows does. If you would like to read the finer points and in-depth information about using this window, click the **Help** button [Help]. For this exercise, we are going to look at the different types of project files you can save with SONAR.

Take a look at the dropdown list labeled **Save as type**. Click the **Save as type** arrow to see a list of supported file formats. Let's look at these different files formats now:

- **Normal.** This is the first option listed and the most common format used for saving project files. Choosing this will create a Cakewalk Project file with the .cwp file extension. It is important to remember that Cakewalk Project files do not actually store any audio data, but rather reference audio files from where they are saved on your computer's hard drive.
- **Template.** Template files are used as a starting point for new projects. Templates can store layout information about your project, such as how many audio and MIDI tracks there are and which Output ports they are assigned to. Detailed information about using templates can be found in SONAR's help topic *Templates*
- **Cakewalk Bundle.** This format is typically only used when transferring projects to other people or other computers. Cakewalk Bundle files use the .cwb file extension and are similar to Cakewalk Project files. The main difference is that Cakewalk Bundle files actually contain all of a project's audio data. Cakewalk Bundle files are much larger in size than regular Cakewalk Project files because they contain all of the audio data for a project, so try to avoid using this format unless you need to move a project between computers. When opening a Cakewalk Bundle file, SONAR will "unpack" the embedded audio data and save it to a new audio folder on your computer.
- **MIDI.** This option lets you save a standard MIDI file of your project. MIDI files do not contain any embedded audio or references to external audio files, so any audio data in a project will be discarded when you save a MIDI file. MIDI files can be either Format 0 or Format 1. Format 0 combines all the MIDI events into a single track. This is compatible with many older sequencers and keyboards. MIDI Format 1 files can store up to 7256 tracks and are a better choice if you plan on using your MIDI file with another computer-based sequencing application. Although not as common, SONAR also allows you to save in the RIFF MIDI format. Unless you are positive that the playback system requires a RIFF MIDI file, you will want to use the MIDI format.

In most cases, the best choice for saving your files is **Normal**. To save this project, do the following:

1. In the **Go to Folder** list, select **Project Files**. Even if **Project Files** is already selected, select it again for good practice.
2. In the **Save as type** list, select **Normal**.
3. Type a name in the **File Name** box.
4. Click **Save** to save the project.

This completes the tutorial.

See:

Creating a new project

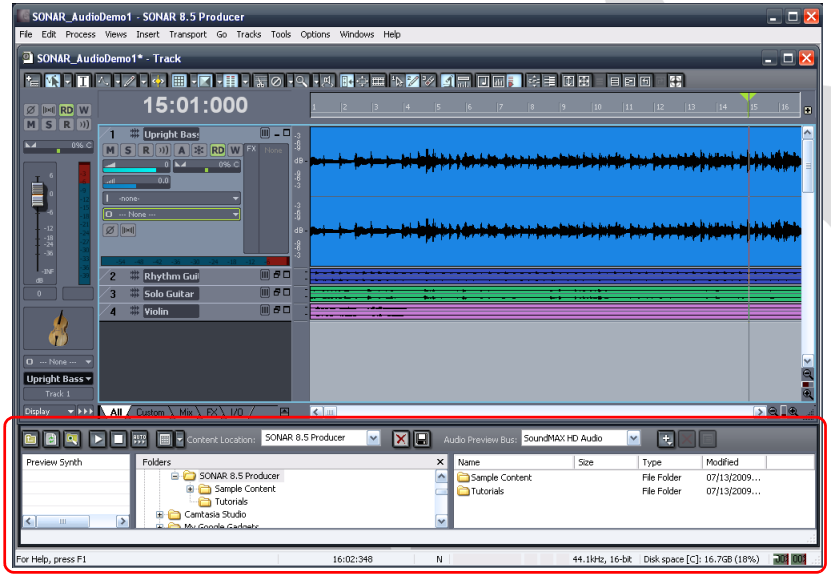
Opening project files

Playing project files

Looping project files

Tutorial 2 – Using the Media Browser

New to SONAR is the enhanced *Media Browser* view; designed to improve workflow and make working with audio loops and MIDI groove clips simple. When you open a project in SONAR, the Media Browser will open underneath the track view. It is outlined in the image below.



To show or hide the Media Browser, click the the **Media Browser View** button located to the left of the Transport controls in the top of SONAR's screen, or press ALT+1.

Now that we know how to show and hide the Media Browser view, let's take a closer look at some of its features, starting with the toolbar that spans across the top of the Media Browser view. Locate the section on your computer screen that looks like the following image.

First, let's review the controls on the left side of the toolbar.

Control	Description
	This is the **Move up** button. It is used to open the folder one level above the active folder.
	The **Refresh** button is used to refresh the active folder. This is helpful if you move new loops into the folder and want SONAR to be able use/see them.
	This is the **Windows Explorer** button. Click to open Windows Explorer at the same directory being viewed in the Media Browser view.
	Stop is used to stop play back of the selected loop.
	Play is used to listen to the currently selected loop.
	When enabled, the **Auto Preview** button automatically previews loops and files when you click on them in the Media Browser view.
	Clicking the **Views** button allows you to choose how files are displayed in the list view. For more details on this check out the online help topic *"The Media Browser View"*

The Content Location drop down box shown below allows you to quickly jump to popular locations on your hard drive.

The **Audio Preview Bus** drop down box shown below allows you to select the output device used to listen to loops and files from the Media Browser view.

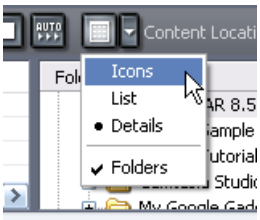
The next three controls are used for software synths.

Control	Description
	The **Insert Soft Synth** button allows you to add an instrument track to your project so you can preview MIDI groove clips directly from the Media Browser.
	This is the **Delete Soft Synth** button, which is used to remove the selected synth from the **Preview Synth** list from your project.
	Click the **Properties** button to open up the property page for the selected synth.

Table 15.

Below the toolbar, the Media Browser is split into two or three panes. From left to right they are the *Preview Synth* list, the *Folders* pane and the *Explorer* pane.

Note: *The folders list can be hidden using the **Views** button.*



See:

Finding and previewing audio loops

Previewing MIDI groove clips

Adding loops to your project

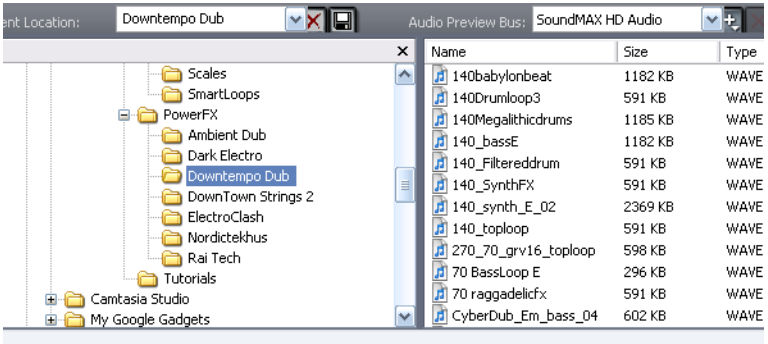
Finding and previewing audio loops

Now that we have a general idea of how the Media Browser is laid out, let's find some of the content that is included with SONAR and give it a listen.

1. Make sure the Media Browser view is open and visible. If it is not, click the **Media Browser** view button or press **ALT+1**.
2. Click on the **Views** button and make sure that the option for **Folders** is selected and that the bullet point is set to **Details.**
3. In the **Folders** list, locate the `My Documents` directory. Click the little triangle to the left of my documents to expose all of the folders inside of it.
4. Using the same process, navigate to the following directory: `My Documents\Cakewalk\SONAR\Sample Content\PowerFX\DowntempoDub\`. You can open folders by double-clicking on them.

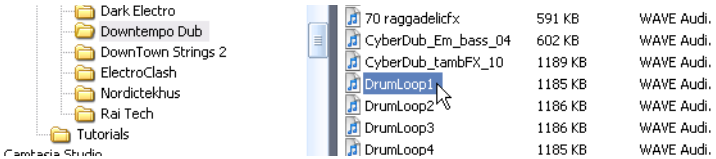
Tip: *You can quickly jump to the* `Sample Content` *folder by selecting* ***Sample Content*** *from the* ***Content Location*** *drop-down list.*

Your folders list should look something like the image below.



Notice that when you click on the `Funky` folder all of the contents of that folder are displayed in the *Explorer* pane to the right.

5. Click on the file named DrumLoop1.wav.



6. Click the **Play** button in the Media Browser toolbar.

   The selected file is previewed.

If you don't hear anything, revisit the settings of your **Audio Preview Bus,** as discussed above**,** and ensure that it is set to the audio device that your headphones or speakers are connected to.

If you need to preview a lot of loops quickly, enable the **Auto-Preview** function . When enabled, an audio loop will start playing as soon as you select it.

See:

Previewing MIDI groove clips

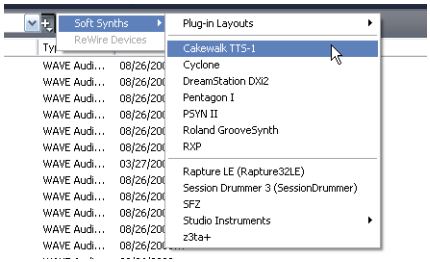
Adding loops to your project

Previewing MIDI groove clips

In addition to audio loops, the Media Browser view also allows you to preview *MIDI groove clips*. Let's try this now with one of the clips included with SONAR. Unlike audio loops, MIDI groove clips require a soft synth or instrument track to play through.

1. Click the **Insert Soft Synth** button , point to **Soft Synths** and select **Cakewalk TTS-1**.

   The **Insert Soft Synth Options** dialog appears.



2. Clear all of the check boxes except for **Single Track Instrument, Recall Assignable Controls,** and **Ask This Every Time**.
3. Click **OK.**

   Cakewalk TTS-1 is added to your project.

Now that we have a synth in our project that we can preview MIDI groove clips with, let's find some and give them a listen.

1. Using the same process we did to find audio loops, use the **Folders** and **Explorer** panes to browse to `My Documents\Cakewalk\SONAR\Sample Content\Smart Loops`.
2. Locate the MIDI groove clip named `Bangin 10.mid`.

Before we can preview a MIDI groove clip, we need to tell SONAR what instrument or synth we would like to preview it with.

3. In the Preview Synth pane, select **Cakewalk TTS-1 1**.

4. Now that SONAR knows what synth to play MIDI groove clips through, select the groove clip named `Bangin 10.mid` just as you did with the audio loop previously.

5. Click the **Play** button in the Media Browser toolbar.

Just like with audio loops, you can set MIDI groove clips to auto-preview by clicking the **Auto-Preview** button.

In addition to using soft synths to preview MIDI groove clips, soft synths also have many other useful and powerful features. For more details and instructions on using them, see Tutorial 4 – Playing and recording software instruments.

See:

Adding loops to your project

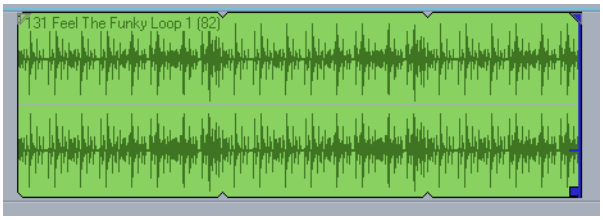
Adding loops to your project

Once you have found an audio loop or MIDI groove clip that you would like to use in your project, the next important step is to add it to your project. Adding loops is easy with SONAR's intuitive drag and drop interface.

To add a loop to your project, do the following:

1. Locate the loop you would like to use in the Browser pane of the Media Browser view.
2. Drag the loop to a track. If you are selecting an audio loop, you must drag it to an audio track. If you would like to use a MIDI groove clip, be sure you drag it to a MIDI track.

   You should also notice that, as you drag the file, your mouse pointer changes to an arrow with a plus sign .
3. When you drag a loop or groove clip into a project, it will only show one repetition. You can extend how long a loop is by pointing the mouse pointer to the clip's right edge, then drag the clip edge to the desired duration. When you point the mouse pointer to the right clip edge, a blue vertical line appears and the mouse pointer looks like this .



This completes the tutorial. You should now be able to drag loops into your projects and loop them.

Tutorial 3 – Recording vocals and musical instruments

One of the most important aspects of creating music in SONAR is digital audio recording. This is the process of taking the sound from a microphone or an instrument and recording it to an audio track. Once this step is completed you can edit and mix the song to prepare it to share with the world.

This tutorial will walk you through the steps involved and provide you with some insight on how to get the best possible audio recordings.

Adding an audio track

In Tutorial 1, you learned about opening project templates. Let's open a blank project for this tutorial:

1. On the **File** menu, click **New**.
2. Select the **Blank (no tracks or buses)** template and click **OK**.

   A new blank project is created.

   With the blank project open, you can insert new tracks as you need them. For the task of recording digital audio you'll need a new audio track. Follow these steps to insert one:

1. Do *one* of the following:
   - Click **Insert** and then click **Audio Track**.
   - Right-click on the Tracks pane and select **Insert Audio Track** on the pop-up menu.

   A new audio track is added to your project.
2. In the new audio track, expand the track to expose all of its controls (for details, see “To expand a track to make all of its controls visible” on page 99).

   The track's controls are exposed.
3. Click the **Input** drop-down menu to select the track’s input.

   The available inputs for the track are displayed.
4. Select the physical jack that you're instrument is plugged in to. If you know, for instance, that your guitar is plugged into input 1, click the **Input** control and select the first option. Some audio interfaces refer to their stereo inputs as pairs, like 1/2, 3/4 or 5/6. Most often left channels are represented by odd numbers and right channels are represented by even numbers.

Note: *Most microphones and guitars are mono, so you'll want to select either the left or right channel accordingly.*

5. Click the **Output** drop-down menu to select the track's output.

   The available outputs for the track are displayed.

6. Select the output port that you want the audio track to play through during playback. This is how you ultimately route the audio to your speakers. You will usually choose 1 and 2, because these are most commonly the outputs that speakers or audio monitors are connected to.

7. Click the track's **Record Enable** button R.

Note: *SONAR only allows recording to tracks that have been record enabled. This is necessary since SONAR allows for multi-track recording. This tells SONAR what track you want your new material recorded to. Otherwise, every track would be recorded to during every take.*

8. Click the **Input Echo** button))) if you want to hear the input during recording. Many sound cards and audio interfaces have an option to do this automatically on the hardware level. If you can already hear the input signal, simply move on to the next section.

Getting ready to record

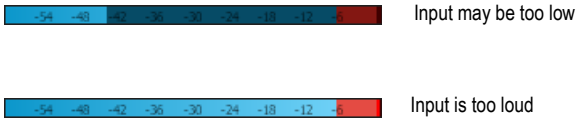
At this point, we need to check the input levels to make sure they are sufficient and not distorting.

Perform as you would if you were recording and watch the meter on the track respond to the sounds you produce.

If the meter never even comes close to the maximum, increase the input level. If the meter even occasionally reaches the maximum, decrease the input level.

Input levels are usually adjusted via a knob next to the input jack on the sound card, but features like this may vary slightly between devices. So, if you have never recorded an instrument or microphone with your sound card, you may want to read about doing so in the device's manual.

Figure 16. *The record meter shows the input level*



Recording your performance

Now that everything is set up, let's record something!

1. On the **Options** menu, select **Project** and then click the **Metronome** tab.

2. Set the metronome for a 2 measure count-in.

   - Click **Use Audio Metronome**, select the **Recording** check box and set **Record Count-in** to 2 Measures. For details about each metronome option, click **Help**.

3. Make sure the track has been record enabled by clicking the track's **Record Enable** button. The **Record Enable** button on the track should be lit in red like this: R. Again, if you don't arm a track, SONAR will not know where to put the audio and the transport **Record** button will be disabled .

4. On the Transport, click **Record**, or press R on your computer keyboard.
5. You'll hear two measures counted in by the metronome and then recording will begin. Start performing at the beginning of the third count.
6. When you finish recording, click the **Stop** button or press the SPACEBAR.

   A new audio clip appears.

Press **Play** to play back the project. If you would like to redo the take, go to **Edit > Undo** to undo the previous recording, then repeat steps 3, 4 and 5 above until you get a perfect take.

Now that your first track has been recorded, you can “over-dub” another part. To do so, disable recording on track 1 and repeat the steps in this tutorial. After repeating the steps, you will have recorded to track 2. Both recorded tracks will play during playback. Each will also have its own exclusive volume and pan control, FX chain and can be muted or soloed. You'll learn more about this in future tutorials.

See:

Troubleshooting

Troubleshooting

If you weren't able to record successfully by following this tutorial, please check the following:

I only get one side of my guitar/microphone recorded

You may be recording a mono signal through a stereo input. Guitars and microphones produce mono signals. Right-click the track and select **Track Properties** from the popup menu. This opens the **Track Properties** dialog, where you can specify the desired input port. Select the appropriate side of your stereo pair, either left or right as opposed to stereo.

Also make sure you don't have a mono adapter going into the Line-in and that you have the Left side of your sound card (mono) chosen for input in SONAR.

Previously recorded tracks are mixed into my new recordings

This can happen when your soundcard is set to record everything that comes out of your computer speakers.

1. Click on the Windows **Start** button and go to **All Programs > Accessories > Entertainment > Volume Control**.

   The Volume Control window appears.
2. On the **Options** menu, click **Properties**.

   The **Properties** dialog appears.
3. In the A**djust Volume For** section, click **Recording**.
4. Click **OK** to close the **Properties** dialog.

   The Record Mixer appears.

5. Make sure **What You Hear** or **Stereo Mix** (exact name various depending on the sound card manufacturer) is not selected. If this option is enabled, click the **Select** check box below the desired input (normally **Line In** or **Mic**).

This problem can also occur when you are using an analog mixer in your setup. Carefully follow all of your signal paths to ensure that your sound cards audio output is not being looped back into itself.

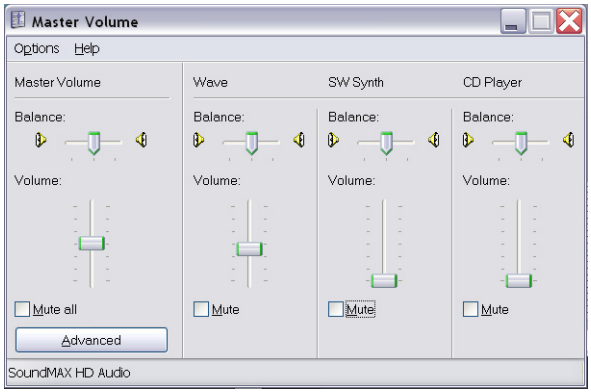
You should also consider the possibility of your microphone picking up the signal from your speakers or headphones.

Only a flat line/silence is recorded

In Windows XP, click the **Start** button and go to **Programs > Accessories > Entertainment > Volume Control** to open the Windows Mixer.

The Windows Mixer controls the volume levels of your sound card inputs and can also mute any input or output device.

The Windows Mixer looks like this:



When you open the Windows Mixer it may be labeled **Play Control** or **Recording Control**. We want to see the recording controls.

To view the recording controls in Windows XP:

1. On the **Options** menu, click **Properties**.

   The **Properties** dialog appears.

2. In the A**djust Volume For** section, click **Recording**.
3. In the **Show the Following Volume Controls** section, click **Line-in** and **Microphone**.
4. Click **OK** to close the **Properties** dialog.

   The recording controls appear in the Windows Mixer.

5. Click the **Select** check box under the input you wish to use (normally **Line In** or **Mic**).

To view the recording controls in Windows Vista:

1. Go to the Windows **Start** Menu and type the word SOUND in the **Start Search** box.

2. The search results appear.
3. Click **Sound** to open the Windows Sound Control Panel.
4. Click the **Recording** tab.

   All available input devices are listed along with a meter for each device.
5. Play your instrument or speak into the microphone.

   Meter activity is visible on one of the input devices.
6. Right-click the input device that has meter activity and select **Set As Default** from the popup menu.

Tutorial 4 – Playing and recording software instruments

Software instruments, which are also referred to as *soft synths*, are a major part of computer music. Our goal in this tutorial is to add a software instrument to a project. We'll explore a few different ways they can be used with SONAR and look at some options to really make the most of them.

A brief history

Note: *Feel free to skip to the next section if you want to start using synths right away.*

For our purposes, a synth has two basic functions:

- Receive a digital message
- Make a sound based on the information contained in that message

In the early 1980's, all of the major manufacturers of keyboards and drum machines got together to decide on a way for their products to work well with each other. Since they all operated under some version of the two functions listed above, it was a simple goal.

They needed to standardize what messages were used to represent particular expressions. For example: if it was a drum machine, everyone would need to use the C note for the bass drum, the D note for the snare drum and so on. That way, messages sent from one drum machine can be fed to another made by a different company. It will play the same beat, but using the drum sounds from the different module.

The standard they established is known as MIDI (usually pronounced [mid-ee]). As soon as computers entered the scene, it was clear that there could (and should) be a way to connect a synth and send MIDI messages to it from a software sequencer. That's how Cakewalk was born. Our first application was a DOS program that would allow a user to edit the MIDI data in detail, and play it out to a connected synth. You could also record the events from a performance into the computer.

Things have evolved a lot since then. As computers have grown more powerful, the capabilities of Cakewalk software have expanded. Computers are now so fast that software companies are able to make synths and drum machines that are completely software-based. They are essentially the guts of a keyboard in a computer program.

See:

Adding an instrument track to your project

Recording MIDI

Adding an instrument track to your project

Adding instrument tracks to your project is easy and something you'll find yourself doing often, so let's explore some of the basics. For this exercise, we'll start with a blank project:

1. On the **File** menu, click **New**.
2. Select the **Blank (no tracks or buses)** template and click **OK**.

   A new project opens.
3. Click **Insert >Soft-Synths**.

   A menu lists all available software synths that are installed on your computer.
4. Click **DropZone.**

   The **Insert Soft Synth Options** dialog appears.
5. Select the following options:
   - **Simple Instrument Track**
   - **Synth Property Page**
   - **Recall Assignable Controls**
   - **Ask This Every Time**

   A new track is inserted in your project. This track is a combination of the two types of tracks you have learned about in the previous tutorials. It holds MIDI data and accepts a MIDI input, but it outputs the sound of the synth, like an audio track would. The DropZone window may also open. If not, you can open it manually by double-clicking on the track icon.

Note: *You can always launch a given software instrument's window by double-clicking its track icon.*

Let's take a quick look at DropZone.

One of the first things you'll typically need to do is choose a sound. In DropZone and most other Cakewalk synths, a sound preset is referred to as a *program*.

1. In DropZone's Program window, click **Empty Program**.

   The Program Browser appears.

> **Note:** *It may take a minute the first time the Program Browser opens. This is because DropZone is building a list of all available sounds. Once the list has been built, the Program Browser will open faster the next time.*

2. Select a program by double-clicking its name. For this tutorial we'll use **Acid Quinda** from the **Basses** section.

   DropZone loads the program and displays the program name.

3. Click the keyboard image to hear what the program sounds like.

> **Note:** *Each soft synth uses a different method of choosing and auditioning sounds. This is often outlined in the synth's documentation. You can press the F1 key to open the online help for a synth.*

Now that we have inserted an instrument and selected one of its sounds we can make use of these sounds in our project. This is where you can get creative. You have the option of recording a performance that you play on a MIDI keyboard (also referred to as a controller) or manually entering notes and events to play out to the software synth. We'll explore each method in the following sections.

See:

Recording MIDI

Recording MIDI

First, we'll try recording. This only works if you have a MIDI controller. If you do not have a MIDI controller, skip ahead to the next section of this tutorial.

For recording, you don't need the DropZone window open. You can close an instrument by clicking in the upper right corner. This doesn't cause the synth to stop functioning—it will continue to work in the background.

Note: *If you need to see the DropZone window again, just double-click the track icon.*

In the Track view, we can assign the input port. If you only have one MIDI keyboard this should be set up already. Try playing some notes to see if it works. If not, go to **Options > MIDI Devices** and make sure your keyboard is enabled in the **Input Port** list.

The next step is arming the track for recording. Click the track's **Record Enable** button . This enables recording on the track.

Now, click the **Record** button in the **Transport** toolbar. The Now Time cursor starts to roll. Play some notes and click the **Stop** button when you're done.

You have just recorded your first MIDI performance through a software instrument. Press the **Play** button to hear it play back.

See:

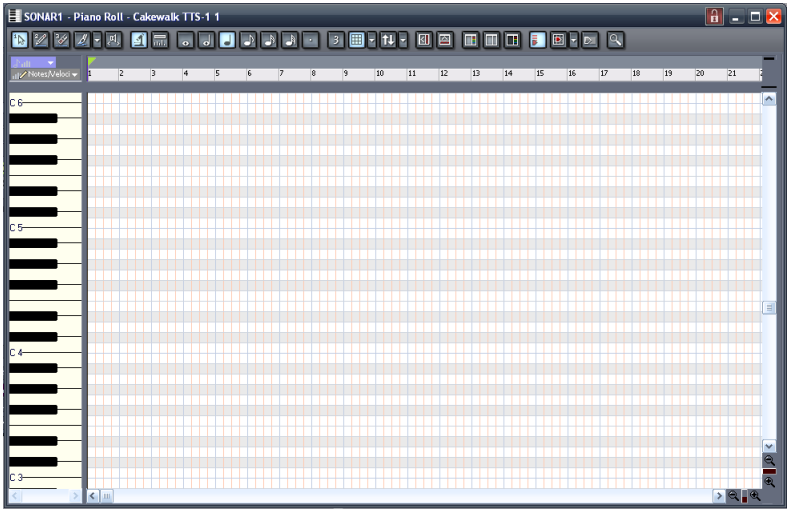
Adding an instrument track to your project

Manually entering MIDI notes

Manually entering MIDI notes

Using this method, you can manually draw notes on a grid called the Piano Roll View (often referred to as the *PRV*). This is the preferred method if you're not much of a keyboard player or don't have access to a MIDI controller. It allows you to edit every detail of a performance.

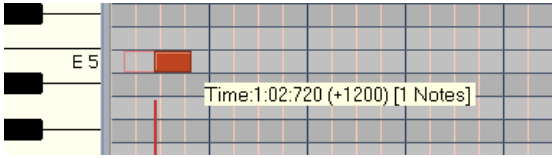
To get to the PRV, you first need to select the track you would like to see in it. Simply click the track icon once so that it changes color. Next, go to **Views > Piano Roll** to open the PRV.



The ruler at the top of this view represents musical measures and beats. The keyboard image on the left represents what notes are being played.

Click on the Draw tool . You can also enable this tool by pressing the D key on your computer keyboard. The Draw tool allows you to click on the grid to create a note.

To create a note, click on the grid at measure 1.

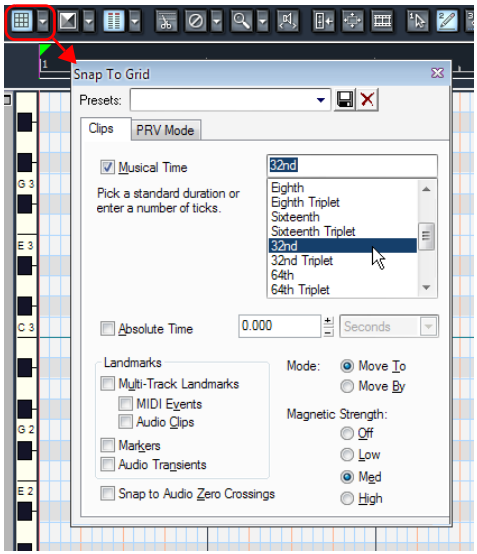


If you click on various sections of a note, the Draw tool performs a different function:

- **Left edge.** Adjusts the start time.
- **Right edge**. Adjusts the end time or the duration.
- **Top**. Adjusts the velocity of the note, which indicates how hard the note is played.
- **Bottom**. Allows you to move the note to another location on the PRV grid.

Try to create a melody using this technique. You might find that you can only create 16th notes or longer. If you want 32nd notes or triplets, click the **Snap To Grid** options button .

This will open the **Snap To Grid** dialog box where you can set the resolution to 32nd notes.



Click **OK**. You can now draw notes at shorter distances from each other.

What if I already have a project that contains MIDI tracks?

If you already have a MIDI track that you would like to play through a software instrument, the steps are a bit different.

Let's start by opening a sample project.

1. On the **File** menu, click **Open**.
2. Naviagate to `My Documents/Cakewalk/SONAR/Sample Content/Tutorials`.
3. Click on the file named `Latin.cwp` and click **OK**.

If you press **Play**, you are not likely to hear anything. That's because this project does not contain a software synth for the MIDI tracks to play through. Since there are 11 tracks in this project, it would be best to use one synth track and route them all to the same instrument. Some instruments, such as the Cakewalk TTS-1 can output more than one type of sound. These instruments are known as *multi-timbral* synths. They know what notes are played through each sound based on the MIDI channel they are sent over. If you examine the **Track Properties** dialog of each track in this project, you'll notice that each one is set to its own channel. No two tracks share the same channel.

Let's insert the Cakewalk TTS-1:

1. Go to **Insert > Soft Synths > Cakewalk TTS-1**.

   The **Insert Synth Options** dialog appears.
2. In the **Create These Tracks** area, click **First Synth Audio Output**.
3. In the **Open These Windows** area, click **Synth Property Page**.

Note: *If you would like a detailed explanation of each option, click **Help**.*

4. Click **OK**.

   A new synth track is inserted in your project.

On some computers, the tracks may play back through the TTS-1 at this point. However, on computers that have hardware MIDI outputs available, you may need to specify the TTS-1 as each track's output. Here's a fast way to do that:

1. Hold down the CTRL key and click each track to select them.

   The tracks are highlighted to indicate they are selected.

2. Go to **Tracks > Property > Output**.

   The **Track Outputs** dialog appears.

3. In the **MIDI Outputs** list, select **Cakewalk TTS-1**.

Press **Play** to play back the project. If you'd like to add your own track to play through the TTS-1, you can click on the **New Track** button again. This time select **MIDI Track**. On your new MIDI track, set the output to TTS-1. Remember, it needs to be on its own discreet MIDI channel. In this project, MIDI channels 1-11 are already used, so let's assign this track to channel 12. You can also select the sound via the track's Patch control. Then use one of the methods described above to create MIDI data. You can also add MIDI data to your new track from the Media Browser. See Tutorial 2 for details about the Media Browser. Another option is using the Staff view as an alternative to the Piano Roll view. That will be covered in the next tutorial: Tutorial 5 - Working with music notation.

Tutorial 5 – Working with music notation

A great way to compose in SONAR is by using the Staff view. The Staff pane displays MIDI note events as musical notation. For some musicians, this may be the most familiar and comfortable view in which to work. The Staff pane provides many features that make it easy for you to compose, edit, and print music. You can add notes to your composition with simple point-and-click techniques.

This tutorial will introduce you to the tools and features that SONAR provides for working with notation.

Let's start by opening the Staff view in a new project:

1. On the **File** menu, click **New**.

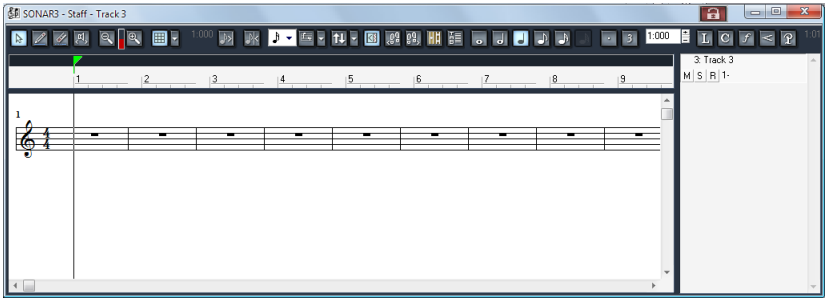
   The **New Project File** dialog appears.

2. Select the **Normal** template, specify a project name and save location, then click **OK**.

   SONAR loads the new project, which contains two audio tracks and two MIDI tracks.

3. Click on track 3 labeled "MIDI 1".
4. On the **Views** menu, click **Staff**.

   The Staff view opens.



Next we need to configure the Staff View tools for the purpose of this tutorial:

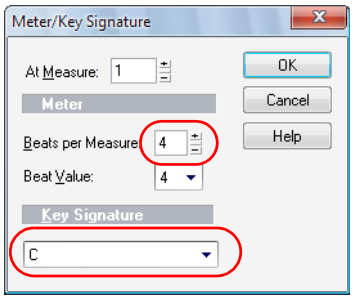
1. Change the **Display Resolution** to the smallest note value.
2. Disable **Fill Durations** and **Trim Durations**.
3. Select the Draw tool.

For this tutorial we will also change the time signature to ¾, the key to G and the staff layout to display a treble and bass clef.

1. On the **Insert** menu, click **Meter/Key Change**.

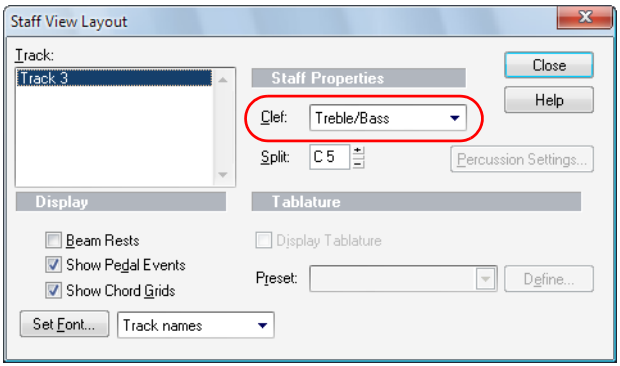
   The **Meter/Key Signature** dialog appears.

2. Change **Beats per Measure** to **3** and **Key Signature** to **1 Sharp (G)**, then click **OK** to close the **Meter/Key Signature** dialog.



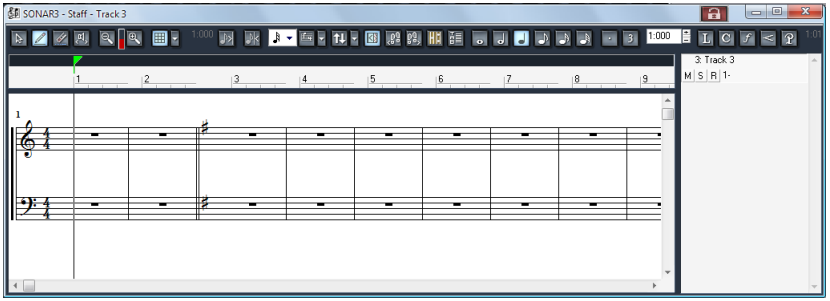
3. In the Staff view, click the **Layout** button .

   The **Staff View Layout** dialog appears.



4. In the **Clef** list, select **Treble/Bass**, then click **OK** to close the **Staff View Layout** dialog.

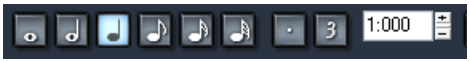
The Staff View now looks like this:



Now that you know how to set up the Staff View, it's time to play! You can either record a MIDI track in this project or manually add notes. The rest of this tutorial will provide you with a basic overview of the notation tools. For more in depth information about all the features and functionality of the Staff View, including using the Fretboard and the Lyrics View, see Notation and Lyrics.

Selecting the note value

Simply select any of the note value buttons found in the center of the Staff view. You can also create a dotted note or triplet by clicking the appropriate buttons found just to the right.



Adding a note

To add a note:

1. Click the Draw tool .
2. Click at the point where you want to add a note.

   A note event is inserted.

Selecting notes

To select notes:

1. Click the Select tool .
2. Do *one* of the following:
   - To select a single note, click the note head.
   - To select multiple adjacent notes, click outside the first note you want to select and drag the mouse to draw a rectangle around the desired notes.
   - To select discontiguous notes, hold down the CTRL key and click the desired notes.

Moving Notes - Change timing or pitch

To move notes:

1. Click the Select tool .
2. Select the note or notes that you want to move.
3. Click on any selected note and drag the mouse left or right to change timing or up and down to change pitch.

Copying notes

To copy notes:

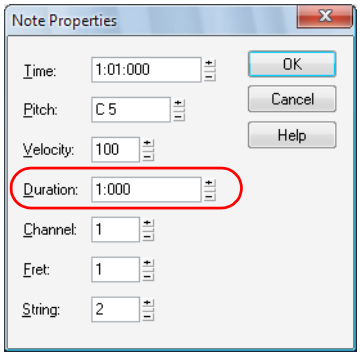
1. Press and hold the CTRL key down while you click the desired note(s).
2. While still holding the CTRL key and the left mouse button, drag the note(s) to the desired location, then release the mouse button.

   The note(s) is copied.

Changing the duration of a note

You can change the duration of a note while using either the Draw tool or the Select tool .

1. Right click the note head to open the **Note Properties** dialog.
2. In the **Duration** field, enter in the number of ticks you want for the note, then click **OK** to close the **Note Properties** dialog.



The following table shows the relationship between note durations and ticks (with the default timebase of 960 ticks per quarter note).

Note	Duration in ticks
Whole	4:000
Half	2:000

Note	Duration in ticks
Quarter	1:000
Eighth	480
Sixteenth	240
Thirty-second	120

Deleting a note

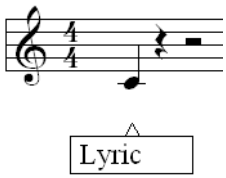
Select the Erase tool and click the note you want to delete.

Adding lyrics

To add a lyric event below a note:

1. Click the Draw tool.
2. Enable the Lyric button.
3. Position the pointer just below the note and click.

   A box appears where lyrics can be typed.



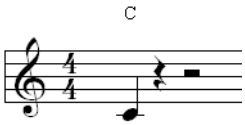
4. Press the space bar to quickly jump to the next note.

Adding chord symbols

To add a chord symbol above a note:

1. Click the Draw tool.
2. Enable the Chord button.
3. Position the pointer above the note you want to add the chord to and click.

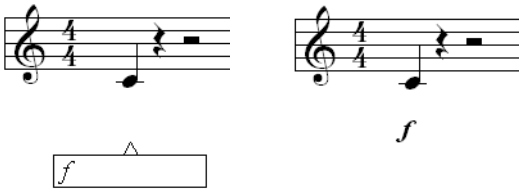
   A chord symbol is added above the note.



4. To change the chord properties or show a guitar chord grid, right-click the chord name.
   The **Chord Properties** dialog appears.

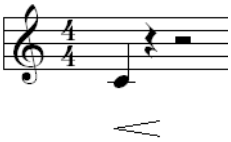
Adding expressions

1. Click the Draw tool .
2. Enable the Expression button .
3. Position the pointer just below a note and click.
   A box appears where expressions can be entered.



Adding a crescendo or decrescendo/diminuendo

1. Click the Draw tool .
2. Enable the Hairpin button .
3. Position the pointer just below a note and click.
   A hairpin event (crescendo or decrescendo) is inserted.



4. To change the hairpin type and duration, right-click the hairpin event.

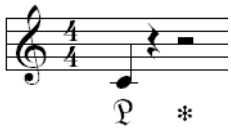
The **Hairpin Properties** dialog appears.

Note: *Hairpin events are ornamental only and do not affect playback.*

Adding pedal marks (sustain)

1. Click the Draw tool .
2. Enablen the Pedal button .
3. Position the pointer below the staff and click.

   Pedal down and Pedal up marks are inserted.



4. Click and drag to move the marks to a new time if needed.

See:

Printing your notation

Printing your notation

Once you are finished entering and editing notes you can print out the score or individual parts.

1. Select the MIDI track or tracks you want to print the notation for.
2. On the **Views** menu, click **Staff**.

   The Staff view opens.
3. On the **File** menu, click **Print Preview**.

   The Print Preview window opens, allowing you to see how the printed score will look.
4. To change the rastral size of the score, click **Configure**.

   The **Staff View Print Configure** dialog appears. For more information about the different rastral sizes, see Printing.

5. To print the score, click **Print**.

Tip: *To change the title, composer and copyright information, select **File > Info** to open the File Info window.*

See:

Notation and Lyrics

Tutorial 6 – Editing your music

While working on your music, you are likely to find that editing is a major part of the song creation process. Before people started making music on computers, all of the editing was done by cutting tape with a razor blade and piecing it together. You can imagine how difficult it could become. In SONAR, you can actually select a part of your music with the mouse and delete/copy/paste/move it all very easily. This Tutorial will introduce SONAR's tools for making some common edits and offer a few tips to make it faster and more fun.

See:

Selection

Moving clips

Splitting Clips

Cropping Clips

Undo and Redo

Selection

One of the most important things to understand in order to edit your music successfully is *selection*. Once you become familiar with selecting, the rest is easy. You typically need to have the appropriate parts selected in order to make edits on them.

There are two aspects of selection:

- Time Range
- Tracks

Let's say you'd like to delete the second measure of a certain track. The time range specifies that the edit will need to occur between measures 2 and 3. The track selection specifies what track's clips will be deleted, while leaving its surrounding tracks unchanged.

Let's explore some different ways to do this in a sample project. All of the tools described are available in the **Track View** toolbar, which is located directly above the tracks in the Track View. For a complete description of all of the tools in the **Track view** toolbar, see “Track View Toolbar” on page 1439.

Note: *If you would like to try both of the following methods, select **Edit > Undo** after completeting the first method. Doing so will revert the project to its previous state.*

Method 1:

1. Select the track that you want to delete measure two from.

Tip: *Click in the Tracks pane on the left, not the Clips pane on the right.*

2. Drag in the time ruler from measure 2 through measure 3.

   The selected time range is highlighted.

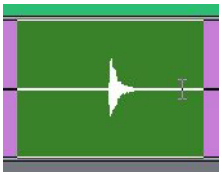
3. Press DELETE or select **Edit > Delete**.

   Measure two is deleted from the selected track.

Method 2:

1. Select the Free Edit tool .
2. Click in the center of the clip and drag to select the section you want to delete.

   The selected section is highlighted.



3. Press DELETE or select **Edit > Delete**.

You might have noticed that you're only able to select full measures. What if you need to edit a smaller amount of time? You'll need to turn off Snap To Grid. To do so, click the **Snap to Grid** button .

With this button disabled, you will be able to make finer selections. You can also choose different Snap To Grid options. Press SHIFT+N to open the Snap To Grid window and try different options. For information about each option, click **Help**.

See:

Moving clips

Splitting Clips

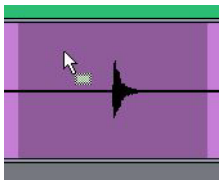
Cropping Clips

Undo and Redo

Moving clips

From time to time, you may need to move clips around. If you understand selection, you're half way there already.

1. Select the section you want to move.
2. With the Free Edit tool, click the top or bottom of the selection and drag the clip to the desired location.



The **Drag and Drop Options** dialog appears, which lets you specify what to do with any existing data in the target location. You can either replace the existing data or blend the old and new data.

See:

Selection

Splitting Clips

Cropping Clips

Undo and Redo

Splitting Clips

In some cases, you might want to split a clip. As described later in this tutorial, it can be beneficial to have clip borders at different points on a track. You can split a clip with the Split tool .

To split a clip, do one of the following:

- To split a clip in two, click the desired position on the clip.
- To split a clip at two separate points, click the first split position and drag to the second split position.

Note: *The Split tool obeys the Snap to Grid settings. If a split does not occur exactly where you click, disable Snap to Grid and try again.*

Tip: *You can also use the Free Edit tool to click the desired position on the clip, then press the S key to split.*

See:

Selection

Moving clips

Cropping Clips

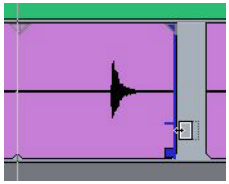
Undo and Redo

Cropping Clips

You can crop a clip by using a gesture called slip editing. Slip editing lets you “roll out” the beginning or the end of a clip to different places without changing the position of the music. Imagine that the clips are “windows” that allow you to see and hear pieces of audio or MIDI. You can change the size of that window so that less of the data is visible. If it's not visible, it won't be heard during playback. The data still exists, so you can enlarge the “window” by slip editing the clip. The visible data will then be audible.

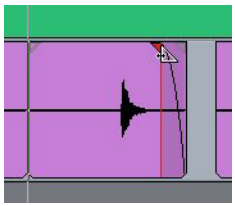
Click the Select tool to enable slip editing.

Now, if you point to the left or right clip edge, the cursor changes and you can drag the clip edge to a new location.

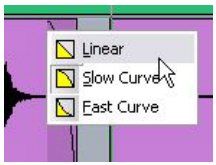


Fading Clips

You can also fade individual clips by using the Select tool. Drag the upper left corner of a clip to create a fade-in. Drag the upper right corner of a clip to create a fade-out.



To change the fade characteristics, right-click an existing fade and select the desired fade type from the popup menu.



See:

Selection

Moving clips

Splitting Clips

Undo and Redo

Undo and Redo

While editing a project, you might make mistakes or experiment with an idea that doesn't produce the desired results. SONAR has unlimited Undo for such occasions. You can undo one step at a time by selecting **Edit > Undo** or by pressing CTRL+Z. You can also look at your edit history and select a time to go back to. To do so, go to **Edit > History**, choose the edit you'd like to return to and click **OK**.

Note: *When you close a project, the undo history is erased.*

If you change your mind and want to revert to the previous undo state, select **Edit > Redo** or press CTRL+SHIFT+Z.

This tutorial has shown you how to use different tools to shape your recordings into well-organized and great sounding projects. The next step is mixing, which is covered in Tutorial 7 – Mixing and adding effects.

Tutorial 7 – Mixing and adding effects

Mixing is an important part of recording that can really help the music you create in SONAR sound its best. Mixing involves placing different instruments and sounds in layers of the frequency spectrum, adjusting levels so that tracks blend nicely, spreading them across the stereo field and adding effects where appropriate.

There are many important decisions to make when mixing; things that are sometimes not considered while writing a song. The choices you make can have a major effect on how pleasurable the listening experience is for your audience.

In this tutorial, we'll discuss some general guidelines. But, it's important to remember that there are no rules. This is another artistic stage of song creation.

We'll start by opening the **MixingTutorial** project:

1. Go to **File > Open** and select the file named `MixingTutorial.cwp`.

Note: *Tutorial files are located in the* `My Documents/Cakewalk/SONAR/Sample Content/Tutorials` *folder. You can jump to this folder by selecting* ***Template Files*** *from the* ***Go to folder*** *drop-down list in the* ***Open*** *dialog.*

2. Go to **File > Save As** and save it under a new name. This way, you can save your work without overwriting the original, in case you'd like to start over.

In the same folder is a file named `MixingTutorial-Complete.cwp`, which is a copy of the same project, but after the tutorial has been completed. You can use this project as a reference to which you can compare settings and levels.

See:

Volume and pan

Adding effects (FX)

Using Automation

Volume and pan

Adjusting volume and pan is always a good place to start when mixing. One of the biggest benefits of SONAR's Console view is that you can easily see the volume and pan controls for many tracks simultaneously, in addition to large meters. Some people also enjoy working in the Console view because it doesn't offer a graphical representation of what the music “looks like”. Since the final outcome will be an audio file, the listener will not be distracted by the visual cues that are shown in the project's Track view. You may find that you are better able to focus on the actual sound when not seeing the clips.

To open the Console view

- Do *one* of the following:
  - Click the **Console view** button in the **Views** toolbar.
  - Click **Views > Console**.
  - Press ALT+3.

Here, we'll be shaping the song's foundation. If you listen to the project as it is, you'll probably notice that it sounds pretty “muddy” and bland. This usually happens because all of the instruments are fighting each other for space in the frequency spectrum and stereo field. They're all trying to be heard at the same level in the same location.

Normally, when recording a track, it is common to try to get a relatively loud signal. This is done to achieve the best signal-to-noise ratio and knowing that you will eventually adjust levels during the mixing stage.

Some people like to begin this process by turning down every track and then gradually turning up one track at a time, starting with the rhythm section. Begin by increasing the volume of the bass drum to the desired level. Continue with the snare, the rest of the drums and finally the bass guitar--moving on in order of importance. If there is a lead vocal in the song, that would come last, so that it sits on top of the instrumental foundation you've established.

Other people approach mixing the opposite way, turning things down a bit one at a time. If one method doesn't seem more appealing than the other, try both to see which one is more comfortable for you.

Important: *Pay close attention to the main meter while mixing. You never want the main meter to reach the very top, which will result in undesirable audible noise. This is called clipping.*

Note: *You can find the Mains meters on the far right side in the Console view. If you don’t see the Mains meters it, click the* ***Mains*** *button* MAINS.

The next thing we'll try is panning. As with mixing in general, there are no rules when it comes to panning. Be creative, trying different ideas to see how they sound. One important thing to consider is

that when you pan two tracks that share the same frequency range away from each other they will become clearer. This especially applies to instruments that have been double-tracked. Try it with the two tracks labeled **Cymbals Left** and **Cymbals Right**. Notice how you can hear more definition and detail in the two tracks as you pan them away from each other. When panning double-tracked instruments, try to avoid panning them all the way to the left or right. Doing so may cause the tracks to sound too “separated”, which can take away from the fullness of the sound.

See:

Adding effects (FX)

Using Automation

Adding effects (FX)

At this point, you should have a basic mix. Everything is generally where you want it to be and it's time to use some audio effects to tweak it all to perfection. Effects placed directly on an audio track are called *inserts*.

Choose an audio track you would like to start with:

1. In the Console view, locate the FX bin for the track you’d like to work with. If you don’t see the FX bin, click the **FX** button FX to ensure FX bins are not hidden.

2. Right-click the FX bin to open the pop-up menu.
3. Point to **Audio FX**,then point to **Sonitus:fx** and choose any one of the available effects.

   The selected effect is inserted into the track’s FX bin.
4. Experiment with the controls on the plug-in while the music is playing back. You will hear noticeable changes to the sound.
5. Right-click on the effect and choose **Delete** to remove the effect.

Each of the effect plug-ins listed is designed to change the sound in some specific way. Here's a quick list of some of the included plug-ins and what they're typically used for:

Compressor/Gate. This plug-in affects the loudness of the sound. It can limit how loud a sound can get. It can also limit how soft a sound can get before it's completely turned off.

EQ. EQ can accentuate or turn down a certain frequency range in a sound. For example, if you have an unwanted high-pitched buzz on one of your tracks, an EQ may be able to turn that high frequency down without affecting the sound of the instrument.

Reverb. Reverb creates an artificial space. It produces echoes that are similar to the natural echoes that happen when a sound bounces off the walls in a room.

Delay. Delay plug-ins have the ability to create an echo. However, it's typically more distinct than that of a reverb. It makes a sound repeat, often in a rhythmic, musical manner.

These are the effects we'll be focusing on in this tutorial. However, other effects are available and you should experiment with each one to discover how they can be used in your mixes. To get online Help for a particular plug-in, simply click one of its controls and press the F1 key on your computer keyboard.

Compression and EQ

While adjusting track levels in a song, you might notice that some tracks are too dynamic. Sometimes they're too loud, other times too soft. In most modern music, the important elements in a mix are focused in a specific volume range. This is done with a *compressor*.

The purpose of a compressor is to limit the dynamic range of music or sound. Compression will make the loud parts of the signal quieter, resulting in a more or less even level. That even level can then be increased to fit more specifically in the mix.

Many compressors have an option to allow that loud peak to remain untouched for a certain time, which can add some “punch”.

Let's try it on the bass drum:

1. Add the Compressor plug-in to the track labeled **Kick**.
2. Adjust the Threshold. The threshold value represents the dB level at which compression starts to take place.
3. Adjust Attack. The attack value represents the time the compressor takes to respond to an increase in the input audio's level once the threshold level has been reached.
4. Adjust the Level to the desired output volume.

This approach can be applied to any track you like. It's especially useful when trying to get vocals to stand out in a mix.

Now, we can apply some EQ. One of the primary uses for EQ is to prevent different instruments from stepping on each other in the frequency spectrum. One instrument might be intended for a certain frequency range, but extends into another instrument's frequency range. If you turn down the overlapping frequency range for one of the instruments, it will allow the other instrument to stand out better in the mix.

Let's give it a try:

1. Solo the tracks named **Tension Climbing** and **Chirppy Synth**.
2. Add the Sonitus:fx Equalizer plug-in to the **Tension Climbing** track.

The Sonitus:fx Equalizer interface appears.

3. Grab one of the numbered nodes and drag it around. Boost the selected band until you find the frequency range that interferes with **Chirppy Synth**. When you find it, turn down the selected band by dragging the node downward.

Tip: *Try to cut the band around 1kHz.*

Experiment with the other controls on the EQ to get the best possible results. As with the compressor plug-in, this approach can be applied to any track you like.

Reverb and Delay

Next, we'll add some space to the song. This is done by using time-based effects.

The first thing we'll do is add a delay effect. A delay effect can really enhance an instrument. In our tutorial project, we will add the Delay effect to the track name **Chirppy Synth**, which sounds very dry and lifeless. Applying a delay might give it more depth.

1. Add the Delay plug-in to **Chirppy Synth**.
2. Configure the controls as follows:
   - Tempo Sync = Host
   - Factor = 1/2 (set for both Left & Right channels)

This is a good starting point. Sometimes the best way to familiarize yourself with a new effect plug-in is to dig in and start tweaking.

Next, we'll apply some reverb to the project. Think of a reverb effect as an artificial room. We could add a separate reverb to each track, but when multiple reverbs are running at the same time it can sound “cloudy”. This might be because our ears are used to hearing sounds bounce of walls naturally. A reverb on each track would sound like you have one instrument in one room, another instrument in another room, and so on.

Instead, we will add a single reverb effect to a bus, then send each track to that bus, at varying levels. This is where SONAR's advanced mixing environment offers a lot of flexibility. We will add a control to each track, which adjusts how loud a copy of the track's sound is sent to the bus. This will sound more natural since it's similar to the behavior of an actual acoustic space. All of the different sounds can interact with each other in the “virtual room” we're creating with the reverb.

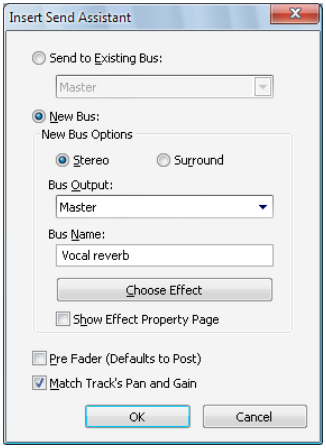
Follow these steps to create your reverb send from the Console View:

1. We want to add this send to all tracks, so go to **Edit > Select > All** to select all tracks.
2. Right-click on one of your tracks in the Sends section of the strip and choose **Insert Send Assistant.** If you don’t see this section in your Console View click the **SEND** button to ensure it is not hidden.

   The Insert Send Assistant appears.
3. Configure the Send Assistant as follows:
   - Click **New Bus**. This will create a new reverb bus instead of routing the tracks to an existing

bus.

- Select **Stereo**
- In the **Name** box, type **Reverb**.
- Click **Choose Effect** and select **Audio Effects > Sonitus:fx > Reverb.**
- Make sure **Pre Fader** is not selected.
- Select the **Show Effects Property Page** check box.
- In the **Bus Output** list, select **Master**.

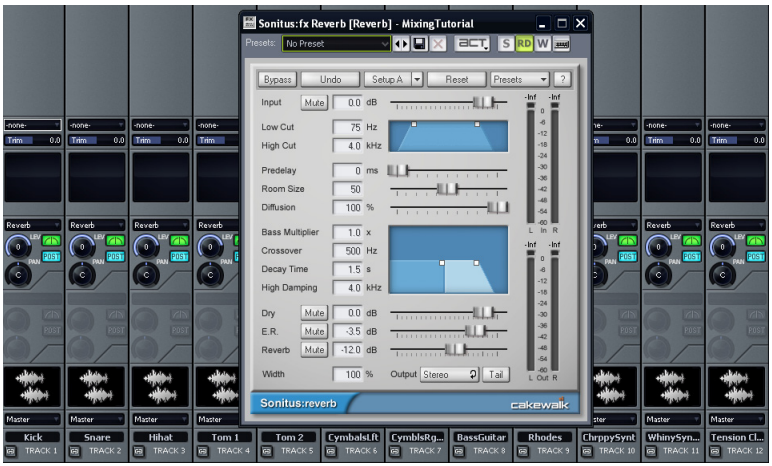


4. Click **OK**.

The Reverb property page appears.

5. Set the **Reverb** control to **0.0 dB** and the **Dry** control to **-Inf.**.

Notice that a send control named Reverb has been added to each track. To enable or disable a send, click the **On/Off** button located on each track's **Send** control.



When a send is enabled, you will hear the reverb effect during playback. To adjust how much reverb is applied to each track, use the send's LEVEL control.

Enable the send control for each track that you want reverb on. You'll probably want at least a little reverb on every track except for the kick drum and the bass guitar.

See:

Volume and pan

Using Automation

Using Automation

Another feature that is important to mixing is *automation*. Automation lets you record changes to almost any parameter in SONAR, including track parameters, effects, synths and buses. SONAR makes this very easy.

1. Click a track's **Write Automation** button W to enable automation recording for that track.

2. Press **Play** ▶ to start playback.

3. During playback, simply make the changes to the parameters in realtime, using either your mouse or a control surface.

4. To disable automation recording, stop playback and click the track's **Write Automation** button W again.

When you play back, the parameters will update automatically.

Automation allows you to make gradual or sudden changes to make your song more dynamic. For example, in the tutorial project, you might find that **Whiney Synth** should become lower in volume at measure 25, when the drums and bass change. Try it:

1. Click the **Write Automation** button W on the **Whiney Synth** track.

2. Click **Play** ▶ or press SPACEBAR to start playback.

3. At measure 25, turn the track volume down to the desired level.

4. At measure 33, turn the track volume back up.

5. Press **Stop** ■ to stop playback.

6. Disable **Write Automation** by clicking the W button again.

7. Press **Play** ▶ and notice how the track volume changes automatically.

Repeat this process with any other automation you feel the project needs.

That concludes this tutorial. But don't stop here. Continue to experiment by adding different effects, adding loops through the Media Browser view, etc.

Be creative and listen closely to the mix details in your favorite songs and albums. It's sure to provide you with inspiration for your own projects. There are also many books available on the topic, as well as thousands of add-on plug-ins that can expand your arsenal of FX. For more information, visit www.cakewalk.com.

FX: www.cakewalk.com/Products/instruments.asp

Books/Videos: www.cakewalk.com/Products/Books/Mixing.asp

Tutorial 8 – Working with video

SONAR allows you to add music and sound to your videos. This tutorial will guide you through the basics of working with video inside SONAR. If you are new to SONAR, it is highly recommended you review Tutorial 1 – Creating, playing, and saving projects before going any further.

See:

Importing video

Working with markers

Exporting your video

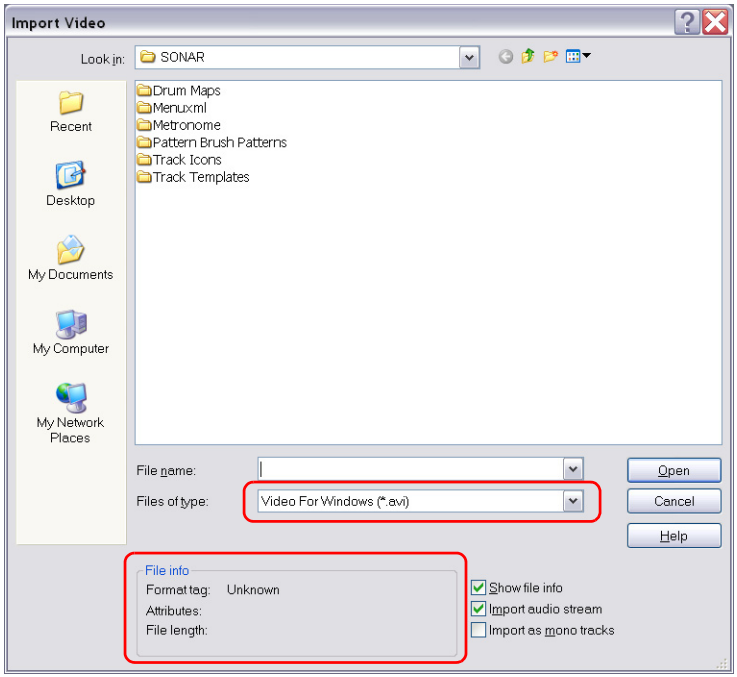
Importing video

Before you can start working with video, you first need to import a video file. Let's try this out with a new project.

1. On the **File** menu, click **New** to open the **New Project File** dialog.
2. Select the **Normal** template, give your project a name and then click **OK**.

   If you are having trouble with this, please refer to Tutorial 1 – Creating, playing, and saving projects.
3. On the **File** menu, point to **Import** and select **Video**.

   The **Import Video** dialog appears.



Let's explore some of the options in the **Import Video** dialog.

The first thing you will notice is that this dialog is very similar to the **Open** dialog that was discussed in Tutorial 1. The **Import Video** dialog functions in very much the same way with the exception of two sections.

First, outlined in the image above is the drop down box **Files of type**. Making a selection here will determine which video formats are displayed in the dialog. SONAR supports the following digital video formats:

- Windows Media (.wmv and .asf)
- Video For Windows (.avi)
- MPEG Video (.mpg)
- QuickTime Video (.mov)

The file we are interested in for this tutorial is a *Windows Media* file, so let's select **Windows Media (*.wmv, *.asf)** in the **Files of type** list.

Next, outlined in the above image you will see the **File info** area on the left and three options on the right. Let's review what each of these options do.

Option	What it does
Show file info	When selected, this tells SONAR to display video information about the selected file in the **File info** area of the dialog.
Import Audio Stream	Select this option if you want to import the video file's embedded audio into a new audio track in SONAR.
Import as mono tracks	Select this option if you want to import the video file's embedded audio data as one or more mono tracks.

Table 16.

For now, let's leave the **Import Audio Stream** and **Show file info** check boxes selected.

Just as you would with the **Open** dialog, navigate to the following location:

`My Documents/Cakewalk/SONAR/Sample Content/Tutorials`

Locate and import the file named `Boarding.wmv`. You can open it by either double-clicking on it or highlighting it and then clicking the **Open** button.

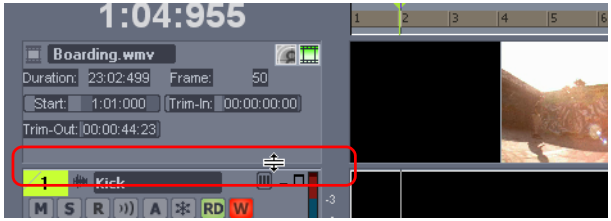
Tip: *You can quickly get to the* `My Documents` *folder by clicking on its button along the left side of the* ***Import Video*** *dialog.*

Notice that SONAR imported any audio that is a part of the video as well. If the video does not have any audio already associated with it, then SONAR will create a silent audio track like in our example.

You should now see the *Boarding* video in the Video view as well as the Video Thumbnail pane in the Track view.

What if I don't see the Video Thumbnail pane or Video view?

To show or hide the Video Thumbnail pane, drag the splitter bar that separates the Video Thumbnail pane from the Clips pane.

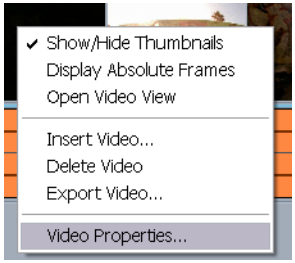


To restore the Video Thumbnail pane, point the mouse pointer over the splitter bar (the mouse pointer will look like), then drag the splitter bar down to restore and resize the Video Thumbnail pane to your liking.

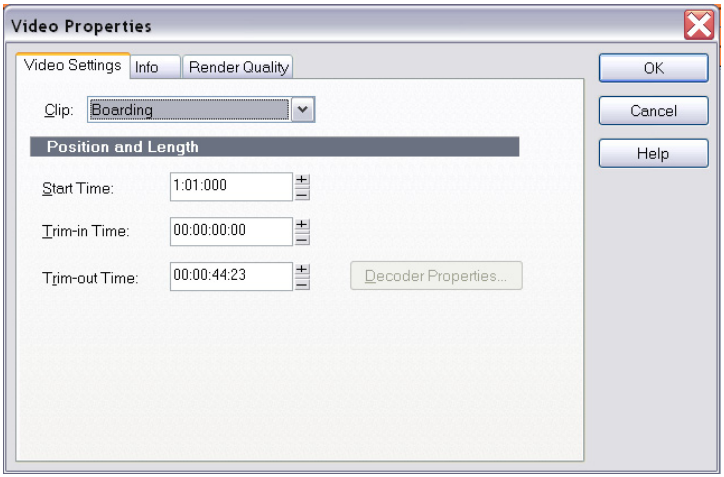
If you closed the Video view, or if it did not open automatically when you imported the video, you can open it by selecting **Views > Video** or pressing ALT+6.

Changing the video properties

SONAR allows you to make some useful changes to a video's settings for film scoring purposes. To access these settings, simply right-click in the Video view and choose **Video Properties** from the popup menu to open the **Video Properties** dialog.



The **Video Properties** dialog has three tabs: the **Video Settings** tab, the **Info** tab and the **Render Quality** tab. For detailed information about all of these options and settings, see Video Properties dialog. For this tutorial, we are only going to look at the tools on the **Video Settings** tab.



There are three options on this tab that are very important to understand and extremely helpful when working with video. Let's take a closer look at them

Option	What it does
Start Time	The time in your SONAR project at which you want the video file to start playing.
Trim-in Time	The time in the video file at which you want video playback to start, this is useful if you don't want to see the opening credits or the first few scenes. This is expressed in SMPTE time code.
Trim-out Time	The time in the video file at which you want video playback to stop, this is also expressed in SMPTE time code.

Table 17.

Let's change the **Start Time** value to measure 2. To do this, enter the number 2 in the **Start Time** box.

Now, click the **RTZ** button in the transport and then click Play. Notice how the video doesn't start playing until measure 2 in your project.

See:

Working with markers

Exporting your video

Working with markers

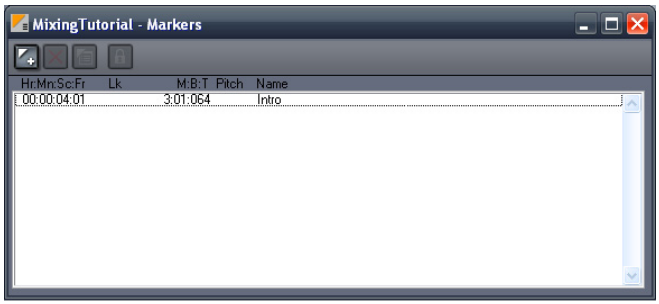
When syncing up audio events to film cues or video, it is common to use markers. Markers are a powerful feature in SONAR that helps to simplify the task of identifying major events in a song or video. They can be used to clarify where a verse or chorus begins in a rock tune or, in the case of film scoring, they can be used to identify hit points (points in the film where you want a musical event to synchronize with a visual event). Before we get started on this next exercise, return to the **Video Properties** dialog and click the **Video Settings** tab. Set **Start Time** to **1:01:000**, **Trim-in Time** to **00:00:00:00** and **Trim-out Time** to **00:00:44:23**.

Let's say we want our music to start at the beginning of the video right when the sun comes out. This occurs about 4 seconds into the movie. Taking a closer look, this happens at 4 seconds and 10 frames into the clip, which, expressed in SMPTE time code, is 00:00:04:10.

There are two ways to add markers in SONAR:

- Place the *Now Time* at the location where you would like a marker, then select **Insert > Marker** or press F11.
- Click the **Add Marker** button in the Markers view.

Let's open the Markers view by selecting **Views > Markers**.



The Markers view is very handy when working with events in a film. The first thing we want to do is add a new marker to the project, indicating the start of the project. To do this, click the **Insert Markers** button to open the **Marker** dialog.

From this dialog you can do a lot of very important things. First let's name this marker by typing **Intro** in the **Name** field.

Next, select the **Lock to SMPTE (Real World) Time** check box. This option is very important when working with video. If a marker is not locked to SMPTE time, its position in relation to events on the video will change with tempo and meter changes in the project.

You might also notice that the **Time** value changes to the SMPTE format after you selected the check box. This determines where the location of the marker will be. We know in the video that the sun comes out at about four seconds and ten frames into the video. Let's set the **Time** value to **00:00:04:10**.

Click **OK** to insert the marker and close the **Marker** dialog. You can place as many markers as you need for a project to sync up all of your events.

The Markers view will now display the marker you just created, with the name **Intro** assigned to it. The Marker view toolbar contains the following commands that apply to selected markers.

Control	Description
	Click the **Delete Marker** button to delete the currently selected marker.
	Click the **Change Marker Properties** button to open the **Marker** dialog for the selected marker. This is useful if you want to change the location of a marker.
	Click the **Lock/Unlock Marker** button to lock or unlock the marker to SMTPE time.

Table 18.

Close the Markers view now and take a look at the time ruler in SONAR, which spans the top of the Clips pane in the Track view. You will notice there is now an orange flag named **Intro** indicating where your new marker is in the project.

See:

Importing video

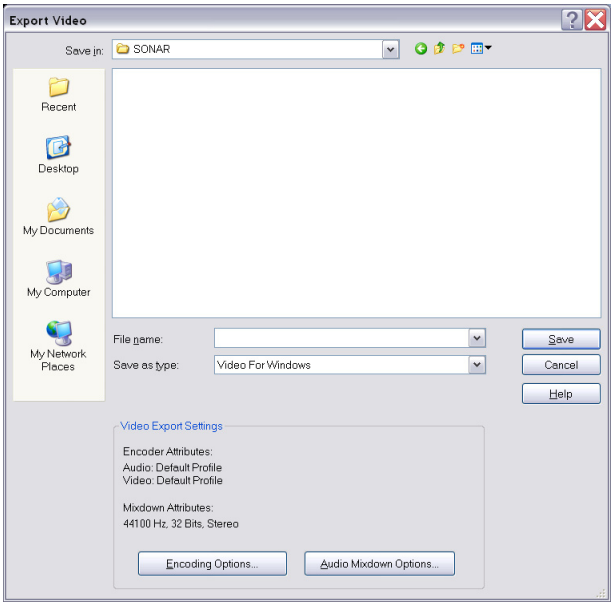
Exporting your video

Exporting your video

Once you have finished with all of your music and have your video synced up as you would like it, you'll want to mix it down to a video file that you can share with the world.

1. Select everything in the project that you want to export. If you want to export the entire project, simply select **Edit > Select > All** or press CTRL+A.
2. On the **File** menu, point to **Export** and click **Video**.

   The **Export Video** dialog opens. You will notice this is very similar to both the **Save As** and **Export Audio** dialogs that were explored in *Tutorial 1* and *Tutorial 9*.



3. Similar to saving project files, you will first want to give your video a name by typing one into the **File name** field.
4. Choose the desired video format by selecting it from the **Save as type** list.

   Clicking the **Encoding Options** button at the bottom will allow you to explore some advanced settings for your video. From this dialog you will be able to change the quality and size of your video. This is particularly important if you plan to upload your video to the web. Some codecs work better than others and are more appropriate for different scenarios. Click the **Help** button in this dialog for more specific details about different formats.

   The **Audio Mixdown Options** button will bring up settings specific to the audio in your project. Click the **Help** button for detailed instructions on how to use these settings.
5. Specify the location you wish to save the file to and click **Save** to export it.

Tutorial 9 – Exporting, CD burning and sharing

Once your SONAR project is complete, you will want to share it with the world or burn a CD. SONAR offers many tools to help you do this. In this tutorial, we are going to explore some of the basics of these tools.

Before we get started, let's open one of the example audio projects included with SONAR. If you have your own project that already contains audio, you can load that instead. However, your screen will look different from the images in this tutorial.

1. On the **File** menu, click **Open**.

   The **Open** dialog appears.

2. In the **Go to Folder** list, select **Template Files** and then open the **Tutorials** folder.
3. Browse to the project named `SONAR_AudioDemo1.cwp` and click **Open** to load the project.

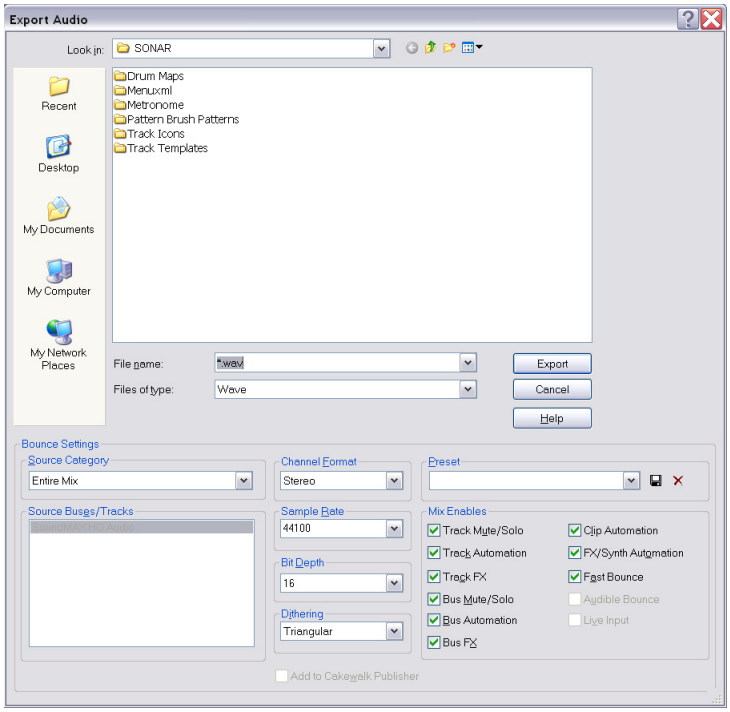
Note: *You may have to rename the file if you saved it with the same name during Tutorial 1.*

Now that you have opened the demo project (or your own audio project) click the **Play** button or press SPACEBAR listen to it. If you do not hear any audio, review the steps in Tutorial 1 to ensure SONAR and your audio device are configured correctly.

Cakewalk Project Files are different from the audio you hear on a CD in that they are often multi-track. In this example, you will notice that there are four audio tracks. In order to burn this mix to a CD or prepare it for distribution, we need to *export* or *mix* it down to a *stereo* track.

First, we need to click **File > Export > Audio**.

This will bring us to the **Export Audio** dialog. This has many useful functions. Let's explore some of them in detail.



You should notice that the top half of this window is very similar to the **Open** and **Save** dialogs that were discussed in *Tutorial 1 – Creating, playing, and saving projects.* This is used to navigate to locations on your computer's hard drive and tell SONAR where you want to store the exported audio.

For this Tutorial, we are only going to explore some of the more common settings. If you would like to read about all of the options and settings click the **Help** button.

Control	Function
Channel Format	Specifies if the audio should be exported as stereo or mono.
Sample Rate	Allows you to set the sample rate of your export. 44100 Hz is used for CD quality audio.
Bit-Depth	Allows you to set the bit-depth of your export. 16-bit is used for CD quality and 24-bit is often used for DVD quality audio.
Add to Cakewalk Publisher	Select this option to send your file to Cakewalk Publisher, which is used to put your music on the Internet.

Table 19.

If you would like to burn an audio CD of your music

1. Click **File > Export > Audio** to open the **Export Audio** dialog.
2. In the **Channel Format** list, select **Stereo**.
3. In the **Sample Rate** list, select **44100**.
4. In the **Bit-Depth** list, select **16**.
5. Enter a name for you mix in the **File name** box.
6. In the **File type** list, select **Wave**.
7. Specify where you want to save the file. Make note of this location, because you will need to use it later.
8. Click **Export**.

   A progress bar appears across the bottom of SONAR's screen while a CD quality audio file is exported. When the progress bar disappears, SONAR has finished exporting your project.

Now we need to burn our mix to a CD. SONAR features a powerful built-in CD burning application that can do this for us. Let's open Audio Creator LE and briefly explore its features and how to use it.

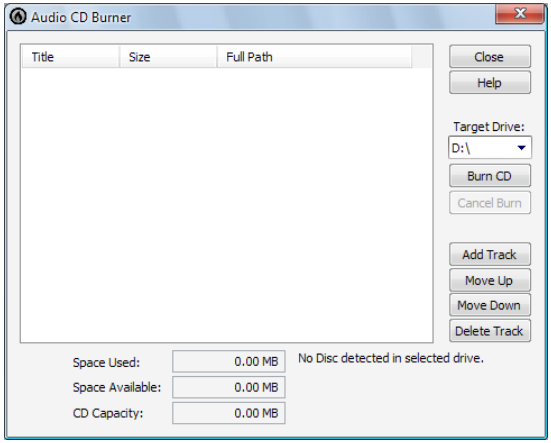
See:

Burning an audio CD

Cakewalk Publisher

Burning an audio CD

Select **Tools > Burn Audio CD** to open the **Audio CD Burner** dialog.



Simply browse to the audio files you wish to burn and click the **Add Track** button. You can also drag audio files into the Burner tracklist.

Note: *Any files that are not in 16 bit, 44.1kHz wav files will automatically be converted to the proper CD format.*

Depending on the type of blank CD you are using, you can fit up to 80 minutes of audio on one CD. Make note of the **Space Available** and **Space Used** fields; these will let you know how many more tracks you can fit on your CD. For the best compatibility with most consumer CD players, you should use a CD-R disc. CD-RW discs, while compatible with some newer CD players, may not play back in all systems.

Once you have finished adding all the songs you would like to burn to a CD, the final step is to burn your disc. To do so, do the following:

1. Insert the writable CD into the CD-R drive.

   The drive containing the writable CD should automatically be detected. If for some reason it isn't detected, manually select the drive letter of your CD Burner from the **Target Drive** drop down list.

2. Click **Burn CD**.

If you would like to share your music on the internet

Note: *Due to licensing restrictions, your Cakewalk software only includes a 30 day free trial of the MP3 encoder. If your 30 day trial period has expired, a full license can be purchased for unlimited use from the Cakewalk web store.*

1. Click the **Export Audio** button to open the **Export Audio** dialog.
2. In the **Channel Format** list, select **Stereo**.
3. In the **Sample Rate** list, select **44100**.
4. In the **Bit-Depth** list, select **16**.
5. Select the **Add to Cakewalk Publisher** check box.
6. Enter a name for you mix in the **File name** box.
7. In the **File type** list, select **MP3**.
8. Click **Export**.

   The **MP3 Export Options** dialog appears. For detailed information about the different options, click **Help**.
9. For our exercise, accept the default settings by clicking **OK**.

   A progress bar appears across the bottom of SONAR's screen. When the progress bar disappears, SONAR has finished exporting your project.

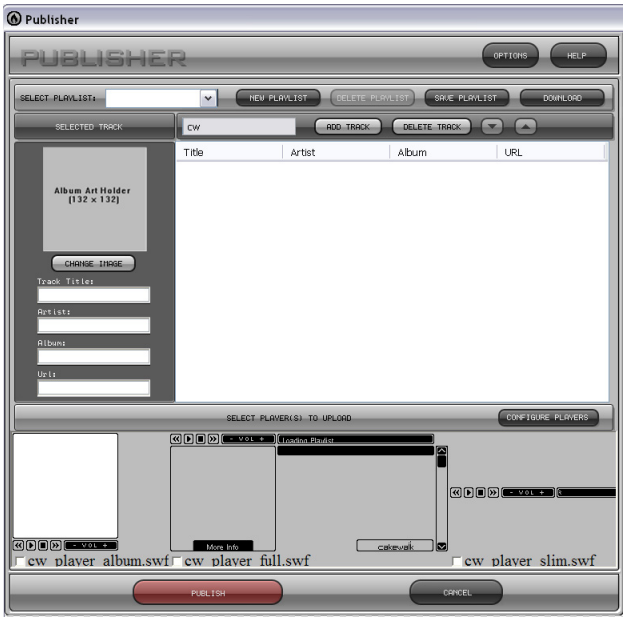
See:

Cakewalk Publisher

Cakewalk Publisher

SONAR includes *Cakewalk Publisher*, which is a powerful tool to share your music, artwork and playlists on the Internet. A detailed description of Publisher is beyond the scope of this tutorial, but let's take a quick look at its basic features and how it integrates with SONAR.

To open Publisher, select **Tools > Publish to Web**.



Notice that your recently exported project is already listed in the **Track** list. This is because you selected the **Add to Cakewalk Publisher** check box in the **Export Audio** dialog.

The following table describes a few of the buttons in the publisher interface. If you would like to explore all of the features in Publisher, click the button labeled **HELP** in the upper right corner of the Publisher window.

Control	Function
CONFIGURE PLAYERS	Used to configure the player and generate the HTML code for pasting into your web site.
CHANGE IMAGE	Lets you associate an image with the selected track. This is useful if you want to include album artwork when you upload your music.
ADD TRACK	Adds new tracks to the current playlist.
DELETE TRACK	Deletes selected tracks from the current playlist.
PUBLISH	Once your player has been configured and your playlist is put together, click **Publish** to upload your files to the Internet.

Table 20.

Controlling Playback

When you play your SONAR project, you have full control over the tempo or speed of playback, which tracks are played, which sound cards or other devices are used to produce the sound, and what the tracks sound like. You can access most of the playback functions from the **Large Transport** toolbar.

SONAR's multi-MIDI enhancements give you the ability to play multiple synths or tracks from a single keyboard or controller, or let multiple performers play the same or different tracks. You have total control over MIDI echo (MIDI echo refers to where MIDI input signals are sent once SONAR receives them).

Note: *SONAR has a button called the **Audio Engine** button in the **Transport** toolbar which you click to stop any feedback you may experience if there is a loop somewhere in your mixer setup. Whenever you play a project, SONAR automatically enables the audio engine, which you can tell by watching the status bar—whenever the audio engine is running, the Audio Running indicator in the status bar lights up.*

See also:

The Now time and how to use it

Using the Large Transport

Controlling playback

Track-by-track playback

Changing track settings

Video playback, import, and export

Locating missing audio

Controlling live MIDI playback—MIDI echo

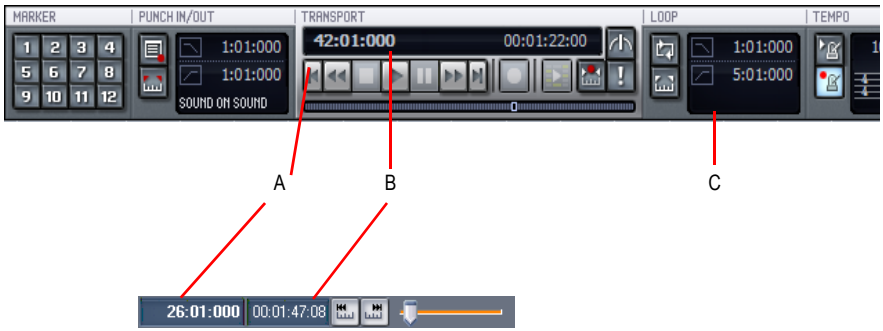
Local control

The Now time and how to use it

Every project has a current time, known as the **Now time**, which keeps track of where you are in a project. The Now time appears as a vertical line in the Track view and is displayed in both the **Large Transport** toolbar and the **Position** toolbar, in two formats.

The measure, beat, and tick number (MBT) identifies the Now time in musical time units. Ticks are subdivisions of quarter notes and indicate the timebase of the project. For more information about the timebase, see “Setting the MIDI timing resolution” on page 241. The other time format is the SMPTE format, expressed in hours, minutes, seconds, and frames.

Figure 17. *The **Large Transport** toolbar*



***A.** The current measure, beat, and tick **B.** The current time in hours, minutes, seconds, and frames **C.** Meter Key Signature display*

Here are some examples of times expressed in measure, beat, and tick (MBT) format:

Time	What it means
1:01:000	First beat of the first measure
9:04:000	Fourth beat of the ninth measure
4:02:060	The 60th tick of the second beat of the fourth measure

Table 21.

The hours-minutes-seconds-frames format is commonly referred to as the SMPTE time. SMPTE is the acronym for the Society of Motion Picture and Television Engineers. In this format, time is measured in hours, minutes, seconds, and frames. It’s not necessary for a project to begin at time zero in this format—any time can be used to represent the start of a project. If you are synchronizing SONAR with an external device whose start time is not 0, you must offset SONAR to match the external device’s start time. For more information, see Synchronizing Your Gear.

Here are some examples of times expressed in this format (assuming that zero is the start time):

Time	What it means
00:00:00:00	The beginning of the project
00:05:10:00	Five minutes and ten seconds from the beginning of the project
01:30:00:00	One hour and thirty minutes into the project
00:00:00:05	Five frames into the project

Table 22.

SONAR provides many ways to set the Now time. Here are just a few:

To change the Now time

- Click the desired time on The Time ruler in the Track view, Piano Roll view, or Staff view
- In the Navigator pane, click anywhere in the view while holding down the CTRL key to change the Now Time to that location
- Click on the Now time in the **Large Transport** toolbar, enter the desired time, and press ENTER
- Choose **Go > Time** or press F5, enter the desired time, and click **OK.**
- Click on an event in the Event List view.

You can also set the Now time by right-clicking in the Clips pane if you enable the **Right Click Sets Now** option in the **Track View Properties** dialog. Right-click a an empty area of the Clips pane, and select **View Options** from the menu that appears to open the **Clip View Properties** dialog.

When entering a time in MBT format, the beat and tick values are optional. You can use a colon, space, decimal point, or vertical bar to separate the parts of the Now time:

You enter	The Now time is set to
2	2:01:000
4 2 0	4:02:000
9	9:01:000
5|1:30	5:01:030

Table 23.

When entering a time in SMPTE format, you can enter a single number (hour), two numbers (hour and minutes), three numbers (hour, minutes, and seconds), or all four numbers.

If you click in The Time ruler while the snap grid is enabled, the Now time will be snapped to the nearest point in the grid. By setting the grid size to a whole note or quarter note, you can easily set the Now time to a measure or beat boundary.

Note: *The Time Ruler only obeys snap when **Musical Time** or **Absolute Time** is selected in the **Snap to Grid** dialog.*

You can also use the buttons and the scroll bar in either the **Transport** toolbar or **Large Transport** toolbar to adjust the time.

When playback or recording is stopped, the Now Time either remains at the point where the project stopped or snaps back to the Now Time Marker. This behavior is controlled in the **General** tab of the **Global Options** dialog. For more information, see The Now time marker.

MIDI note will continue to play If Now Time is moved

Changing the Now time while a MIDI note is sounding will cause SONAR to play the full duration of the note. This behavior was introduced in SONAR 4.0.3, and is necessary as a result of addressing various gapping issues when editing MIDI data during playback.

If you prefer a slight hiccup instead of hearing the full note duration, you can change the default behavior with the **Set Now Time with Full Restart** option in **Options > Global > General**.

Note: *Moving a MIDI note event during playback is affected by this same issue.*

See:

Displaying the Now time in large print

Other ways to set the Now time

The Now time marker

In the Track view, the Now time appears as a black vertical line. When you set the Now time in the Track view a green triangle called the Now time marker appears in the Time Ruler. This marker represents the point at which the Now time will snap back to after you stop playback or recording.

You can drag the Now Time marker during playback. When the mouse button is released, the transport immediately jumps to the new location.

Note: *You can only drag the Now Time marker during playback, not while recording.*

You can change the Now time marker behavior so that the marker moves to the current Now time when playback or recording is stopped (use the **Options > Global** command; on the **General** tab uncheck **On Stop, Rewind to Now Marker**).

To change the Now time marker behavior

1. Select **Options > Global** from the SONAR menu.

   The **Global Options** dialog appears.

2. Click the **General** tab.
3. Uncheck the **On Stop, Rewind to Now Marker** option to have the Now time marker move to follow the current Now time when you stop playback.

   Or

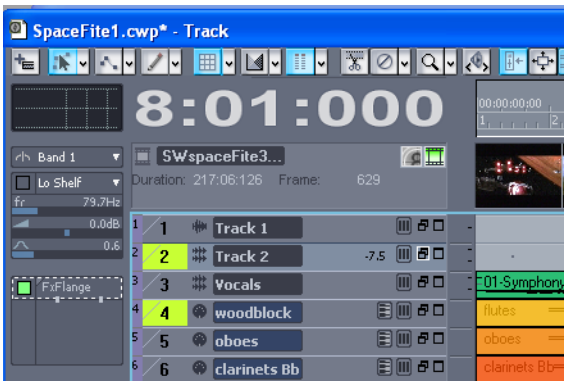
   Check the **On Stop, Rewind to Now Marker** option to have the Now time snap back to the Now time marker when you stop playback.

4. Click **OK**.

The Track view Now time display

The Track view displays the Now Time above the track strips in a large and configurable format.

Figure 18. *The Track view Now time display*



Click the display to display the following time formats:

- **M:B:T (Measure:Beat:Tick).** Example: 8:01:000.
- **SMPTE (Hours:Minutes:Seconds:Frames).** Example: 00:00:21:00.
- **Frames.** Example: 629 (only available if project contains video).
- **Milliseconds (Hours:Minutes:Seconds:Milliseconds).** Example: 00:00:21:000.
- **Samples.** Example: 926100.

You can also right-click the display, and choose time formats from the pop-up menu.

The pop-up menu also lets you choose the following display options:

- To hide the time display, choose **None.**
- To show the time display, right-click the empty area and choose one of the available time formats

from the pop-up menu.

- To choose font, size,color, or resizing options, choose **Font** from the pop-up menu to open the **Font** dialog. Enabling the **Automatically Resize to Window** option causes the display to automatically shrink the display to fit the available space.
- To choose alignment options, choose **Align > Left, Align > Center,** or **Align > Left** from the pop-up menu.

You can also configure the color from the **Configure Colors** dialog (**Options > Colors**; "Track View Header Time Display"). The color is saved with color presets.

The time display settings are global and persist between sessions.

Displaying the Now time in large print

SONAR can display the Now time in large print so that it's easier to see when you are far from your monitor (for example, when you're at your keyboard or another instrument) or when several people need to read the Now time from a distance. Here's how:

To display the Big time view

1. Choose **Views > Big Time** to display the Big Time view.

Figure 19. *The Big Time view*

2. Change the settings according to the table:

To do this	Do this
Switch time format	Click on the view to toggle between MBT and SMPTE time
Change font or color	Right-click on the view, choose the font and color you want, and click **OK**
Change the size of the view	Drag any corner of the view to change its size

Table 24.

Note that SONAR ignores font styles and effects such as strikeout and underline.

Other ways to set the Now time

There are a variety of commands and keyboard shortcuts you can use to set the Now time:

Command	Shortcut	What it does
Go > Time	F5	Lets you enter the Now time in the **Position** toolbar or in a dialog box
Go > From	F7	Sets the Now time to the From time (the start time of the current time selection)
Go > Thru	F8	Sets the Now time to the Thru time (the end time of the current time selection)
Go > Beginning	CTRL+HOME	Sets the Now time to the beginning of the project
Go > End	CTRL+END	Sets the Now time to the end of the project
Go > Previous Measure	CTRL+PAGE UP	Sets the Now time to the start of the current measure if the Now time is not on a barline, or to the start of the previous measure if the Now time is on a barline.
Go > Next Measure	CTRL+PAGE DOWN	Sets the Now time to the start of the next measure

Table 25.

If your project has markers, you can use the **Marker** toolbar to set the Now time:

To do this	Do this
Skip to the next marker	Click on the **Markers** toolbar (or press CTRL+SHIFT+PAGE DOWN).
Skip to the previous marker	Click on the **Markers** toolbar (or press CTRL+SHIFT+PAGE UP).
Jump to any marker	Click on the **Markers** toolbar to open the Markers view. Click on the marker you want to jump to in the Markers view.

Table 26.

For more information about markers, see “Creating and Using Markers” on page 318.

The Time ruler

The Time ruler appears in the Track view, Tempo view, Staff view and Piano Roll view. It has several functions, including:

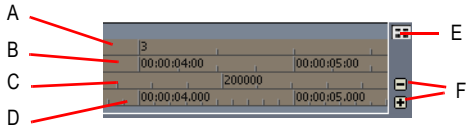
- **Making a time selection.** The Time ruler follows the Snap to Grid settings, if enabled.
- **Changing the Now time**

- **Adding loop, punch, and pitch markers.** You can right-click in the Time ruler to add markers.

In the Track view, the Time ruler has the following time display options or formats:

- Measures, Beats and Ticks (M:B:T)
- Hours, Minutes, Seconds and Frames (H:M:S:F—also called SMPTE)
- Samples
- Milliseconds

Figure 20. *The Time ruler*



A. *M:B:T* ***B.*** *H:M:S:F* ***C.*** *Samples* ***D.*** *Milleseconds* ***E.*** *Add Musical Snap to transient snap pool (see AudioSnap)* ***F.*** *Minus and Plus buttons*

The M:B:T setting follows your settings in the Meter/Key view. If you project is set to 4/4 time, you have four beats in the Time ruler for each measure. If your project is set to 6/8 time, you have six beats in the Time ruler for each measure.

If there is only one format displayed in the Time ruler, you can switch the format by right-clicking in the Time ruler and selecting the format you prefer.

To switch the Time ruler format to M:B:T

1. Right-click in the Track view Time Ruler.
2. In the menu that appears, select **Time Ruler Format > M:B:T.**

To switch the Time ruler format to H:M:S:F (SMPTE)

1. Right-click in the Track view Time Ruler.
2. In the menu that appears, select **Time Ruler Format > H:M:S:F.**

To switch the Time ruler format to samples

1. Right-click in the Track view Time Ruler.
2. In the menu that appears, select **Time Ruler Format > Samples.**

To switch the Time ruler format to milliseconds

1. Right-click in the Track view Time Ruler.
2. In the menu that appears, select **Time Ruler Format > Milliseconds.**

Additionally, you can add or remove Time ruler formats using the **Plus**/**Minus** buttons located just outside the right edge of the Time ruler.

Note: If only one Time ruler format is being used, only the **Plus** button is displayed.

To add or remove Time ruler formats using the Plus/Minus buttons

- Click the **Plus** button and select a Time ruler format from the pop-up menu.
- Click the **Plus** button and select a Time ruler format you would like to add from the pop-up menu.
- Click the **Minus** button and select from the pop-up menu to remove an active Time ruler format.
- Right-click in the Time ruler and move the cursor to Time ruler format in the pop-up menu. A list of all Time ruler formats appears. Active formats are checked, inactive formats are unchecked.
  - Click a checked format to move it down one row.
  - Click an unchecked format to replace the topmost displayed format.

Note: *Enabling the **Display All Times as SMPTE** check box in the **General** tab of the **Global Options** dialog forces all times in the project to be displayed in SMPTE time, regardless of your setting in the Time ruler.*

Controlling playback

To control playback, you have your choice of tools, menu commands, and shortcut keys for most common operations.

When you start playback, the Now time updates continuously to show the current time. When you stop playback, the Now time rewinds to the Now Time Marker. When you start playback again, it continues from the same point.

If the Now time is advancing but you don't hear any sound, see the online help topic "Troubleshooting." If you are using MIDI sync or syncing to MIDI time code, SONAR waits to receive external timing data before it begins playing. If the various views are not updating during playback, make sure the Scroll Lock key on your computer keyboard is not enabled. For more information, see the online help topic Synchronizing Your Gear.

Note: *If your Windows setup uses any system sounds that are associated with any typical activity, such as minimizing a window, etc., you should disable these sounds. They can sound extremely loud through your monitors, and also interrupt playback and recording, if you open any dialog boxes or do anything that has a system sound attached to it while a project plays. The quickest way to disable all system sounds is to open the Control Panel (**Start > Settings > Control Panel**), double-click the **Sounds** icon to open the **Sounds Properties** dialog box, and in the **Schemes** field select **No Sounds**. Click **Apply**, and then click **OK**.*

To start and stop playback

To do this	Do this
Start playback	Press the SPACEBAR, click , or choose **Transport > Play,** or double-click in the Time Ruler
Stop playback	Press the SPACEBAR, click , or choose **Transport > Stop**
Rewind to the start of the project	Click , press the W key, or choose **Transport > Rewind**
Skip to the end of the project	Click

Table 27.

Note: *The default behavior for the Now time when you click the **Stop** button is for it to return to the Now time marker where playback began. If you want the Now time to remain where it is when you stop playback, you can use the keyboard shortcut CTRL+SPACEBAR. If you want to change the default behavior, select **Options > Global** and click the **General** tab. In the **General** tab, uncheck the **On Stop, Rewind to Now Marker** option.*

Allow playback with no data

SONAR is able to start playback even if there is no data in a project. This is useful in various cases, such as:

- If you need to trigger playback of external devices.
- If you need to continue playback beyond the end of the project, for example, to allow MIDI notes and sustains to decay naturally and not end abruptly.

Stop at Project End option

The **Stop at Project End** global option determines whether or not playback is allowed beyond the last event in a project. This option is enabled by default.

When enabled (default setting):

- Playback will not engage if there is no data present in the project at all.
- Playback will stop when no more data is present going forward.

When disabled:

- Playback will engage if there is no data present in the project at all.
- Playback will continue past the end of a project until the user manually stops playback.

To allow playback with no data

Use the **Options > Global** command to open the **Global Options** dialog, and on the **General** tab, make sure that the **Stop at Project End** check box is not checked.

Auto fade when starting/stopping playback

SONAR makes it possible to render a smooth fade in/out whenever audio playback is interrupted. This can be useful to smooth out abrupt transitions while stopping and starting the transport rapidly and will reduce ear fatigue during long sessions.

The fade is only applied during playback and is ignored while recording or bouncing audio.

To configure the auto fade times

1. Select **Options > Audio** and click the **Advanced** tab.

   The **Audio Options** dialog appears.

2. Adjust the following options:

   - **Fade On Start (milliseconds).** When this option is set to a value greater than zero, starting playback will cause a gradual fade in of the audio for the specified duration. The valid range is 0–100000 and the default value is 0.
   - **Fade On Stop (milliseconds).** When this option is set to a value greater than zero, stopping playback will cause a gradual fade out of the audio for the specified duration. The valid range is 0–100000 and the default value is 0.

Handling stuck notes

Under MIDI, the events that turn notes on are separate from the events that stop notes from playing. Normally, when you stop playback, SONAR attempts to turn off all notes that are still playing. Depending on how your equipment is configured, it's possible for notes to get stuck in the On position. The **Transport > Reset** command is used to stop all notes from playing. The **Transport > Reset** command also stops feedback from input monitoring.

Note: *You can control the MIDI messages that are sent by the **Transport > Reset** command by changing the* `Panic Strength` *variable in the* `Cakewalk.ini` *file. See "Initialization Files" on page 929 for more information.*

To clear stuck notes

- Choose **Transport > Reset**, or click on the **Large Transport** toolbar.

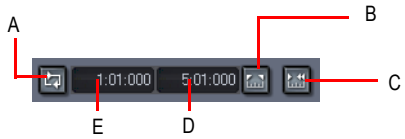
See:

The **Transport > Reset** command

Looping

Sometimes you want to listen to one portion of a project over and over, either so you can play along and rehearse or because you want to edit that section of the project while it is playing and hear the results as you make changes. SONAR has a playback looping feature that makes this simple.

Looping is defined in the **Loop/Auto Shuttle** toolbar, as shown here:



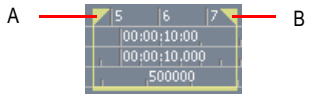
A. *Click to turn looping on or off* ***B.*** *Click to copy the selection (From and Thru) times* ***C.*** *Click to open the* ***Loop/Auto Shuttle*** *dialog box* ***D.*** *Loop End time* ***E.*** *Loop Start time*

To set up a loop, you do three things:

- Set the start time of the loop
- Set the end time of the loop
- Enable looping

From then on, SONAR will automatically jump back to the start of the loop when it reaches the end.

When looping is enabled, the loop times are indicated by special markers in the Time ruler.



A. *Loop From* ***B.*** *Loop Thru*

To move a loop in the Time ruler

1. Click the yellow bar that connects the two loop markers

   The cursor becomes a horizontal double-headed arrow.
2. Drag the loop to the desired location in the Time ruler.

The **Loop/Auto Shuttle** dialog box, which appears when you use the **Transport > Loop and Auto Shuttle** command or click the **Loop and Auto Shuttle** button in the **Loop** toolbar, contains two additional settings that affect the details of how looping operates:

Option	How it works
Stop at the end time	Playback does not proceed beyond the end of the loop
Loop continuously	When playback reaches the end of the loop and rewinds to the start, playback continues automatically (this option is on by default)

Table 28.

With the default option settings, SONAR will play the loop over and over again, continuously.

If you start playback before the loop start time, SONAR will play until the loop end time is reached, then jump back to the loop start time.

Note: *If you stop playback while looping is enabled, the Now time jumps to the Now time marker. If you disable the **On Stop Rewind to Now Marker** option in the **General** tab of the **Global Options** dialog, the Now time stays wherever you stopped playback.*

The **Rewind** command operates slightly differently when looping is in effect. The first time you rewind, the Now time is set to the start of the loop. If the Now time is already at the start of the loop, Rewind takes you to the beginning of the project. From then on, Rewind switches back and forth between the loop start time and the start of measure 1.

To set up a playback loop

1. Set the loop start and end times in one of the following ways:
   - Drag the mouse between two points in the The Time ruler of the Track view, Staff, or Piano Roll view to select a range of times, then click in the **Loop/Auto Shuttle** toolbar to copy the selection time to the loop time.
   - Click between two markers in the Track, Staff, or Piano Roll view to select a range of times, then click in the **Loop/Auto Shuttle** toolbar to copy the selection time to the loop time.
   - Type the loop start and end times directly into the toolbar.
   - Select a range of times, then right-click in the Time ruler and choose **Set Loop Points** (this method makes the second option unnecessary).

Looping is automatically turned on when you use the **Set Loop to Selection** command.

To change the loop settings

1. Click , or choose **Transport > Loop and Auto Shuttle** to display the **Loop/Auto Shuttle** dialog box.
2. Check the options you want to use.
3. Click **OK**.

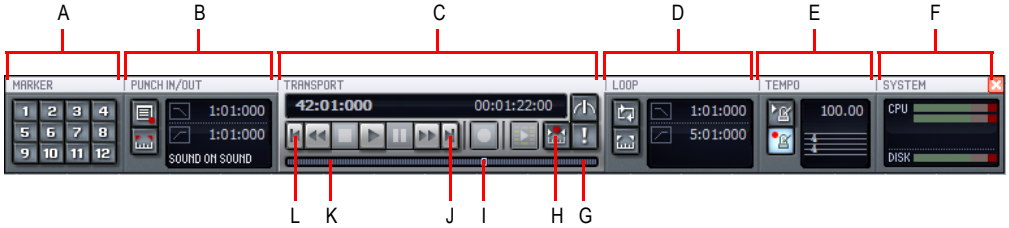
To cancel a playback loop

- Click on the toolbar to disable looping.

Using the Large Transport

The **Large Transport** consists of six sections, each of which can be shown or hidden according to the needs of your project. Right click anywhere in the **Large Transport**, and deselect any section from the pop-up menu that you wish to hide. The six sections are **Markers**, **Record**, **Transport**, **Loop**, **Tempo** and **System**.

Figure 21. *The **Large Transport** toolbar*

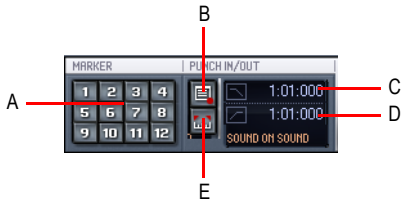


***A.** Markers section **B.** Punch In/Out section **C.** Transport section **D.** Loop section **E.** Tempo section **F.** System section **G.** Click to move ahead one measure **H.** Auto-punch toggle **I.** Drag Now Time to any desired position **J.** Click to jump to the end **K.** Click to back up one measure **L.** Click to jump to the beginning*

The **Large Transport** toolbar differs from the **Transport** toolbar in that it displays a **Markers** section (numeric keypad), the Now time (which you can set by entering numbers into the display fields in either MBT or SMPTE time), a CPU and Disk Cache Performance meter, and the Time/Key Signature display. The Time/Key Signature display shows the current meter, key signature, and tempo. You can edit the meter and key signature by clicking the display to open the **Time/Key Signature** dialog box. You can display the **Large Transport** toolbar by selecting the **Views > Toolbars** command to open the **Toolbars** dialog box, and checking **Transport (Large)**. You can also display and hide the **Large Transport** toolbar by pressing F4.

Using the Markers section

You can store up to 12 markers in the **Markers** section, making it easy to navigate through your project. Assign markers to milestones in your project using the **Insert > Marker** command or by pressing F11 when the now time is in the desired location for your marker. When your cursor hovers over a button in the **Markers** section, the name you assigned to the marker is displayed as a tooltip.



A. *Marker buttons* ***B.*** *Record options* ***C.*** *Set punch in time* ***D.*** *Set punch out time* ***E.*** *Set punch points to selection*

To use the Punch In/Out section

1. Click the **Record Options** button .

   The **Record Options** dialog box appears.
2. Select between **Blending existing data with new data**, or **Overwriting existing data with new data.**
3. Select between storing looped takes in a single track or storing looped takes in individual tracks.

For more information see “Loop Recording” on page 262. You can also set Auto-punch from the **Record Options** dialog. For details, see “To use auto-punch in the Punch In/Out section” on page 185.

To use auto-punch in the Punch In/Out section

1. Activate Auto-punch by clicking the **Set punch points** button .
2. Click the **Punch In M:B:T** meter and enter the **Punch In** time using the spinners or keying in the desired M:B:T.
3. Click the **Punch Out M:B:T** meter and enter the **Punch Out** time using the spinners or keying in the desired M:B:T.
4. Set the Now Time far enough ahead of the **Punch In** point for you to be ready for it.
5. Click the **Record** button on the **Large Transport** or press R on your keyboard.

SONAR plays the project, and begins recording on the selected track at the **Punch In** time you entered, then stops recording at the **Punch Out** time.

Buttons in the Transport section

- RTZ (Return to zero)
- Start/Stop Rewind
- Stop project
- Play project

- Pause project
- Start/Stop Fast-forward
- Go to end of project
- Record.
- Audition.
- Toggle Auto-punch
- Reset MIDI
- Now Time measured inM:B:T, H:M:S:F 5:03:000 00:00:10:24
- Now Time slider

Note: *The **Rewind** and **Fast Forward** buttons allow you to rewind and fast forward smoothly during playback. Any audio data will continue to play normally, however the Now Time marker will move smoothly until you release the **Rewind** or **Fast Forward** button.*

To use the Loop section

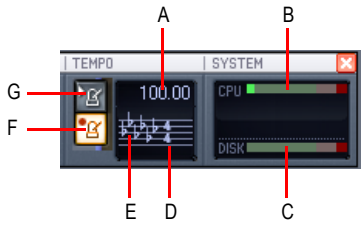
1. Clip the **Loop On/Off** button.
2. Set the **Loop Start** time in the M:B:T meter either manually or by using the spinner. Set the **Loop End** time in the M:B:T meter either manually or by using the spinner.

You can also set a loop from the **Large Transport** toolbar by highlighting a section of your project in the Time ruler and then clicking the **Set Loop Points to Selection** button.

Reading the Key signature, Time signature, Tempo and System display

The **Large Transport** displays a variety of information about the project you are working on, including tempo, key, meter, metronome settings, and CPU and disk cache performance.

.



***A.** Tempo **B.** CPU performance meter **C.** Disk cache performance meter **D.** Time signature **E.** Key signature **F.** Metronome on/off during record **G.** Metronome on/off during playback*

Track-by-track playback

SONAR lets you play back any combination of tracks at one time by changing each track's *status*. You can control the status of each track with the individual controls that are on every track, or with the global controls on the **Playback State** toolbar or the status bar that's at the bottom of the SONAR window. For more information about the status bar, see "Status Bar/CPU Meter/Disk Meter" on page 855. For more information about the **Playback State** toolbar, see "The Playback state toolbar" on page 188.

There are several different status settings for each track:

Status	What it means
Normal	The track plays unless one or more of your other tracks is soloed.
Muted	The track is not played, but you can turn it on while playback is in progress.
Archived	The track is not played, and you must stop playback to re-enable it. Archived tracks do not tax your CPU during playback so they can be used to store alternate takes.
Soloed	Only those tracks that are designated as solo tracks are played; all others are muted.
Armed	The track is armed for recording.
Mono/Stereo	The track plays back in either mono or stereo, depending on what the individual track setting is, and whether the **Play in Mono** button in the **Playback State** toolbar is depressed.
Phase normal or inverted	If a track was accidentally recorded out of phase with another track, the **Phase** button lets you reverse the phase of a track.

Table 29.

While playback is in progress, you can mute and unmute tracks in any combination, which means you can hear only the tracks that you want. You can change the status of a track in the Track view, the Console view, the **Track** menu, or the **Playback State** toolbar.

If a track is both muted and soloed, it does not play. Mute has precedence.

The track status is saved with the SONAR project file. If you save a SONAR project as a standard MIDI File, however, all tracks are saved without mute, solo, or archive indicators.

See:

The Playback state toolbar

Silencing tracks

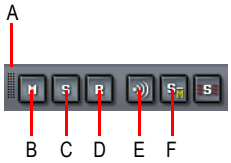
Soloing tracks

Inverting the phase of a track

Changing tracks' mono/stereo status

The Playback state toolbar

To display the **Playback State** toolbar, use the **Views > Toolbars** command to open the **Toolbars** dialog box, and make sure **Playback State** is checked. The **Playback State** toolbar is a global control that allows you to mute or unmute, solo or unsolo, arm or disarm, and toggle the input echo status of all tracks.



A. *Drag to reposition* ***B.*** *Mute* ***C.*** *Solo* ***D.*** *Arm* ***E.*** *Input echo or MIDI echo* ***F.*** *Solo Dim*

See:

Silencing tracks

Soloing tracks

Silencing tracks

When a track is muted, SONAR processes the track while playback is in progress so that you can unmute the track without stopping playback. If you have lots of muted tracks, this can place a heavy load on your computer. Archived tracks, on the other hand, don't place any load on your computer. Therefore, if there are tracks you want to keep but don't need to play, you should archive them instead. Archived tracks are indicated by the letter A in the **Mute** button that is displayed in the Track and Console views.

When you mute or unmute a track while playback is in progress, there may be a slight delay before you hear the effect of the change. This is to be expected and does not indicate a hardware or software problem.

To mute or unmute individual tracks

- To mute or unmute a track, click its **M** button in the Track or Console view.
- To mute or unmute several tracks at once, select the tracks and choose **Tracks > Mute**, or select the tracks, right-click, and choose **Mute** from the pop-up menu**.**

To unmute all tracks

- Click the **M** button in the **Playback State** toolbar or the **Mute** label in the status bar.

To mute all tracks

- If no tracks are currently muted, click the **M** button in the **Playback State** toolbar.

  Or

- Select all tracks, and then use the **Tracks > Mute** command.

To archive or unarchive tracks

1. Select one or more tracks in the Track view.
2. Do one of the following:
   - Click the track's **Archive** button A.
   - Choose **Tracks > Archive**, or right-click and choose **Archive** from the menu to toggle the archive status of the selected tracks.

Note: *A track can not be archived during playback.*

Tip: *To show/hide the **Archive** and **Freeze** buttons in the Track view, open the Widget Tab Manager and specify the visibility of the Track State group. For details, see Widget Tab Manager.*

Soloing tracks

Sometimes you want to hear a single track, or a few tracks at once, without having to mute all the other tracks. You can do this by soloing the tracks you want to hear.

As soon as any track is marked as a solo track, SONAR ignores all mute settings (unless a soloed track is also muted—mute takes precedence over solo) and plays *only* the track or tracks that are set to solo. Any number of tracks at one time can be marked as solo. All these tracks will play together. As soon as the solo status of the final solo track is turned off, SONAR once again plays back tracks based on their mute settings.

To solo or unsolo individual tracks

- To solo or unsolo a track, click the **Solo** button in the Track or Console view
- To solo or unsolo several tracks at once, select the tracks and choose **Tracks > Solo**, or right-click, and choose **Solo** from the pop-up menu.

See also:

Dim Solo mode

To unsolo all tracks

- Click the **S** button in the **Playback State** toolbar or the **Solo** label in the status bar.

To solo all tracks

- If no tracks are currently soloed, click the **S** button in the **Playback State** toolbar.

  Or

- Select all tracks, and then use the **Tracks > Solo** command.

See also:

Dim Solo mode

Dim Solo mode

Normally when you solo a track/bus in SONAR, the tracks or buses which are not soloed are essentially muted. Dim Solo is a mode in which non-soloed audio tracks/buses are still audible but at a reduced level. The default gain reduction is -6dB, but can also be configured for -12dB and -18dB.

Dim Solo is useful when you want to focus on a specific track but you still want to edit/mix the track in context with the entire mix. This allows you to hear all tracks while the soloed track stands out from non-soloed tracks.

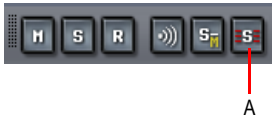
Note: *Dim Solo mode only applies to audio tracks and buses, not MIDI tracks.*

To enable/disable Dim Solo

When Dim Solo is enabled, non-soloed audio tracks will play at a reduced gain rather than 0 gain (mute).

To enable/disable Dim Solo mode, do *one* of the following:

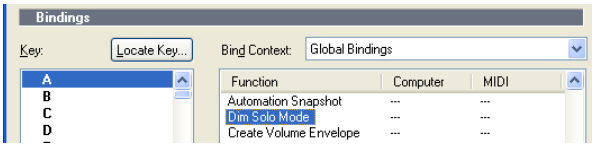
- Click the **Dim Solo** button in the **Playback State** toolbar. The button lights up when enabled. For more information, see “The Playback state toolbar” on page 188.



A. Dim Solo enable/disable toggle

- Assign Dim Solo Mode to a key binding and use the key binding to enable/disable Dim Solo mode.

  The **Dim Solo Mode** function is listed in the Global Bindings context. For more information, see “Key Bindings” on page 738.



The Dim Solo enable/disable state is saved with each project.

To configure Dim Solo level

When Dim Solo mode is enabled, the amount of gain reduction applied to non-soloed tracks or buses is specified in the **Audio Options** dialog.

1. Select **Options > Audio** to open the **Audio Options** dialog and click the **General** tab.
2. Set the **Dim Solo Gain** setting to either **-6dB**, **-12dB** or **-18dB** and click **OK**.

The **Dim Solo dB** setting is saved with each project.

See:

Soloing tracks

The Playback state toolbar

Audio Options dialog—General

Key Bindings

Inverting the phase of a track

A waveform's exact opposite is called an inversion. It is a shift of 180 degrees. A waveform and its inversion cancel each other out completely, so it is usually not desirable to have two track recordings of the same source if one is phase inverted. It can lead to reduced volume, lowered or distorted response in certain frequencies, or even silence in the case of two tracks which are exactly identical (i.e. cloned tracks).

Occasionally, for example when recording a source using two microphones, one of the microphones may be recording an inversion of the other, the resulting tracks may, to some degree, be cancelling each other out. SONAR allows you to invert the phase of a track to match another.

To invert the phase of a track

1. Open the Track view or Console view.
2. In the track you want to invert the phase, click the **Phase inversion** button .

Changing tracks' mono/stereo status

SONAR has a **Mono/Stereo** button in each track module in the Track and Console views. The buttons in the track modules force each track to play in either stereo or mono, but preserve the tracks' pan positions in the stereo mix.

The **Mono/Stereo** button in each track forces the track's audio signal to enter any patched plug-ins as either mono or stereo, whether or not the tracks are mono or stereo. This allows you to use either mono effects on a stereo track or stereo effects on a mono track.

Note: *You may lose important stereo data by using mono effects with stereo tracks because your stereo tracks are summed to mono in order to pass through the effect. If you never want your stereo data to be summed to mono, select stereo.*

To use a track's Stereo/Mono button

1. Display the Track view or Console view.
2. In the track you want to force to either mono or stereo for processing effects, click the **Stereo/ Mono** button to the desired position:
   - **Speaker icon pointing left.** This choice means that you manually selected mono for this track.
   - **Speaker icon pointing left and right** (as pictured above). This choice means that you manually selected stereo for this track.

Mono audio clips may be increased by 3 dB in certain scenarios

There are some situations where the level of a mono clip will be increased by 3 dB if the track's output interleave (mono/stereo toggle) is set to mono:

1.If the track has mixed stereo and mono clips

2.The track has a synth selected as its input source

3.Input Echo is enabled or the track is armed for recording

In summary, whenever the track output interleave is mono and the data interleave is stereo, mono data will be increased in level by 3 dB.

Using mono VST plug-ins on stereo tracks may cause out of sync audio

When using a mono plug-in on a stereo track (interleave set to Stereo), the left and right channels will be out of sync. The left channel is processed by the mono effect, and delay compensation is applied, while the right channel is not processed and does not have delay compensation applied. The signal will look something like this:

- Left channel: Wet signal (delayed)
- Right channel: Dry signal (no delay)

A mono VST plug-in will work correctly if **Enable Mono Processing** is checked in the **VST Plug-in Properties** dialog and the track interleave is set to mono.

Note: ***Enable Mono Processing*** *is enabled by default in SONAR 8. If you are playing back a legacy project in SONAR 8, and notice the project does not sound the same, try to disable* ***Enable Mono Processing*** *for any mono plug-ins used in the project.*

Changing track settings

Each track in a project contains MIDI or audio information and has a variety of settings (also called parameters) that determine how the track sounds. By changing these parameters, you can change the sound of your project. For audio tracks, you control parameters such as volume, stereo panning, and the output device that is used to produce the sound. For MIDI tracks, you control many additional parameters, including the type of instrument sound that is used to play the notes stored in the track. Both kinds of tracks contain an **Automation Read** button and an **Automation Write** button, which enable or disable automation playback and recording, respectively.

Note 1: *You can control all sliders and knobs in the Console and Track Views by clicking a control, then hover over it with the mouse and manipulate the mouse wheel. If you move the mouse cursor away from the slider or knob while using the mouse wheel, you will lose control of the slider or knob you are adjusting.*

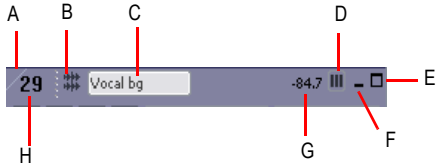
Note 2: *You can hide, reorder, and visually group the controls in tracks and buses. You can also control how the display tabs at the bottom of the Track pane function. See “Configuring Track View Controls” on page 297 for more information.*

Audio track parameters

The following pictures illustrate the parameters that audio tracks have. The pictures are of an audio track that is located in the Track view, however most of these parameters can also be adjusted in the Console view:

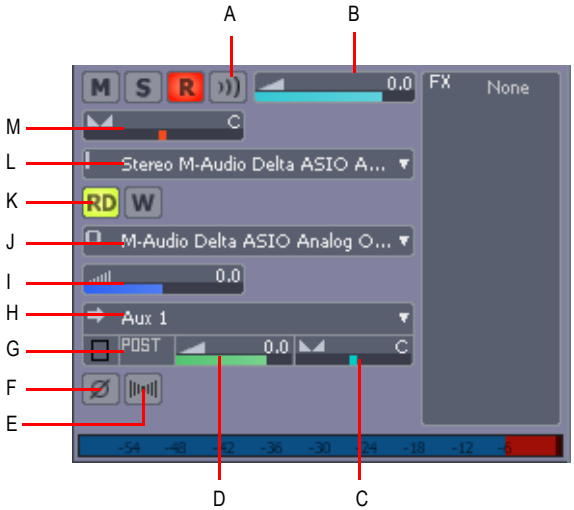
Figure 22. *Audio track*

Figure 23. *Audio track header controls*



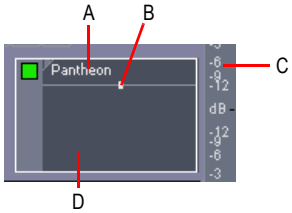
A. *Strip selector* ***B.*** *Header icon* ***C.*** *Track name* ***D.*** *Show layers button* ***E.*** *Maximize track* ***F.*** *Minimize track* ***G.*** *Peak value* ***H.*** *Track number*

Figure 24. *Audio track interior controls*



A. *Input echo* ***B.*** *Volume slider* ***C.*** *Send pan* ***D.*** *Send level* ***E.*** *Mono/stereo switch* ***F.*** *Phase button* ***G.*** *Send enable* ***H.*** *Send destination* ***I.*** *Input trim* ***J.*** *Output* ***K.*** *Automation Read and Write buttons* ***L.*** *Input* ***M.*** *Pan slider*

Figure 25. *Audio track FX bin, meter, and track scale*



A. *Currently patched effect* ***B.*** *FX interleave indicator* ***C.*** *Track scale* ***D.*** *FX bin*

Here is a summary table of the different audio track parameters and how they are used.

Parameter	What it means
Strip selector	Click this to add a track to a Quick Group, which means that certain controls in tracks that are in the Quick Group are grouped.
Number	A sequential track number used for reference
Name	A name that you assign the track for easy reference. Note that if you do not assign a name to a track, the default name is the track number. This track number will change if you change the order of your tracks.
Mute	When enabled, mutes the track
Solo	When enabled, solos the track
Arm	When enabled, arms the track for audio recording.
Input Echo	Turns input monitoring on or off.
Automation Read and Write buttons	Enable/disable automation playback and recording, respectively
Peak value	Displays the Peak value, which is the amplitude of the latest audio peak in the track.
Show Layers button	Hides or shows track layers.
Minimize/restore track button	Collapses track to minimum possible height, or restores it to the size it was before it was minimized.
Maximize/restore track button	Expands track to maximum possible height, or restores it to the size it was before it was maximized.
Vol (volume)	The current volume level for the track, ranging from -INF (silent) to +6 dB (maximum volume).
Pan	The stereo distribution of the output, ranging from 100% left (hard left) to 100% right (hard right); a value of “C” indicates sound that is centered left-to-right. On stereo tracks, pan acts as balance.

Table 30.

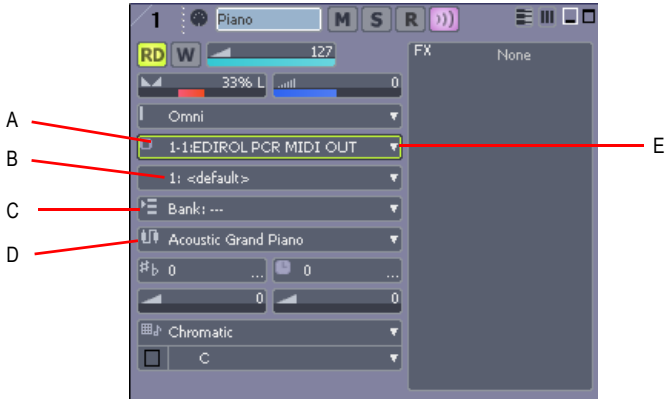
Parameter	What it means
Trim (volume trim)	Volume Trim is a pre-fader control which allows the fine tuning of a single track's volume. For example, let's say you have four tracks, three tracks have their volume fader set to 0 dB while the fourth track's fader is set to +10 dB. You want to group the faders and do a slow fade out, but the slightly higher level of the fourth track causes its volume to be higher in relation to the other tracks towards the end of the fade out. To balance the fader levels, reduce the fader level for the fourth track to 0 dB and raise the Volume Trim value for that track to +10 dB. The resulting volume levels for the project are the same, but now you can group the faders and perform a fade out with no track standing out disproportionately at the end of the fade out.
Input	The input source for the track, used in recording
Output	The output bus through which the track is played
Send Enable	Activates a send module, which sends a copy of the track signal to a bus.
Send Level	Controls volume of audio data sent by this send module.
Send Pan	Adjusts the send pan setting.
Send Pre/Post switch	Pre (pre-fader) means that the Send signal goes to the bus prior to the track's volume fader; post means the Send signal goes to the bus after the volume fader.
Send destination	Displays name of bus that the Send is sending data to.
Mono/Stereo	A switch that determines whether a track's signal enters an effect or chain of effects as mono or stereo, regardless of the nature of the track.
Phase In/Out	A switch that inverts the phase of the track.
Effects bin	The patch point for a track's plug-ins or soft synths.
Meters	The recording and playback levels are displayed in the Playback and Record meters.

Table 30.

MIDI track parameters

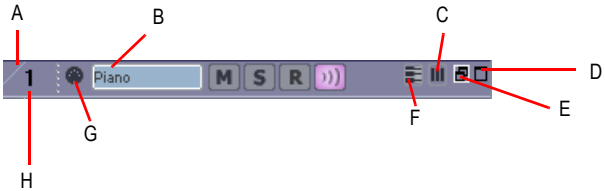
The following pictures illustrate MIDI track parameters:

Figure 26. *A MIDI track*



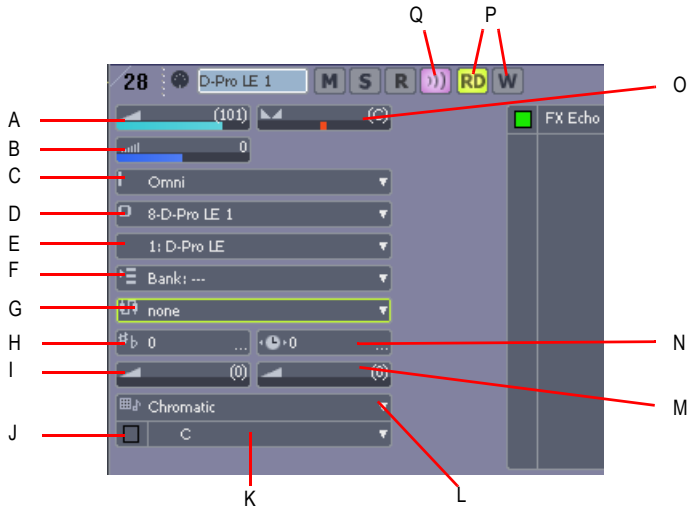
A. *Output menu* ***B.*** *Channel menu* ***C.*** *Bank menu* ***D.*** *Patch menu* ***E.*** *Drop-down arrow to display menu*

Figure 27. *MIDI track header controls*



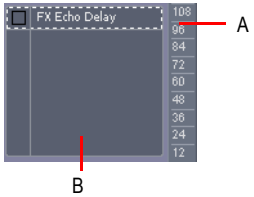
A. *Strip selector* ***B.*** *Track name* ***C.*** *Show layers button* ***D.*** *Maximize track* ***E.*** *Minimize track* ***F.*** *PRV Mode button* ***G.*** *Header icon* ***H.*** *Track number*

Figure 28. *MIDI track interior controls*



A. *Volume slider* ***B.*** *Trim* ***C.*** *Input* ***D.*** *Output* ***E.*** *Channel* ***F.*** *Bank* ***G.*** *Patch* ***H.*** *Key +* ***I.*** *MIDI chorus* ***J.*** *Snap to Scale On/Off* ***K.*** *Snap to Scale root note* ***L.*** *Snap to Scale scale type* ***M.*** *MIDI reverb* ***N.*** *Time +* ***O.*** *Pan slider* ***P.*** *Automation Read and Write buttons* ***Q.*** *Input Echo button*

Figure 29. *MIDI track FX bin and track scale*



A. *Track scale* ***B.*** *MIDI FX bin*

Here is a summary table of the different MIDI track parameters and how they are used:

Parameter	What it means
Strip selector	Click this to add a track to a Quick Group, which means that certain controls in tracks that are in the Quick Group are grouped.
Track number	A sequential track number used for reference

Table 31.

Parameter	What it means
Track name	A name that you assign the track for easy reference. Note that if you do not assign a name to a track, the default name is the track number. This track number will change if you change the order of your tracks.
Mute	When enabled, mutes the track
Solo	When enabled, solos the track
Arm	When enabled, arms the track for audio recording.
Input Echo	Controls whether the track will echo MIDI data or not.
Automation Read and Write buttons	Enable/disable automation playback and recording, respectively
PRV Mode button	When enabled, displays a track in Inline Piano Roll view mode.
Show Layers button	Hides or shows track layers.
Minimize/restore track button	Collapses track to minimum possible height, or restores it to the size it was before it was minimized.
Maximize/restore track button	Expands track to maximum possible height, or restores it to the size it was before it was maximized.
Vol (volume)	The current volume level for the track, ranging from 0 (silent) to 127 (maximum volume).
Pan	The stereo distribution of the output, ranging from 100% left (hard left) to 100% right (hard right); a value of “C” indicates sound that is centered left-to-right.
Velocity trim	The change in velocity (volume) that will be applied to notes in this track on playback; ranges from –127 to +127
Input	The input source for the track, used in recording
Output	The output device through which the track is played
Ch (channel)	The MIDI channel through which the notes will be played
Bank	The set of patch names available for the track
Patch	The instrument sound that will be used for playback.
Time+	An offset applied to the start time of the events in the track
Key+	The number of steps by which the notes in the track are transposed on playback (e.g., 12 to transpose up one octave)
Chorus	Adds MIDI chorus effect to the track

Table 31.

Parameter	What it means
Reverb	Adds MIDI reverb effect to the track
Snap to Scale scale type	Displays current scale for Snap to Scale feature
Snap to Scale root note	Displays root note of current Snap to Scale scale
Snap to Scale on/off	Turns Snap to Scale feature on or off

Table 31.

To change a track name

1. Double-click on the current track name.
2. Enter the new track name.
3. Press ENTER.

The default track names (Track 1, Track 2, etc.) are not actually names, but placeholders until you name a track. If you reorder the tracks these placeholders change.

You can rearrange and resize the panes in the Track view as shown in the following table:

To do this	Do this
Change the width of the Track pane and Bus pane	Drag the divider that separates the Track pane from the Clips panes to the left or right
Change the height of the Mains/Buses pane	Drag the divider that separates the Track and Clip panes from the Bus pane up or down

Table 32.

You can customize which tracks are displayed or not displayed, and enlarge or maximize individual tracks while other tracks remain minimized. You can also manually set the exact size of a track's display. The following table shows how to customize the appearance of tracks in the Track pane:

To do this	Do this
Hide or show a track	Open the **Track Manager** dialog (press M), and check or uncheck a track's check box in the dialog.
Maximize a track	Click the **Maximize** button in the track
Restore a track to its original size (before it was minimized or maximized)	Click the **Restore** button in the track
Minimize a track	Click the **Minimize** button in the track

Table 33.

To do this	Do this
Change the height of a track using splitter bars	Move the cursor over the gap below a track until the cursor looks like this . Click and drag until the track is the size you want.
Lock or unlock the height of a track	Right-click an empty area in the track's controls and choose **Lock Height** from the menu.

Table 33.

You can display subsets of the Track pane's interior controls (the titlebar controls are always displayed) by selecting one of the tabs located at the bottom of the Track view. To choose which controls are displayed on each tab, see "To Configure Track and Bus Tabs" on page 298.

Changing audio track settings in the Track pane

You can change the values in the Track pane in a number of ways:

Control	How to change the setting
Volume, Pan, Volume Trim, Send Output Level, and Send Pan	Click on the control and move your cursor left or right to adjust values, or press ENTER and type a value.
Input and Output	Click on the black arrow on the right of the control and select a driver from the menu that appears, or double-click on the control and select a driver from the menu.
Buttons	Click to enable or disable

Table 34.

Changing MIDI track settings in the Track pane

Control	How to change the value
Channel	Click on the black arrow on the right of the control and select a channel from the menu that appears, or double-click on the control and enter a value.
Bank	Click on the black arrow on the right of the control and select a bank from the menu that appears, or double-click on the control and enter a value.
Patch	Click on the black arrow on the right of the control and select a patch from the menu that appears, or double-click on the control and enter a value.
Volume, Pan, Volume Trim, Chorus and Reverb	Click on control and move your cursor left or right to adjust values, or double-click on the control and enter a value.

Table 35.

Control	How to change the value
Key+ and Time+	Double-click the control or click on the black arrow on the right of the control and enter a new value, or double-click on the control and enter a value.
Input	Click on the black arrow on the right of the control and select a MIDI channel from the menu that appears, or double-click on the control and select a driver from the menu.
Output	Click on the black arrow on the right of the control and select a driver from the menu that appears, or double-click on the control and select a driver from the menu.
Buttons	Click to enable or disable

Table 35.

You can change numeric values in MIDI tracks as shown in the following table:

To do this	Do this
Change the value by 1	Press the - or + key on your numeric keypad, or click on the spinner control
Change the value by 10 (for Key+, by 12)	Press the [or] key, or right-click on the spinner control
Enter a new value	Press ENTER and type the new value using the keyboard, and press ENTER

Table 36.

For numeric fields, you can press and hold both mouse buttons to change the value by increments of 10 (12, a full octave, for Key+).

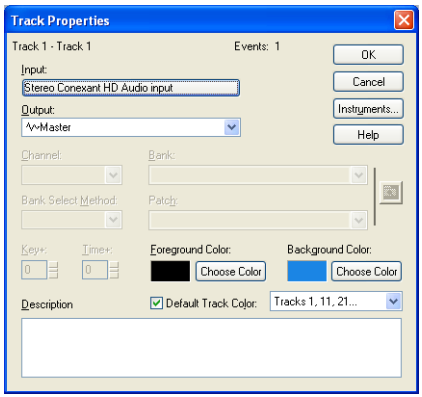
You can also edit Track properties in the **Track Properties** dialog box. To open this dialog box, right-click on the Track bar and select **Track Properties.**

Figure 30. *The **Track Properties** dialog*

You can change the value of a track parameter for several tracks at once using commands on the **Tracks > Property** menu. For example, to assign a group of tracks to the same output, select the tracks you want to assign, then choose **Tracks > Property > Output**. These menu commands can also be used to change the settings for individual tracks.

All track parameters are saved with a SONAR project. However, if you export a project to a standard MIDI File, several of the parameters (Key+, Vel+, Time+, and Chan) are applied to the MIDI data as the file is being exported. Other parameters, including Input, Output, Mute, Solo, and Archive, are lost when you export the project to a MIDI file.

The following sections contain more information about many of the parameters in the Track view. For more information about the track inputs and the track **Arm** button, see “Preparing to record” on page 242.



Setting up output devices

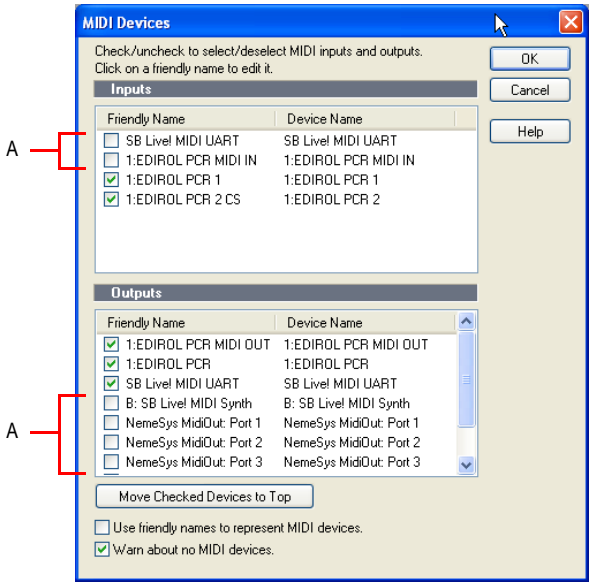
The output setting for a track determines which piece of hardware or software synthesizer will be used to produce the sound stored in your project. In a very simple equipment setup, you might have only a computer equipped with a basic sound card. In this case, you want to play all MIDI and audio output through the sound card on your computer.

If your equipment setup also includes a MIDI keyboard attached to the MIDI port on your sound card, you can choose to route MIDI data directly to the sound card or through the sound card MIDI port to the keyboard. If you choose the former, the music will play from your computer speakers. If you choose the latter, the sound will play from the speaker attached to your keyboard. You can even choose to send some MIDI information to each of these devices so that they both play at once.

You can purchase MIDI interfaces that plug into your parallel, serial, or USB port to add MIDI ports to your computer. For more information about complex system configurations, see the online help topic: Hardware Setup.

If your computer has several MIDI outs, choose the ones you want to use and put them in a particular order using the **Options > MIDI Devices** command. The order in which your MIDI devices appear in the **Output** menus in the Track and Console views is based solely on the order in which the selected outs appear in the **MIDI Devices** dialog box. As a result, the order in which your devices appear in a track's output control may not match the port numbers that appear on your external multiport MIDI device.

Figure 31. *The **MIDI Devices** dialog*



A. *These devices are not selected*

When you first run SONAR it asks you to select MIDI devices. You may want to change these selections in the future. You can do so by selecting different devices in the **MIDI Devices** dialog box.

Your computer is usually equipped with at least one audio device—your computer sound card. Your setup may have several different audio output devices, or you may have a multichannel sound card that presents itself to your computer as though it were several different devices, one for each stereo pair. In SONAR, audio tracks are assigned to main outs or buses. Each main out represents a hardware device. You use the **Output** control to assign a track in a project to the main or bus you want to use.

While you need to choose the MIDI output devices you want to use before you assign them to tracks, all of your audio devices can be assigned to tracks freely. You do not need to configure them the way you do MIDI devices. If you have a voice modem or speakerphone in your computer, however, you might want to set up SONAR so that it won't use those devices. Also, note that some dedicated audio equipment has specific setup requirements. For more information, see Improving Audio Performance.

To choose MIDI devices

1. Choose **Options > MIDI Devices** to display the **MIDI Devices** dialog box.
2. Click on any MIDI device in the **Outputs** list.
3. To move any device to the top of the list, deselect all other devices and click **Move to Top** to move the selected device to the top of the list.

4. When all devices are selected in the order you want, click **OK**.

See:

MIDI Devices dialog

Creating friendly names for MIDI output and input devices

You may find that a name you make up yourself for a MIDI device is easier to remember or more descriptive than a device's original name. The friendly name for a MIDI device is the name you will see places such as MIDI track **Input** and **Output** menus, and the **Controllers/Surfaces** dialog, if you enable the **Use Friendly Names To Represent MIDI Devices** check box at the bottom of the **MIDI Devices** dialog.

To make up a friendly name:

1. Choose **Options > MIDI Devices** to display the **MIDI Devices** dialog.
2. Double-click the name of a device in the **Friendly Name** column, type a new name, and press ENTER.
3. Enable the **Use Friendly Names To Represent MIDI Devices** check box at the bottom of the **MIDI Devices** dialog.
4. Click **OK**.

Assigning Inputs & Outputs

You assign each track to a MIDI or an audio output using the **Output** drop-down in the Track view. From then on, material on that track will be sent to the appropriate output device.

Note: *If you rearrange your MIDI output devices after making output assignments, you may find MIDI information being sent to different instruments than you expect. Also,* SONAR *allows you to define instruments that are associated with certain outputs and channels. If you use this feature, the name of the output will change to reflect the instrument you have chosen.*

To assign a track to an output

1. Click the **Output** drop-down of the track you want to assign.
2. Select the output you want to use.

To change the output setting for more than one track at a time, select the tracks you want to change and choose **Tracks > Property > Output.**

Note: *Outputs that are used by the External Insert plug-in (see "External Insert plug-in" on page 632) cannot be assigned to track and bus outputs. The only exceptions are master buses that have other instances of the External Insert plug-in routed to them.*

To assign the same audio input port to multiple tracks

1. In the Track view, select the tracks whose audio input port you wish to assign.

2. Click the small drop-down arrow in any selected track's **Input** control -none-.

   The **Input Port** menu appears.

3. Choose **Selected Track Inputs** from the context menu.

   The **Track Inputs** dialog opens with the selected tracks initially highlighted. You can modify the track selection from within the **Track Inputs** dialog. For more information, see Track Inputs dialog.

Note: *The **Selected Track Inputs** command is essentially a shortcut for the **Tracks > Property > Inputs** command.*

4. Select the desired audio input port and click **OK**.

   The audio input port is assigned to all selected audio tracks.

To assign different audio input ports to multiple tracks

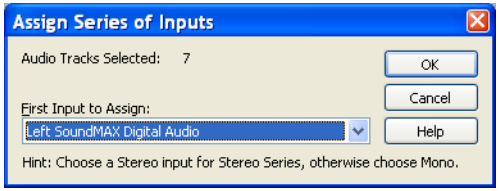
1. In the Track view, select the tracks whose audio input port you wish to assign.
2. Click the small drop-down arrow in the first selected track's **Input** control -none-.

   The **Input Port** menu appears.

3. Choose **Selected Track Input Series** from the context menu.

   The **Assign Series of Inputs** dialog opens, which lets you choose the first input port in the series.

Figure 32. *The **Assign Series of Inputs** dialog*



4. Select the audio input port that should be assigned to the first selected track and click **OK**.

   SONAR will assign consecutive mono input ports to the selected audio tracks, beginning with the track that was clicked in step 2. If a left or right input is selected, then mono inputs will be assigned. If a stereo input is selected, then stereo inputs will be assigned.

To assign the same audio output port to multiple tracks

1. In the Track view, select the tracks whose audio output port you wish to assign.
2. Click the small drop-down arrow in any selected track's **Output** control --- None ---.

   The **Output Port** menu appears.

3. Choose **Selected Track Outputs** from the context menu.

The **Track Outputs** dialog opens.

Note: *The **Selected Track Outputs** command is essentially a shortcut for the **Tracks > Property > Outputs** command.*

4. Select the desired audio output port and click **OK**.

   The audio output port is assigned to all selected audio tracks.

To assign the same audio output port to all stereo buses

1. In the Track view, click the small drop-down arrow in any stereo bus' **Output** control .

   The **Output Port** menu appears.

Note: *Surround buses are ignored.*

2. Choose **Set All Bus Outputs** from the context menu.

   The **Output port** submenu appears.

3. Select the desired audio output port.

   The audio output port is assigned to all stereo buses

Note: *Only hardware main outputs may be assigned, not other buses.*

Choosing the instrument sound (bank and patch)

Electronic keyboards and synthesizers often contain hundreds or thousands of different sounds. Each sound is known as a *patch*. The name comes from the early days of synthesizers, for which you physically rewired (using patch cords) the oscillators and modulators to produce different sounds. Patches are normally organized into groups of 128, called *banks*. Most instruments have between 1 and 8 banks, but MIDI supports up to 16,384 banks of 128 patches each (that's over 2 million patches).

The bank and patch settings in the Track view control the initial bank and patch of a track during playback. Every time SONAR starts playback at the beginning of a project, the bank and patch settings for the track are set to these initial values. Many instruments have descriptive names for their banks and patches. SONAR stores these names in an instrument definition. If you are using an instrument that supports General MIDI, your patch list will contain the 128 sounds that are defined by the General MIDI specification.

Note: *Different MIDI instruments use different types of commands to change banks. SONAR supports four common methods for changing banks. For information about the bank selection method you should use with your MIDI gear, see your MIDI equipment's documentation.*

Tip: *If your bank name is too long to fit in the **Bank** field, hold your cursor over the bank name. A tooltip appears with the complete bank name.*

Note that a single MIDI channel can only play one patch at a time on each instrument assigned to that channel. Therefore, if two or more MIDI tracks are set to the same output and channel but have different bank and patch settings, the patch of the highest-numbered track will be used for all the tracks.

In some projects you want the sound played by a track to change while playback is in progress. You can accomplish this using the **Insert > Bank/Patch Change** command. When you start playback in the middle of a project, SONAR searches back through the track to find the correct patch to use—either the initial bank and patch or the most recent bank/patch change. Note that the Track view only shows the initial bank and patch, even while a different bank and patch are being played back. The only way to see and edit a bank/patch change is in the Event List view. For more information, see the online help topic “The Event List View” on page 512.

To assign an initial bank and patch to a track

1. Right-click on the Track titlebar (the top of the track which contains the track name) and select **Track Properties**.

   The **Track Properties** dialog box appears.
2. In the **Track Properties** dialog box, choose the desired bank and patch from the drop-down lists.
3. To search for a patch containing specific text, click the **Patch Browser** button to the right of the drop-down lists. You can also open the Patch Browser by right-clicking a bank or patch control in the Track or Console views.
4. Click **OK**.

Another way to assign a patch to a track

1. Select the patch you want from the **Patch** drop-down.

To change the bank and patch settings for more than one track at a time, select the tracks you want to change and choose **Tracks > Property > Bank** or **Tracks > Property > Patch.**

To insert a bank/patch change

1. Highlight the track whose bank and patch you want to change by clicking on the track number.
2. Set the Now time to the time at which you want the change to occur.
3. Choose **Insert > Bank/Patch Change** to display the **Bank/Patch Change** dialog box.
4. Choose a bank and patch from the lists.
5. Click **OK**.

SONAR inserts a change in bank and patch. When you play back the project, the initial bank and patch shown in the Track view will be used to the point at which the bank/patch change takes place. You can remove a bank/patch change in the Event List view.

To choose patches with the Patch browser

1. In the Track view or Console view, right-click the patch name in the track module you want to change patches in.

   The **Patch browser** dialog box appears, displaying a list of all the Instrument patch names that have been installed.

Tip: *The Patch Browser can be opened for the selected MIDI track by pressing the SEMICOLON key (;).*

2. Search for a patch name, if desired, by filling in text in the **Search** field at the top of the dialog box.
3. When you find the right patch, click its name and click **OK**.

   SONAR changes the patch of the track you selected.

See:

Patch Browser dialog

Adding effects

You can add both MIDI and audio effects directly from the Track view. SONAR adds these effects in real-time, preserving your track's original data.

To add an audio effect in the Track pane

- In an audio track, right-click in the **FX** field, choose **Audio Effects > Cakewalk,** and select an effect from the menu that appears.

See:

Audio Effects (Audio Plug-ins)

Adjusting volume and pan

The Volume and Pan settings control the initial volume and pan of a track during playback. Every time SONAR starts playback, the Volume and Pan settings for the track are set to these initial levels. SONAR allows you to choose different panning laws if you want (see"Configuring panning laws" on page 210).

In some projects you want the volume or panning of a track to change while playback is in progress. You can accomplish this by drawing a volume or pan envelope in the Track view, or by recording automation. For more information, see the online help topic “Automation”.

Note: *SONAR processes the volume and pan settings by transmitting MIDI volume and pan events (controllers 7 and 10, respectively) when playback starts. If two or more MIDI tracks are set to the same output and channel but have different volume or pan settings, the settings for the highest-numbered track will prevail.*

Note also that not all keyboards and synthesizers respond to these events. Check your instrument’s manual for more information.

To set the initial volume setting

1. Move your cursor to the **Volume** control of the track you want to change.
2. Click and drag to the left to lower the volume or the right to raise the volume.

You can also change the volume settings in a variety of other ways. To change the volume settings for more than one track at a time, select the tracks you want to change and choose **Tracks > Property > Volume.**

To set the initial Pan setting

1. Move your cursor to the **Pan** control of the track you want to change.
2. Click and drag to the left to adjust the pan to the left or to the right to adjust the pan to the right.

   Hard left is 100% left. Hard right is 100% right. Pan is centered at C.

You can also change the pan and volume settings in a variety of other ways. To change the pan settings for more than one track at a time, select the tracks you want to change and choose **Tracks > Property > Pan**.

Configuring panning laws

You can choose from six different panning laws, if you want. A panning law is the mathematical formula that a sequencer or mixer uses to control panning.

To change panning laws

1. Use the **Options > Audio** command to open the **Audio Options** dialog.
2. On the General tab, in the **Stereo Panning Law** field, choose one of these options:
   - **(Default) 0 dB center, sin/cos taper, constant power.** This choice causes a 3 dB boost in a signal that’s panned hard left or right, and no dip in output level in either channel when the signal is center panned.
   - **-3dB center, sin/cos taper, constant power.** This choice causes no boost in a signal that’s panned hard left or right, and 3dB dip in output level in either channel when the signal is center panned.
   - **0dB center, square-root taper, constant power.** This choice causes a 3 dB boost in a

signal that's panned hard left or right, and no dip in output level in either channel when the signal is center panned.

- **-3dB center, square root taper, constant power.** This choice causes no boost in a signal that's panned hard left or right, and 3dB dip in output level in either channel when the signal is center panned.
- **-6dB center, linear taper.** This choice causes no boost in a signal that's panned hard left or right, and 6dB dip in output level in either channel when the signal is center panned.
- **0 dB center, balance control.** This choice causes no boost in a signal that's panned hard left or right, and no dip in output level in either channel when the signal is center panned.

3. Click **OK**.

Adjusting volume trim

Volume Trim acts like the trim control on a mixer, raising or lower the level prior to the volume fader. Volume trim is useful for calibrating your faders to match a dB reference level or for aligning your faders for grouping. The **Volume Trim** control has a range of -18dB to +18dB. Raising or lowering the Volume Trim raises or lowers the apparent volume of the track by that amount without affecting the actual fader level.

To set the volume trim level

1. Move your cursor to the **Volume Trim** control of the track you want to change.

2. Click and drag to the left to lower **Volume Trim** level or to the right to raise **Volume Trim** level.

Assigning a MIDI channel (Chn)

MIDI transmits information on 16 channels, numbered 1 through 16. Every MIDI event is assigned to a particular channel. Some MIDI equipment can accept MIDI information on only a single channel. This channel may be preassigned, or you may be able to change it. Other MIDI equipment, including many electronic keyboards and synthesizers, can accept information on several different MIDI channels at once. Usually, these devices use a different instrument sound for each channel.

On playback, the channel number is used to direct the MIDI information to a particular piece of equipment.

The Chn parameter in the Track view redirects all events in the track to the specified channel, ignoring the channel number stored with each event. If this parameter is left blank, all events in the track are sent to their original channels.

This parameter does not affect the channel information that is stored with each MIDI event. When the track is displayed in other views, like the Piano Roll or Event List view, you will see the original channel that is stored in the file. You can edit the channel values in those views or use the **Process > Interpolate** command.

To set the channel for a track

1. In the track you want to change, click on the black arrow to the right of the **Chn** field and select the channel you want to use.

To change the channel assignment for more than one track at a time, select the tracks you want to change and choose **Tracks > Property > Channel**.

Adjusting the Key/transposing a track (Key+)

Each MIDI note event has a key number, or pitch. On playback, the *key offset* (Key+) parameter transposes all notes in the track by the designated number of half-steps. The value can range from -127 to +127. A value of 12 indicates that notes will be played back one octave higher than they are written.

This parameter does not affect the note number that is stored for each note event. When the clip is displayed in other views, like the Piano Roll, Staff, or Event List view, you will see the original notes as they are stored in the file. To permanently change the pitches, you can edit them individually or use the **Process > Transpose** command.

If the key offset value transposes the key number (MIDI note) outside the allowable MIDI range (0–127), the key number will be transposed to the lowest or highest octave within that range.

You can use the Key+ parameter to assist in preparing scores for instruments whose music is written in something other than “concert” key (such as Bb trumpet). For more information, see the online help topic “Music Notation for Non-concert-key Instruments.”“Music Notation for Non-concert-key Instruments” on page 780.

When you edit the Key+ parameter, pressing [or] changes the value by 12 instead of by 10. This makes it easy to transpose by octaves.

To set the key offset for a track

1. In the track you want to change, click on the **Key+** control.
2. Enter a value (1 = a semitone), or press the + or – key to change the key by a single semitone. Use the [or] key to change the key by 12 semitones (one octave).

To change the key offset for more than one track at a time, select the tracks you want to change and choose **Tracks > Property > Key+.**

Adjusting the note velocity (Vel+)

Each MIDI note event has a velocity, which represents how fast the key was struck when the track was recorded. On playback, the *velocity offset* parameter adjusts the velocity data for all notes in the track by the designated amount. The value can range from -127 to +127. The effect of changing velocities depends on the synthesizer. Some synthesizers do not respond to velocity information. For others, the effect varies depending on the sound or patch you have chosen. Normally, higher velocities result in louder and/or brighter-sounding notes.

This parameter does not affect the velocity that is stored for each note event. When the clip is displayed in other views, like the Piano Roll view, Staff view, or Event List view, you will see the

original velocities as they are stored in the file. You can edit the velocity values in those views, or use the **Process > Scale Velocity** or **Process > Interpolate** command.

Velocity is different from volume in that it is an attribute of each event, rather than a controller that affects an entire MIDI channel. Here's an example of where this distinction might be important. Suppose you have several tracks containing different drum parts. All of these parts would probably be assigned to MIDI channel 10 (that's the default channel for percussion in General MIDI). If you change the volume setting for any track that uses channel 10, all the different drum parts—regardless of what track they're in—would be affected. If you change the note velocity for one drum track, it will be the only one whose volume is affected.

To set the velocity offset for a track

- In the track you want to change, click and drag the **Vel+** control to the desired setting.

To change the velocity offset for more than one track at a time, select the tracks you want to change and choose **Tracks > Property > Vel+**.

Adjusting the time alignment of a MIDI track (Time+)

Each event takes place at a known point in the project. On playback, the *time offset* (Time+) parameter adjusts the times for MIDI events in the track by the designated amount. The value can be as small as a single clock tick or as large as you want.

This parameter can be used to make a part play behind the beat or in front of it or to compensate for tracks that sound rushed or late. The time shift can be used to create a chorus or slap-back echo effect by making a copy of a track and then applying a small offset to the copy. You can use larger time offsets to shift a track earlier or later by several beats or measures.

Note that you cannot shift any event earlier than 1:01:000. For example, if the first event in the track starts at 2:01:000, you cannot shift its start time earlier by more than one measure.

This parameter does not affect the time that is stored for each note event. When the clip is displayed in other views, like the Piano Roll, Staff, or Event List view, you will see the original times as they are stored in the file.

To set the time offset for a track

1. In the track you want to change, click on the **Time+** control.
2. Enter a value, or press the + or – key until you reach the value you want.

To change the time offset for more than one track at a time, select the tracks you want to change and choose **Tracks > Property > Time+.**

Other MIDI playback settings

Two other MIDI settings can affect what happens when you play back your project, as described in the following table:

Option	How it works
Zero Controllers When Play Stops	If this option is enabled, SONAR zeroes (resets) the pitch wheel, the pedal Controller, and the modulation wheel Controller on all 16 MIDI channels whenever playback is stopped. It also sends a “Zero All Continuous Controllers” MIDI message, which turns off other continuous Controllers on newer synthesizers. If you experience frequent stuck notes when playback stops, try checking this option.
Patch/Controller Searchback Before Play Starts	If this option is enabled, SONAR searches for and sends the most recent patch change, wheel, and pedal events on each output and MIDI channel before starting playback. This ensures that all these settings are correct, even if you start playback at an arbitrary point in your project.

Table 37.

To set these options, choose **Options > Project** and click the **MIDI Out** tab. If you have set up a playback loop, enabling either of these options can cause an audible delay when the loop is restarted.

Controlling live MIDI playback—MIDI echo

When you play your MIDI keyboard or controller, the sound that SONAR produces is determined by what hardware or software synth SONAR sends the incoming MIDI data to after SONAR receives the data. This is called MIDI echo. By default, SONAR sends the data to the MIDI output or software synth listed in the **Output** field of the *current track*. The current track is the one whose titlebar has the lighter color—press the up and down arrows on your computer keyboard and watch each track turn lighter in succession as you change different tracks into the current track (you can also click any of a track’s controls to make it current).

However, you can echo MIDI data to much more than just the current track, or turn echoing off on the current track if you want. With a single keyboard or controller, you can echo MIDI data to as many MIDI tracks as you want, meaning that you can simultaneously play as many hardware and software synths as you can hook up to your MIDI interface or run on your computer. You can also have multiple performers on different controllers sending MIDI data to either the same synth or multiple synths. Each SONAR track allows you to select what MIDI input ports and channels the track will respond to. The **Output** field of the track determines what instrument will sound when the track receives the data. Each track’s **Input Echo** button determines whether the track echoes MIDI data.

The Input Echo button

Each MIDI track has an **Input Echo** button, which controls whether the track will echo MIDI data or not. The button has three states: on , dimmed , and off . When the button is on, the track

echoes MIDI data. When the button is dimmed, the track echoes MIDI data because the track is the current track. When the button is off, the track does not echo any data, even if it is the current track. The Off position on a current MIDI track is only available if you disable the **Always Echo Current MIDI Track** option in the **General** tab of the **Global Options** dialog (**Options > Global** command). The dimmed position becomes unavailable with this setting.

There are several ways to turn Input Echoing on:

- Click a track's **Input Echo** button so that it is on.
- Click a track to make the track the current track (if the **Always Echo Current MIDI Track** option on the **General** tab of the **Global Options** dialog is enabled). In this situation (which is the default), if the track's **Input Echo** button is not on, it appears dimmed, to show that this track echoes data because it is the current track.
- If the **Always Echo Current MIDI Track** option on the **General** tab of the **Global Options** dialog is disabled, make a track the current track, and use the **Tracks > Input Monitor/Echo** command (or click the track's **Input Echo** button).

Storing favorite configurations

If you want a track to respond to more than one port or channel, you must create a preset input configuration. If you create some favorite configurations of MIDI input options, not only will they be stored with the project you created them in, but you can save each one as a preset to load in any MIDI track in any project you want. Clicking the drop-down arrow in a track's **Input** field displays the **Inputs** drop-down menu, which has the **Manage Presets** choice that allows you to create and store your favorite combinations of MIDI input choices.

To play one synth at a time from one or more MIDI keyboards

- Since this is SONAR's default behavior, simply use the UP ARROW or DOWN ARROW keys on your computer keyboard to choose the current track (the current track has a gold titlebar), and choose the synth you want to play by using the track's **Output, Bank, Patch**, and **Channel** fields. With the default behavior, all MIDI input from all ports and channels is merged and sent through the current track. Notice that the track's **Input** field says **Omni**.
- If you've disabled the default behavior (see next procedure), you must make sure that the current track's **Input Echo** button is lit up (on) before you can play the synth that the track is patched to.

To disable the default MIDI echo detting

- If you want to turn off the automatic MIDI echoing of the current track, disable the **Always Echo Current MIDI Track** option in the **General** tab of the **Global Options** dialog (**Options > Global** command). If you then turn off the current track's **Input Echo** button and play your keyboard, SONAR will not produce sound.

To play multiple synths from a MIDI keyboard

1. Choose a synth for each track that you want to play by using each track's **Output, Channel, Bank**, and **Patch** fields.
2. In the **Input** field of each track that you want to play, click the drop-down arrow and choose the MIDI input port and channel that you want the track to respond to from the following options:

- **None.** This option actually sets the **Input** field to **Omni**. With this setting the track will respond to any MIDI input coming in on any port (MIDI interface input driver) on any channel.
- **(name of MIDI input driver) > MIDI Omni.** Choosing this option causes the track to respond to any MIDI channel coming from the named MIDI interface input driver.
- **(name of MIDI input driver) > MIDI ch 1-16.** Choosing this option causes the track to respond ONLY to whatever MIDI channel you choose coming from the named MIDI interface input driver.
- **Preset.** If you've created any preset collections of input ports and channels, you can select one here.
- **Manage Presets.** If you want to create or edit any preset collections of input ports and channels, you can select this option (see following procedure).

3. Make sure that the **Input Echo** button on each track that you want to play is turned on.

To create or edit a preset input configuration

1. In the **Input** field of a track that you want to select inputs for, click the drop-down arrow and choose **Manage Presets** from the drop-down menu.

   The **MIDI Input Presets** dialog appears.
2. In the **Input Port** column, find the input port that you want to use for this track (if you only use a single-port MIDI interface, you'll only see one choice).
3. To the right of the input port, select the MIDI channels that you want this track to respond to on this MIDI port.
4. Select channels for any other MIDI port that's listed, if you want to use channels on that port also.
5. If you want to save this configuration, type a name for it in the window at the top of the dialog, and click the **Disk** icon to save it.

Now, when you choose inputs for other tracks, you can choose the preset you saved by clicking the **Presets** option in the track's **Input** drop-down menu. If you want to edit a preset, select it in the top window of the **MIDI Input Presets** dialog, edit it, and click the **Disk** icon. If you want to delete a preset, select it in the same dialog and click the **X** button to delete it.

To use multiple performers on multiple tracks

1. For performer number 1, click the **Input** drop-down menu(s) of the track(s) you want that performer to play, and choose the port and MIDI channel that performer 1's keyboard is sending data to SONAR on.
2. Repeat step 1 for all other performers.
3. If there is any track that you want more than one performer to play, create a preset of the input ports and channels that you want that track to respond to (see previous procedure).
4. Make sure the **Input Echo** button is on for each track you want to play.

To turn MIDI echo (and input monitoring) On or Off for all tracks

- In the **Playback State** toolbar (to display, use the **Views > Toolbars > Playback State** command), click the **Input Monitor** button (last one on the right).

Local control

You should normally disable the Local Control setting on your master keyboard to prevent notes from being doubled when you play your keyboard. If you disable Local Control, your keyboard sends notes that you play to SONAR, which echoes them to the synthesizer, which plays them only once.

When SONAR starts, you can have it send a special MIDI message that attempts to disable Local Control automatically. Most modern synthesizers respond to this message. If yours does not, you will need to disable Local Control every time you turn it on for use with SONAR.

If your synthesizer does not let you disable **Local Control** (this is rare), you can use the **Local On Port** setting in the **Input** tab of the **Project Options** dialog box to indicate the number of the output port connected to your synthesizer. SONAR will then refrain from sending MIDI echo data to that port. In this configuration, you may need to turn your synthesizer's volume control up and down from time to time to avoid hearing it play along with your other modules. If this situation doesn't apply to you, the **Local On Port** should be set to **0**.

To automatically disable all local control whenever you launch SONAR

1. In the directory where SONAR is installed, double-click on the `TTSseq.ini` file to open it.
2. In the `[Options]` section, add the line:

   ```
   SendLocalOff=1
   ```

3. Save the file and close it.
4. When you launch SONAR, it automatically sends a Local Off message to your keyboard.

Note: *Not all keyboards respond to Local Off messages.*

Playing files in Batch mode

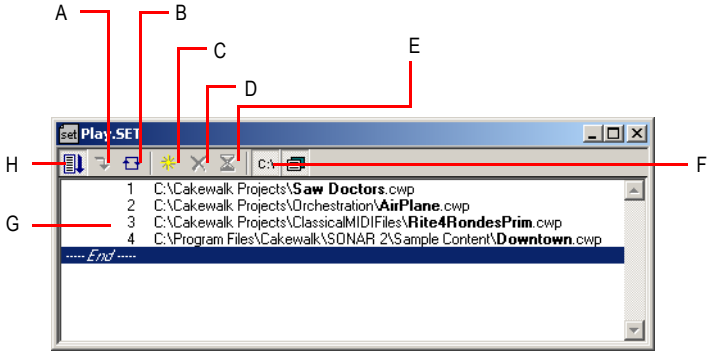
SONAR allows you to play several files in sequence automatically using the Play List view. You can use this feature in live performance applications or just for fun.

SONAR's Play List view lets you create and work with a series of project, MIDI, and bundle files. As each file plays, SONAR loads it and displays it in the Track view and other views like any other project file.

The Play List view

The Play List view lets you create, edit, and save a **play list** (or **set**) of up to 999SONAR projects. Once you've created the list, you can play back the entire sequence automatically. You can even program the list to pause between songs for a fixed amount of time or to wait for a keystroke before proceeding.

Figure 33. *The Play List view*



A. *Switch to the next song* ***B.*** *Repeat the list* ***C.*** *Add a song* ***D.*** *Drop a song* ***E.*** *Set a delay* ***F.*** *Display full path* ***G.*** *List of songs* ***H.*** *Enable the play list*

Play lists can be saved for future use. Play list files have the extension .set.

To create and edit a play list

To create and edit a play list in the Play List view, follow the instructions in the table:

To do this	Do this
Open an existing play list	Choose **File > Open**, choose **Play List** from the **Files of Type** list, choose the file you want and click **Open**
Create a new play list	Choose **File > New,** choose **Play List Set** from the list, and click **OK**
Add songs to the play list	Click or press INSERT, choose a file from the **Add Song to Play List** dialog box, and click **Open**
Set the delay after a song	Click on the song in the play list, click , enter the delay you want, and click **OK**
Change the order of songs	Drag the file to a new location in the play list
Copy a song to another location in the play list	CTRL-drag the file to a new location in the play list
Remove a song from the play list	Select the song and click or press the DELETE key
Save the play list	Choose **File > Save**; or choose **File > Save As**, enter a file name, and click **Save**

Table 38.

To play files from the Play List view

To play back files from the Play List view, follow the instructions in the table.

To do this	Do this
Activate the play list	Click in the **Play List view** toolbar so that the button is pressed. If this button is not pressed, only a single file will play when you start playback.
Choose the starting song	Double-click the file you want to start with. The project is opened and displayed as usual.
Start playback	Click , choose **Transport > Play**, or press the SPACEBAR.
Stop playback	Choose **Transport > Stop,** or press the SPACEBAR.
Skip to the next file	Click in the **Play List view** toolbar.
Loop continuously over the play list	Click the button in the **Play List view** toolbar.
Show or hide file name extensions and folder names (path)	Click the button to enable or disable the display of folders.

Table 39.

Video playback, import, and export

Video files play in the Video view in real time as your project plays. You can also view your video on an external DV device connected to an IEEE 1394 port (“FireWire”).

The **File > Import > Video** command lets you include the following video file types in your project:

- AVI (also called Video for Windows)
- MPEG
- Windows Media Video
- QuickTime (.mov files only)

Note: *Some .mov and .avi files contain no video. You can’t import these files with the **File > Import > Video** command. You must use the **File > Import > Audio** command instead, and set the **Files of Type** field to **All Files**.*

The **File > Export > Video** command lets you export your audio tracks and your imported video as the following file types:

- AVI (also called Video for Windows)

- Windows Media Video
- QuickTime

SONAR also has a Video Thumbnails pane at the top of the Track view, which shows individual frames of your video at different places in your project (See “Using the Video thumbnails pane” on page 225 for more information).

You open the Video view by using the **Views > Video** command**.** The Video view displays the Now time (as in the Big Time view) and the video itself. The display in the Video view is synchronized with the Now time, giving you convenient random access to the video stream. This makes it easy to align music and digitized sound to the video.

Commands in the Video view’s right-click pop-up menu let you set the time display format, the size and stretch options for the video display, the video start and trim times, and other options.

QuickTime issues

In order to import/export QuickTime files in SONAR, you must install both the filters AND QuickTime. Below are some other known QuickTime issues:

- QuickTime Import/Export requires version 6.5.1 or higher of the QuickTime Player to be installed. The QuickTime Player is not included with SONAR, but can be downloaded separately from Apple's web site (www.apple.com/quicktime/download/win.html).
- Audio mixdown to QuickTime must be set to 16 bits stereo or mono, or the resulting export will create a unusable file or abort with an error.
- Audio mixdown to QuickTime must be set to 48 KHz or less or the resulting export will create a file that plays back incorrectly.
- When exporting to QuickTime, the frame rate of the QuickTime video compressor will default to “best possible”. Since not all movies in a SONAR video project correctly report their frame rate, the best practice is manually enter the desired frame rate. This is done in the video settings of the QuickTime video compressor.
- Exports to QuickTime from a SONAR video project created from an AVI using the Indeo video compressor will create a movie with white frames.
- Exports to QuickTime may have an extra white frame on the last frame of the movie. This extra frame can be removed with the QuickTime Pro Player or another QuickTime editing application.

See:

Importing and playing back videos

Optimizing video performance

Importing and playing back videos

Here are step-by-step procedures for inserting and playing back videos:

To load a video file into a project

1. Choose **File > Import > Video**, or choose **Insert** from the Video view’s pop-up menu.

The **Import Video** dialog appears.

Tip: *You can also drag a video file from the Medai Explorer view and drop it on the Video Thumbnails pane.*

2. In the **Files of Type** field, select the kind of video file you're looking for.
3. Select a file.
4. Check the **Show File Info** option to display information about the file in the **File Info** section of the dialog.
5. Check the **Import Audio Stream** option if you want to load the file's audio data.
6. Check the **Import As Mono Tracks** option if you want to import the file's audio data as one or more mono tracks.
7. Click **Open**.

SONAR loads the video file and displays it in the Video view. If you choose to import audio data, SONAR inserts a new track above the currently selected track, and puts the audio data in a clip or clips on the new track.

Note 1: *When you save a project that contains video, SONAR saves the project's video file by reference only; the actual video data remains in the original file. Video data is not saved in bundle files, so it must be backed up on its own.*

Note 2: *After you load a video file into a project, you can play it back either in the Video view, or on an external DV device through a FireWire port. See "Video playback on a FireWire DV device" on page 228 for more information.*

To play a video file in the Video view

1. Open the Video view by choosing **Views > Video.**
2. Press the SPACEBAR to play or stop video playback.
3. To change the display size of the video, right-click in the Video view and choose **Stretch Options > [desired size]** from the pop-up menu.

Note: *When you play a video file that has high temporal compression, such as movies optimized for web delivery, playback may not be smooth unless you disable video thumbnails, (see "Using the Video thumbnails pane" on page 225 for more information).*

To delete the video from the project

1. Open the Video view by choosing **Views > Video.**
2. Right-click in the Video view and choose **Delete.**

SONAR removes the video from the project. Note that imported audio data is not deleted.

To enable or disable video playback

1. Open the Video view by choosing **Views > Video.**
2. Right-click in the Video view and choose **Animate.**

If your computer is not fast enough to play back video efficiently, you can get better performance by temporarily disabling video animation during playback.

To set the Time display format

- Click the time display to cycle between **MBT**, **SMPTE**, **Frames** and **None**

  Or
- Right-click in the Video view and choose an option from the **Time Display Format** menu:

To do this	Do this
Select a time format	Choose **MBT, SMPTE, Frames or None**
Change font or font color	Choose **Font** and select new font characteristics
Turn off the time display	Choose **None**

Table 40.

To adjust the SMPTE time

1. Move the Now time to the place where you want SMPTE time to be either 00:00:00:00, or a number you can enter.
2. Use the **Transport > Set Timecode At Now** command to open the **Set Timecode At Now Time** dialog.
3. If you want to set SMPTE time to 00:00:00:00 (the dialog's default value) at the current Now time, click **OK** to close the dialog. If you want to set SMPTE time to some other value at the current Now time, type that value into the **SMPTE/MTC Time** field, and click **OK** to close the dialog.

To choose a frame rate

1. Use the **Options > Project** command to open the **Project Options** dialog.
2. On the **Clock** tab, under **Timecode Format**, choose the frame rate you want from the six choices, and then click **OK** (for more information, see "SMPTE/MIDI Time Code Synchronization" on page 824).

To set the Video display format

Right-click in the Video view and choose an option from the **Stretch Options** menu:

To do this	Do this
Display the video in its original size	Choose **Original Size**
Stretch the video to fill the Video view	Choose **Stretch to Window**
Stretch the video as much as possible while preserving the original aspect ratio	Choose **Preserve Aspect Ratio**
Make the video display as large as possible, but only enlarge by integral multiples	Choose **Integral Stretch**
Display the video in full screen mode	Choose **Full Screen**

Table 41.

SONAR adjusts the video display according to the selected option. The stretch option is used to recalculate the video display size whenever you resize the Video view.

To set the background color

- Right-click in the Video view and choose a color option from the **Background Color** menu.

To set the Start and Trim times

1. Right-click in the Video view and choose **Video Properties**.
2. Set options as described in the table:

Option	What it means
Start Time	The time in your SONAR project at which you want the video file to start playing
Trim-in Time	The time in the video file at which you want video playback to start
Trim-out Time	The time in the video file at which you want video playback to stop

Table 42.

SONAR synchronizes the video to the project according to the specified Start and Trim times.

Note: *The project's video file is saved in the project by reference only, the actual video data remains in the original file. Video data is not saved in bundle files, so it must be backed up on its own.*

See also:

Exporting video

Optimizing video performance

Exporting video

After you've mixed your audio tracks the way you want them, you can export the inserted video file together with your audio tracks to create a new video file.

When you export a video, any changes you've made to the Start, Trim-In, or Trim-Out times determine how long your new exported video is compared to the original video that you inserted into your SONAR project.

Note: *If you're exporting an AVI file, the **No Compression** option in the **Video Codec** field of the **AVI Encoder Options** dialog is a good choice. This choice does not change or compress your source video material. If you want your exported AVI file to be compressed, the **Cinepak** option will create an AVI file that plays back smoothly with decent quality. The **MJPEG** option will create an AVI file that does not play back as smoothly, but is a high quality format to archive a file in.*

To export a video

1. Make sure your audio tracks are completely mixed, and your video Start time, Trim-In time, and Trim-Out time are set the way you want them.
2. Use the **File > Export Video** command.

   The **Export Video** dialog appears.
3. In the **File Name** field, type a name for your new video.
4. In the **Files of Type** field, choose the kind of video file you want the exported file to be.
5. Click the **Encoding Options** button to open a dialog of encoding options for the kind of file you're creating. *Some codecs do not work:* click the **Help** button in the dialog for help choosing options.

Note: *If you're exporting an AVI file to either a 24-bit audio format or to a multi-channel (surround sound) format, set the Audio Codec in the AVI **Encoding Options** dialog to **No Compression**.*

6. Click the **Audio Mixdown Options** button to open a dialog of audio mixdown options. Click the **Help** button in the dialog for help choosing options.
7. Click **Save** to export your video.

Optimizing video performance

Here are a few tips to optimize video performance:

- Viewing your video in on an external DV device will significantly decrease the processor load on your computer if the video stream is a DV AVI file. See "Video playback on a FireWire DV device" on page 228 for more information.

- If you intend to do a lot of seeking around or looping and editing while a video file is loaded, make sure that your video file has sufficient keyframes. Since each frame has to be computed from the last keyframe encountered, if you have very few keyframes in the video, performance may be slow. To change the number of keyframes, you may recompress the file using the **File > Export Video** command and specify more frequent keyframes. Choose a suitable video compressor such as Cinepak and change the KeyFrame Rate parameter to a number between 1-5. A value of 1 makes every frame a keyframe, and higher numbers insert a keyframe after that many frames.
- Changing the video properties of an AVI file, such as Trim and Start time, can make realtime performance slightly slower. You can make these changes permanent (and thereby reduce the load on your CPU) by using the **File > Export Video** command, and then re-importing the file.
- Playing videos at a resolution (video size) of 320x240 is usually a high enough resolution to monitor the video while you're composing a soundtrack. You can still choose to stretch the video to full screen at this resolution. You set the video size on the **Render Quality** tab of the **Video Properties** dialog. Using a higher resolution can bog down your computer if you're processing audio tracks at the same time.

See also:

Using the Video thumbnails pane

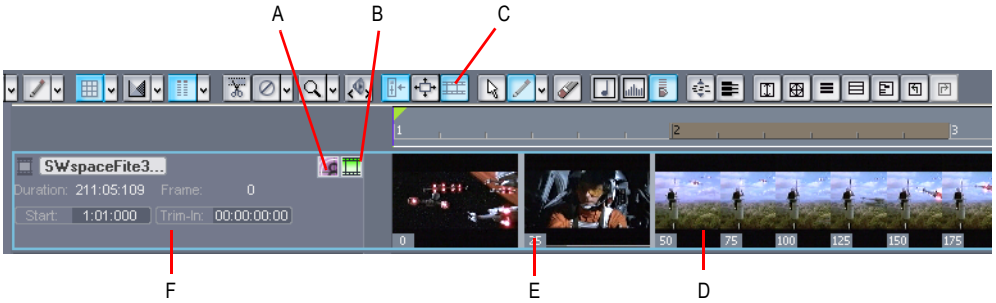
Using the Video thumbnails pane

At the top of the Track view in SONAR is the Video Thumbnails pane, which displays individual frames of your video at certain time intervals of your project. The time interval between displayed frames is determined by the zoom level you choose. If you zoom in far enough, you can view each individual frame of your video.

Note 1: *If you're playing back a highly compressed movie (not many keyframes in the file), it can take about a minute to redraw video thumbnails when you're playing the movie or resizing a window.*

Note 2: *Some Windows Media videos do not report their frame rate to SONAR. SONAR can play these files, but cannot create thumbnails from them, so no thumbnails appear in the Thumbnail pane.*

Figure 34. *The Video Thumbnails pane*



A. *Show/hide frame numbers button* ***B.*** *Show/hide thumbnails button* ***C.*** *Show/hide video pane button*
D. *Splitter bar* ***E.*** *Frame number* ***F.*** *Video track strip*

Here are the various commands and functions of the Video Thumbnails pane:

- You can show or hide the pane.
- You can show or hide the video thumbnails.
- You can display absolute frame numbers.
- You can resize the thumbnails while preserving the aspect ratio by dragging the splitter bar.
- The video track strip at the top of the Track pane has display fields for **Video File Name**, **Start Time**, **Trim-In Time**, **Trim-Out Time**, **Duration**, and **Current Frame**, as well as a toggle buttons to show/hide the thumbnails (without hiding the Video Thumbnails pane), and to show/hide frame numbers on individual frames. You can edit the **Start Time**, **Trim-in Time**, and **Trim-Out Time** fields.
- SONAR saves the size and state of the Video Thumbnails pane on a per/project basis.
- The Video Thumbnails pane zooms horizontally when you use the standard Track view commands for horizontal zooming. You control the height of the Video Thumbnails pane by dragging the splitter bar up or down that's at the bottom of the Video Thumbnails pane.

For step-by-step instructions, see the following procedures:

To hide or show the Video thumbnails pane

- Drag the splitter bar that separates the Video Thumbnails pane from the Clips pane.

  Or

- Use the **Views > Video Thumbnails** menu command.

  Or

- Click the **Show/Hide Video** button in the **Track view** toolbar.

To turn Video thumbnails On or Off

1. Right-click the Video Thumbnails pane or the Video Thumbnails track strip.

2. Choose **Show/Hide Thumbnails** from the pop-up menu that appears.

   Or

- Click the **Show/Hide Thumbnails** button in the **Track view** toolbar.

To hide or show frame numbers on frames

- In the video track strip, click the **Show/Hide Frame Numbers** button .

To open the Video properties dialog

- Double-click the video track strip.

To open the Video view

- Double-click the Video Thumbnails pane.

To move the Now time to a thumbnail

- Click the thumbnail.

To change the Start time

- In the video track strip, click the **Start** field, type a new number in Measure/Beat/Tick format, and press ENTER. The start time is the time in your SONAR project at which your video starts to play.

To change the Trim-In time

- In the video track strip, click the **Trim-In** field, type a new number in SMPTE format, and press ENTER (you can press the SPACEBAR instead of typing colons, if you want, and you can type single zeros instead of double zeros). The **Trim-In** time is the time in your video file at which you want to start video playback.

To change the Trim-Out time

- In the video track strip, click the **Trim-Out** field, type a new number in SMPTE format, and press ENTER (you can press the SPACEBAR instead of typing colons, if you want, and you can type single zeros instead of double zeros). The **Trim-Out** time is the time in your video file at which you want to stop video playback.

To use the Video thumbnails context menu

1. Right-click the Video Thumbnails pane or the Video Thumbnails track strip.
2. Choose any of these options from the pop-up menu that appears:
   - Show/Hide Thumbnails
   - Display Absolute Frames
   - Open Video View
   - Insert Video
   - Delete Video
   - Export Video

- Video Properties

Video playback on a FireWire DV device

You can view your video projects on an external FireWire DV device.

Note: *This feature will decrease the processor load to your computer if the video stream is a DV AVI file. If the stream is not DV AVI, the CPU load will significantly increase, compared to playing back onscreen with SONAR's Video view.*

To convert a Video project to DV AVI format

1. Use the **File > Export Video** command.

   The **Export Video** dialog appears.
2. In the **File Name** field, type a name for your new video.
3. In the **Save as Type** field, choose **Video for Windows**.
4. Click the **Encoding Options** button to open the **AVI Encoder options** dialog, and choose **DV Video Encoder** in the **Video Codec** field. Click **OK**.
5. Click the **Audio Mixdown Options** button to open a dialog of audio mixdown options. Choose the audio options you want, but remember that if you plan to save the project to DV tape, choose the following audio format:
   - **Channel Format.** Choose **Stereo**.
   - **Sample Rate.** Choose **48000**.
   - **Bit Depth.** Choose **16**.
6. Click **Save** to export your video.

Once you save the video file, it can be re-inserted into a project (see "Importing and playing back videos" on page 220). If the project will ultimately be exported to tape, that project will need to have an audio sample rate of 48 KHz playing back at 16 bits.

To play video on an external DV device

1. Connect your external FireWire device. Make sure Windows recognizes the device, and displays the device's icon on the Windows taskbar.
2. Launch SONAR and open your video project.
3. In SONAR's video view (**Views > Video** command), right-click the Video view and choose **External DV Output > *<name of external DV device>*** from the pop-up menu.
4. Play your SONAR project.

   The video disappears from the Video view and appears on your external monitor or camcorder. Leave the Video view open so that you can move the Now Time frame-by-frame with the Video view keyboard shortcuts.

If the Video view is the active window, you can use keyboard shortcuts to advance by a frame or a frame increment. The +/-, and left/right arrow keys move forward/backwards by a single frame. If you

hold down the CTRL key, then the frame increment value is used (default = 5 frames). You can also use the [and] keys to seek by the frame increment.

If your video does not play back in sync with your audio, see Synchronizing external video playback to audio.

External DV output (IEEE 1394/FireWire)

SONAR relies on the Microsoft AV/C drivers to communicate with DV devices that are connected to a IEEE 1394 FireWire bus on your computer, in order to control and preview video to digital video devices.

If another software application overwrites or disables these drivers, the Preview to FireWire and Print to Tape feature may not function correctly. If you are going to install a software application that uses DV devices connected to the IEEE 1394 FireWire bus, please check with the software vendor about DV device drivers it may install. Also, please check with the manufacturer of your DV device for AV/C-compliance information. The following devices have been tested and known to work properly with SONAR:

- ADS Pyro A/V Link DV transcoder
- Canopus ADVC-100 DV transcoder
- Canon ZR-85 miniDV camcorder

Note: *When using DV AVI movies, the transcoding unit must be set to the same format (NTSC or PAL) as the video file, or Preview to FireWire and Print to Tape will fail to work properly. Also, CPU consumption will be lower when the source material is in DV format, since the format is native to the FireWire device and doesn't incur a CPU hit for transcoding video.*

Exporting a project to a FireWire DV device

Once your project sounds the way you want it to, you can export the video and audio together to an external FireWire DV device. This is called “printing to tape,” if your external device uses tape.

To export a project to an external DV device

1. Use the **File > Export > Video** command to open the **Export Video** dialog.
2. In the **Save as Type** field, choose **AVC Compliant Device**. You might see a different name in the drop-down menu, depending on what type of external device you are using.
3. Click the **Audio Mixdown Options** button to open the **Audio Mixdown Options** dialog.
4. In the **Audio Mixdown Options** dialog, choose the following options, and then click **OK**:
   - **Channel Format.** Choose **Stereo**.
   - **Sample Rate.** Choose **48000**.
   - **Bit Depth.** Choose **16**.
5. In the **Export Video** dialog, click the **Encoding Options** button to open the property page of your external device.

6. In the property page, use the transport controls to position the tape in your external device to a blank area for recording.
7. Close the property page, and click the **Save** button in the **Export Video** dialog to start exporting. If you're printing to a device that uses tape, the tape stops rolling when the export process is finished.

Synchronizing external video playback to audio

Because there is more latency in FireWire video playback than in PC digital audio playback, video playback on an external device will probably be playing back later than the audio tracks in SONAR.

To sync external video to audio

1. Right-click the Video view and choose **Video Properties** from the pop-up menu to open the **Video Properties** dialog.
2. On the **Render Quality** tab of the dialog, under **External DV Output**, enter an offset number in the **Video Sync Offset** field. The number you enter here causes the Video to start playing sooner than the audio. It's helpful if your video has some pre-roll footage that contains a visual sync point.

Note: *The offset is accurate to 3 decimal places, e.g. 1 ms (a thousandth of a second). One frame of video is approximately 33 ms long for NTSC and 40 ms for PAL; the offset will typically be less than 1 second.*

3. Click **OK** to close the dialog. Play your video, and readjust the **Video Sync Offset** number as needed.

Locating missing audio

If you try to open a project and SONAR is unable to locate all the audio files that the project references, the **Find Missing Audio** dialog appears. The **Find Missing Audio** dialog helps you find any missing audio in your project.

See:

The Find missing audio file dialog

Restoring missing audio files

Managing shared and external files

The Find missing audio file dialog

Use the **Locate Missing Audio File** dialog to find missing audio in your project. The following is a brief description of the options you have in this dialog:

- **Open.** Click this button once you have searched for and found the missing audio file.
- **Skip.** Click this button to move to the next missing file. When you skip and audio file your project

opens without that piece of missing audio.

- **Skip All.** Click this button to skip all missing audio files. When you skip all missing audio files, you project opens without those pieces of missing audio
- **Search.** Click this button to begin a search of all available hard drives for your missing audio file.
- **After locating the file Options.** You can choose to either move an audio file to the project's audio data folder, copy an audio file to the project's audio data folder, or leave an audio file in its current folder.

For more information, see Find Missing Audio File dialog.

Restoring missing audio files

When you open a project file that references audio files which SONAR can not find, the **Locate Missing Audio** dialog appears. Use the following procedure to restore the missing audio files to your project.

To restore missing audio files

1. In the **Locate Missing Audio** dialog, click the **Search** button.

   The **Search for Missing Audio** dialog appears and SONAR begins searching all available hard drives for the missing file or files.
2. When SONAR is finished searching, the files that it has found appear in the dialog.
3. Select the file or files that SONAR has found and click **OK**.

   The **Locate Missing Audio** dialog appears.
4. Select one of the following options:
   - **Move file to Project Audio Folder.** Use this option if you are sure that no other projects are referencing this file in its present location.
   - **Copy file to Project Audio Folder.** Use this option if the missing file is shared with another project and you want to keep all of your project's audio files together.
   - **Reference file from present location.** Use this option if you want to leave the missing file in its current location now that SONAR knows where it is.
5. Click **Open**.

SONAR moves, copies or references the missing file or files as you instructed.

Managing shared and external files

You may want to share files between projects. The files you want to share may be frequently used sound effects or drum loops. SONAR allows you to choose whether to copy imported audio files to your project's audio data directory or to link to them in their current (external) location.

Note: *External files are defined as any file not in the project's audio data folder (or a subfolder within the project's audio data folder).*

To configure SONAR to always copy files to the project Audio data folder

Use this procedure if you want to keep all of your project's audio in one folder (your project's audio data directory).

1. Select **Options > Global** and click on the **Audio Data** tab.
2. In the **All Projects** section, click the **Always Copy Imported Audio Files** option.

To configure SONAR to share external files

SONAR allows you to share external files (files not in the project's audio data directory). There are some exceptions, however. Files that have a different sampling rate or bit depth are always copied to the project's audio data directory. Also, if the **Always Copy Imported Audio Files** option in the **Audio Data** tab of the **Global Options** dialog is checked, imported audio is always copied to your project's audio data directory.

Do the following to ensure that you are sharing files:

1. **Uncheck the Always Copy Imported Audio Files** option in the **Global Options** dialog.
2. In the **Open** dialog, when importing audio, make sure the **Copy Audio to Project Folder** option is unchecked.

Recording

You can add sound or music to a SONAR project in many different ways. You can record your own material using a MIDI-equipped instrument, use a microphone or another audio input to record digital audio information, or import sound or music data from an existing digital data file. With the Input monitoring feature, you can hear your audio instruments exactly how they sound in SONAR, including any plug-in effects (effects are not recorded, however). When you record audio or MIDI tracks, SONAR displays a wave preview of your recorded data as you record it.

You can also input new material using your computer keyboard or mouse using the Piano Roll view, the Staff view, or the Event List view. For more information about entering music using these views, see the online help topics: The Staff View, The Piano Roll View, and The Event List View.

See:

Creating a new project

Preparing to record

Recording music from a MIDI instrument

Input quantizing

Arpeggiator

Recording audio

Input Monitoring

Loop Recording

Punch Recording

Step Recording

Recording Specific Ports and Channels

Importing Music and Sound

Saving Your Work

Creating a new project

You can add music and sound to an existing project or to a new project. Just as in any Windows program, you open an existing project file using the **File > Open** command, and create a new project file using the **File > New** command.

When you create a new SONAR project, there are some additional parameters you can set to make it easier to work on your project. These include:

- Meter and key signature
- Metronome and tempo settings
- Audio sampling rate
- MIDI timing resolution

See:

Creating a new project

Setting the Meter and Key signatures

Setting the Metronome and Tempo settings

Setting the audio sampling rate and bit depth

Using per-project audio folders

For ease of backing up your audio files in a project, SONAR allows you to use a separate audio folder for each project. This feature is off by default.

To enable per-project audio

1. Select **Options > Global.**

   The **Global Options** dialog appears.
2. Click the **Audio Data** tab.
3. In the **Audio Data** tab, click the **Use Per-Project Audio Folders** option.
4. Click **OK**.

Note: *If you use the default project that is created when you open SONAR, you are not using per-project audio. You must use the **Copy All Audio with Project** option in the **Save As** dialog to create a per-project audio folder. For more information, see “To Save an Existing Project Using Per-project Audio” on page 838.*

Creating a new project File

When you create a new project you are asked to choose a template to use for your new file. If you have per-project audio folders enabled (for more information, see the online help topic Using per-project audio folders), you are also asked to specify a file name, the folder where you want to store

the file, and the folder where you want to store the file's audio. You can override per-project audio by unchecking the **Store Project Audio in its Own Folder** option.

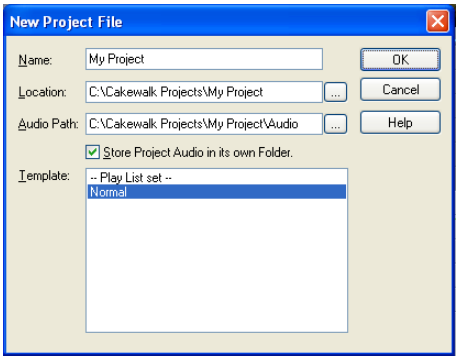
SONAR includes a set of templates you can use to create a new project. These templates include common types of ensembles, such as rock quartets, jazz trios, and classical full orchestras. When you create a new project using one of these templates, SONAR creates a project that has MIDI settings predefined so that one track is set up for each of the instruments in the ensemble. SONAR also includes a template with two MIDI and two audio tracks (called the Normal template). If you are creating a new project that will contain only audio material, use the Audio Only template. If you are creating a new project that will contain only MIDI material, use the MIDI Only template.

You can create your own template files and use them as the basis for other new projects. For more information, see "Templates" on page 735.

To create a new project file

1. Choose **File > New** to display the **New Project File** dialog box.

Figure 35. *The **New Project File** dialog*



2. If you have the per-project audio folders option enabled, enter a file name, set the folder where you want to store the new file, and set the folder where you want to store the new file's audio.
3. Choose a template from the list.
4. Click **OK**.

SONAR creates the new project file and displays it with the Track view open.

Setting the Meter and Key signatures

By default, a new SONAR project is in 4/4 time and the key of C major. You can change these settings to any desired **Meter** or key. These settings apply to all the tracks in a project. You cannot set different meter or key signatures for different tracks.

The meter or key signature of a project can change at any measure boundary. To insert changes in the meter or key signature, use the **Views > Meter/Key** command to display the Meter/Key view, or use the **Insert > Meter/Key Change** command.

If you are creating a new project that will contain only audio material (no MIDI material), you do not need to set the meter and key signature.

Note: *Groove clips do not follow your project's key. Groove clips follow the project pitch (in the* ***Markers*** *toolbar and pitch markers in the Time Ruler. For more information, see "Working Groove Clip audio" on page 419.*

The key signature controls how SONAR displays notes in the Staff view, the Event List view, and elsewhere. The meter tells SONAR the number of beats per measure and the note value of each beat. Common meters include:

- 2/4 (two beats per measure, each quarter note gets a beat)
- 4/4 (four beats per measure, each quarter note gets a beat)
- 3/4 (three beats per measure, each quarter note gets a beat)
- 6/8 (six beats per measure, each eighth note gets a beat)

The top number of a meter, the number of beats per measure, can be from 1 through 99. The bottom number of a meter is the value of each beat. You can pick from a list of values ranging from a whole note to a thirty-second note.

The meter determines the following:

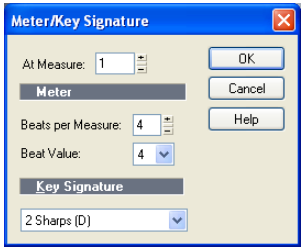
- Where the metronome accents are placed
- How the Now time is displayed
- How the Staff view is drawn
- How grid lines are displayed in the Piano Roll view

To Set the Meter and Key signature

1. Display the **Views** toolbar by choosing **Views > Toolbars > View.**
2. Click on the **View** toolbar to open the Meter/Key view.
3. Click to open the **Meter/Key Signature** dialog box.

   The **Meter/Key Signature** dialog appears.

Figure 36. *The* ***Meter/Key Signature*** *dialog*



4. Enter the top and bottom meter values in the **Beats per Measure** and **Beat Value** fields.

5. Choose the key signature from the **Key Signature** list.

6. Click **OK**.

You can also set the meter and key signature in the **Large Transport** toolbar display, or by using the **Insert > Meter > Key Change** command.

Setting the Metronome and Tempo settings

The metronome counts off each beat in a measure, so you can hear the tempo of your project. You can choose to have the metronome sound during recording, during playback, or both. When you start recording, SONAR can play any number of beats or measures of metronome clicks before recording begins. This can help you “get in the groove” before you start performing. These beats or measures are called the *count-in*.

When you create a new project, you should set the metronome to play during the count-in and while recording. If you are adding material to an existing project, you might only need the metronome for the count-in.

You can customize the metronome sound to use audio or any note on a MIDI instrument. By default, SONAR uses a hi-hat cymbal sound from a General MIDI drum kit for the MIDI metronome, but you can change this setting to anything you like by changing the MIDI output, MIDI channel, and duration. You can also choose the note and velocity (volume) to use for the first beat of each measure and for all other beats. The metronome settings are stored separately with each project, so you can use different settings for each one.

Most metronome options can be set in the **Metronome** toolbar:

Figure 37. *The **Metronome** toolbar*

***A.** Record count-in **B.** Measures **C.** Beats **D.** Metronome during playback **E.** Metronome during record **F.** Use Audio Metronome **G.** Use MIDI metronome **H.** Metronome settings*

If you don’t see the **Metronome** toolbar, use the **Views > Toolbars** command to open the **Toolbars** dialog box, and check the **Metronome** check box. The metronome MIDI note parameters must be set in the **Metronome Settings** dialog box.

Note: *If you are synchronized to an external clock source, you cannot use the count-in feature. For more information, see “Synchronizing Your Gear” on page 819.*

To set the tempo and metronome for a new project

1. In the **Metronome** toolbar, select the **Metronome during Recording** and **Metronome during Playback** options.

2. If you want to hear a count-in before recording begins, set the count-in to 1 or more. Select **Count-in Measures** or **Count-in Beats**.
3. Select **Use Audio Metronome** and/or **Use MIDI Metronome**.
4. Arm at least one track.
5. Press R or click to start recording. The count-in will play, and the Now time will start to advance.
6. If necessary, stop playback and adjust the tempo using the tempo controls in the toolbar and restart playback. Repeat until the metronome plays the tempo you want.
7. Press the SPACEBAR or click to stop recording.
8. Press W, or click to rewind to the beginning of the piece.

Your tempo and metronome settings are now ready. When you save the project file, the metronome and tempo settings will be saved as well.

To change your Metronome settings

1. Open the **Metronome Settings** dialog box in one of the following ways:
   - Click **Metronome Settings** in the **Metronome** toolbar.
   - Choose **Options > Project** and click the **Metronome** tab.
2. Change the metronome settings as indicated in the following table:

To do this	Do this
Enable the metronome during playback	Check **Playback**
Enable the metronome during recording	Check **Recording**
Enable the count-in	Enter the number of clicks for the count-in in the **Count-in** box, and select **Measures or Beats**
Use the audio	Check **Use Audio Metronome**
Use a MIDI note as the sound	Check **Use MIDI Note** and choose the output, channel, and other settings

Table 43.

3. Click **OK**.

Your metronome settings will be saved with the project file.

To set the MIDI metronome sounds from your MIDI instrument

1. Select a track in the Track view that is assigned to the MIDI device you want to use for the metronome sound.

2. Click **Metronome Settings** in the **Metronome** toolbar to open the **Project Options** dialog box.
3. Make sure that the settings in the **Output** and **Channel** fields match those for the track in the Track view.
4. Click on the **Key** box in the **First Beat** or the **Other Beats** section.
5. Play a note on your MIDI instrument. The note number is entered automatically. The velocity is not updated.
6. Click **OK**.

Your metronome settings will be saved with the project file.

Setting the audio sampling rate and bit depth

Each SONAR project has an audio *Sampling rate* and an audio driver *Bit depth* that indicate the level of accuracy with which audio data are sampled and processed. The same parameters are used for all the digital audio in a project. When you create a new project, if you do not want to use the default setting, you must choose a sampling rate before you start recording audio.

SONAR lets you choose from several different sampling rates: 11025 Hz, 22050 Hz, 44100 Hz, 48000 Hz, 88200 Hz, 96000 Hz, 176400Hz, and 192000 Hz. The default used by SONAR is 44100 Hz, the same rate as audio CDs. However, you may choose a higher rate and later mixdown to 44100. You can also enter any hardware-supported value in the **Sampling Rate** field. Consult your hardware documentation for supported sampling rates.

A higher sampling rate produces better quality sound. However, a higher sampling rate also means that each audio clip takes up more memory and disk space and requires more intensive processing by your computer. If you have an older computer, or a slow hard drive, you might be better off with a lower sampling rate. For more information, see “Improving Performance with Digital Audio” on page 851.

By default, the audio driver bit depth of audio data is 16 bits. If your sound card supports 18, 20, 22, or 24 bit audio, you can choose to take advantage of these higher resolutions.

If you are creating a new project that will contain only MIDI material (no audio), you do not need to set the audio sampling rate or bit depth. If you import audio from a Wave file or another digital audio file, the sampling rate and audio driver bit depth of the wave file are converted to your default setting, if necessary.

Note: *If you are planning to move your project to a Digital Audio Tape (DAT) or to some other media via a digital transfer, set your sampling rate and bit depth to match the target unit. For example, use 44,100Hz/16-bit for a project that will be mastered to a CD, so that no sample rate conversion is required.*

To set the sampling rate and audio driver bit depth for new projects

1. Choose **Options > Audio** to display the **Audio Options** dialog box.

2. On the **General** tab of the dialog, select a value in the **Sampling Rate** drop-down menu, and a value from the **Audio Driver Bit Depth** drop-down menu.
3. Click **OK**.

The sampling rate and audio driver bit depth are saved with the project file.

Sony Wave-64 support

SONAR 6 and earlier wrote wave files based on the RIFF wave file format. The RIFF format has an inherent file size limitation of 2GB.

SONAR fully supports reading and writing to the Sony Wave-64 format, which has a limit of 8,388,608 terabytes!

SONAR only creates Wave-64 file when needed. The Wave-64 format allows an application to dynamically switch from classic RIFF WAVE to Wave-64 format even if the data was originally created as a RIFF wave file. SONAR detects when a file will exceed 2GB and will dynamically switch to the new Wave-64 format.

The table below shows the maximum duration for a stereo WAVE file before we hit the 2GB limit, as well as the max duration for a stereo Wave-64 file before we hit the 8,388,608 terabyte limit.

Sample Rate	Bit Depth	RIFF-Wave	Sony Wave-64
44,100 Hz	16	3.38 hours	14,524,080,431 days
44,100 Hz	32	1.69 hours	7,262,040,215 days
44,100 Hz	64	50.7 minutes	3,631,020,108 days
192,000 Hz	16	46 minutes	3,335,999,724 days
192,000 Hz	32	23.3 minutes	1,667,999,862 days
192,000 Hz	64	11.65 minutes	833,999,931 days

Table 44.

When Wave-64 Files are created

Wave-64 files are created behind the scenes automatically under the following usage scenarios:

- When the number of samples recorded exceeds the file size limit of a 32-bit RIFF WAV file (approximately 2GB file size).
- When you export, bounce or freeze tracks or clips and the resultant wave size exceeds 2GB.
- When you destructively process audio effects on a SONAR clip whose duration exceeds 2GB.
- When you import audio and choose a wave file that exceeds 2GB in size (this could be a Wave-64 file).
- When you save a CWB file and the size of any chunk in the CWB file exceeds 2GB, the entire

CWB is saved in the new Wave-64 format.

Note: *64-bit CWB files are incompatible with previous versions of SONAR.*

64-bit CWB files

CWB files are RIFF files with multiple WAVE chunks. Therefore, CWB files in previous versions of SONAR were subject to the same file size limitations of normal RIFF Wav files. This could potentially result in a CWB file that failed to save because a chunk was too large.

SONAR will automatically use the Wave-64 format if a CWB file exceeds 2GB.

Note: *64-bit CWB files are incompatible with previous versions of SONAR.*

Wave-64 file extension

Wave-64 files have a .w64 extension associated with them. Whenever a Wave-64 file is written, SONAR saves it with an extension of w64.

CWP file persistence for 64-bit sample offsets

The SONAR project file format supports writing 64-bit sample offsets for regions and clips. When a project containing 64-bit sample times is detected, saving that project automatically rewrites it in this new format.

Note: *Projects that contain 64-bit sample times are incompatible with SONAR 6 and earlier.*

Setting the MIDI timing resolution

Each SONAR project has a setting for the timing resolution, or *timebase,* that indicates the resolution of MIDI data. This resolution is measured in ticks or pulses per quarter note and is often abbreviated as PPQ. The default resolution is 960PPQ, which is accurate enough for most applications. In this timebase, each quarter note is represented by 960 ticks, each eighth note by 480 ticks, each eighth-note triplet by 320 ticks, and so on.

In some projects you may need a different timebase. For example, if you wanted to use eighth-note septuplets (7 eighth notes per quarter note) and represent them accurately, you would need to have a timebase that is divisible by 7, such as 168PPQ. SONAR uses the timebase you choose for a project to determine the range of tick values in the Now time.

To set the timebase for a project

1. Choose **Options > Project** and click the **Clock** tab.
2. Choose the timebase you want from the **Ticks per Quarter Note** list.
3. Click **OK**.

The timebase will be saved with the project file.

Preparing to record

To prepare for recording, you need to do the following:

- Set the recording mode.
- Choose your input(s).
- Arm one or more tracks for recording.
- Check your recording levels (audio only).
- Tune your instrument if necessary (audio only).
- Set the Now time to the point where recording should start.
- Start recording.

After you record, you can use the **Edit > Undo** command to erase the most recently recorded material. You can use the **Edit > Redo** command to restore the recording and toggle between **Undo** and **Redo** as many times as you like.

If you are using MIDI Sync or time code sync for the clock source, SONAR waits to receive external timing data before it begins recording. For more information see the online help topicSynchronizing Your Gear.

See:

Recording modes

Choosing an input

Arming tracks for recording

Auto arming

Recording modes

Any material you record is stored in a new clip. If you record into several tracks at once, one clip is created in each track. If you record into a track that already contains clips, you can choose one of

three *recording modes* to determine what happens to those clips. When you save your project, you also save whatever recording mode you choose together with that project:

Recording mode	How it works
Sound on Sound	The new material is merged with any existing material. This means that any existing clips on the track are left unchanged and all newly recorded material is stored in new clips. While recording, you will be able to hear material from existing clips.
Overwrite	The new material replaces (overwrites) any existing material. This means that portions of existing clips may be “wiped clean” to make room for newly recorded material. While recording, you will not be able to hear material from existing clips.
Auto Punch	Recording only takes place between the punch-in and punch-out times. You can use **Auto Punch** in either Sound on Sound or Overwrite mode.

Table 45.

To choose a recording mode

- Select a mode from the drop-down list in the **Record** toolbar.

  Or

- Choose **Transport > Record Options** or click to display the **Record Options** dialog box, then select the desired mode.

SONAR saves your recording options with each project, so you can save a different recording mode with each of your projects.

Choosing an input

To record into a track, you must choose an input for the music or sound to be recorded. Usually, you choose **All Inputs - Omni** to record material from a MIDI instrument, or the left or right channel of a digital audio device (such as a sound card) to record audio material, or stereo if you want to record stereo audio in a single track. The input for each track is displayed in the track’s **Input** field and at the top of each module in the Console view.

When you choose **All Inputs > Omni** as the input for a track, SONAR merges material from all MIDI inputs and instruments. This means you don’t have to worry about input, channel, or other MIDI settings. Sometimes, you may want to record different MIDI channels into different tracks. To learn how to do this, see “Recording Specific Ports and Channels” on page 274.

While each track can have a different input, it is also possible for several tracks to have the same input.

To choose a MIDI input in the Track view

1. Click the drop-down arrow of an **Input** field of a MIDI track (an **Input** field has this icon to the left of it:).

A drop-down menu of MIDI inputs appears.

2. Choose an input from the following:
   - **None.** This option actually sets the **Input** field to **Omni** with this setting the track will record any MIDI input coming in on any enabled port (MIDI interface input driver) on any channel.
   - **All Inputs > (MIDI Omni or MIDI ch 1-16).** With this setting the track will record any MIDI input coming in on any enabled port (MIDI interface input driver) on any channel, unless you choose a particular MIDI channel instead of MIDI Omni. Then the track will only record input that's on the MIDI channel you chose.
   - **(name of MIDI input driver) > (MIDI Omni or MIDI ch 1-16).** Choosing this option causes the track to record any MIDI channel coming from the named MIDI interface input driver, unless you choose a particular MIDI channel instead of MIDI Omni. Then the track will only record input that's on the MIDI channel you chose, from the named input driver.
   - **Preset.** If you want to record multiple data from multiple ports and/or channels, you need to select a preset collection of those ports and channels. You can select one here (to create presets, see next line).
   - **Manage Presets.** If you want to create or edit any preset collections of input ports and channels, you can select this option (see "To Create or Edit a Preset Input Configuration" on page 275).

To choose an audio input in the Track view

1. Click the drop-down arrow of the **Input** field of an audio track (an **Input** field has this icon to the left of it:).

   A drop-down menu of audio drivers appears.

2. Select the audio driver for the sound card you want to record with from these options:
   - **None.** This choice ensures that you do not record to the track in question.
   - **Left** (name of your sound card). Choose this if you want to record a mono signal on the left channel of your sound card.
   - **Right** (name of your sound card). Choose this if you want to record a mono signal on the right channel of your sound card.
   - **Stereo** (name of your sound card). Choose this if you want to record a stereo signal.

If your sound card has more than one pair of inputs, a pair of numbers appears after the name of each audio driver to indicate which pair of inputs the driver is attached to.

Note: *Inputs that are used by the External Insert plug-in (see "External Insert plug-in" on page 632) cannot be assigned to track inputs.*

To choose an audio input in the Console view

1. At the top of an audio track module, click the **Input** button.

   A pop-up menu of audio drivers appears.

2. Select the audio driver for the sound card you want to record with from these options:
   - **None.** This choice ensures that you do not record to the track in question. It also turns off input monitoring for this track.
   - **Left** (name of your sound card). Choose this if you want to record a mono signal on the left channel of your sound card.
   - **Right** (name of your sound card). Choose this if you want to record a mono signal on the right channel of your sound card.
   - **Stereo** (name of your sound card). Choose this if you want to record a stereo signal.

If your sound card has more than one pair of inputs, a pair of numbers appears after the name of each audio driver to indicate which pair of inputs the driver is attached to.

To choose a MIDI input in the Console view

1. At the top of a MIDI track module, click the **Input** button.

   A pop-up menu of MIDI channels appears.
2. Choose an input from the following:
   - **None.** This option actually sets the **Input** field to **Omni**. With this setting the track will record any MIDI input coming in on any enabled port (MIDI interface input driver) on any channel.
   - **All Inputs > (MIDI Omni or MIDI ch 1-16).** With this setting the track will record any MIDI input coming in on any enabled port (MIDI interface input driver) on any channel, unless you choose a particular MIDI channel instead of MIDI Omni. Then the track will only record input that's on the MIDI channel you chose.
   - **(name of MIDI input driver) > (MIDI Omni or MIDI ch 1-16).** Choosing this option causes the track to record any MIDI channel coming from the named MIDI interface input driver, unless you choose a particular MIDI channel instead of MIDI Omni. Then the track will only record input that's on the MIDI channel you chose, from the named input driver.
   - **Preset.** If you want to record multiple data from multiple ports and/or channels, you need to select a preset collection of those ports and channels. You can select one here (to create presets, see next line).
   - **Manage Presets.** If you want to create or edit any preset collections of input ports and channels, you can select this option (see "To Create or Edit a Preset Input Configuration" on page 275).

Arming tracks for recording

SONAR lets you record any number of tracks at one time. You indicate the tracks you want to record by *arming* the tracks. You can arm a single track or several tracks at one time. Each track records material received though its selected input. Whenever a track is armed, not only does the track's **R** button turn red, but the Clips pane that's to the right of that track's controls turns a reddish hue.

To arm one or more tracks for recording

- To arm a track in the Track view, click R.

Or

- To arm a track in the Console view, click R (to see the **Arm** button in the Console view, the **MSR** button on the left side of the Console view must be depressed).

  Or

- To arm several tracks at the same time, select one or more tracks in the Track view, then right-click and choose **Arm** from the pop-up menu.

A track's **Arm** button turns red to indicate that the track is armed for recording.

To disarm all tracks at once

- Click the red **Arm** label that's located in the status bar at the bottom of the SONAR window.

  Or

- Click the red **Arm** button in the **Playback State** toolbar, which you can display by using the **Views > Toolbars** command and checking **Playback State** in the **Toolbars** dialog box.

Auto arming

You must arm tracks in order to record. To safeguard your data, there is no automatic arming of any tracks.

If you want to record MIDI tracks without arming a track, choose **Options > Global**, and select the **General** tab. Click the **Allow MIDI Recording without an Armed Track** check box.

This feature lets you start recording a new track simply by making it the current track and pressing R or clicking the **Record** button in the toolbar. Auto-arming makes it possible to inadvertently record over existing material in the current track, however.

Recording music from a MIDI instrument

Once you have set your tempo and metronome, and armed one or more tracks, you are ready to start recording.

To record MIDI

1. Set the Now time to the point in the project where you want to start recording.
2. Click ●, press R, or choose **Transport > Record.** If your metronome count-in is turned on, it will play the count-in.
3. Play or perform the material you want to record. As you record, SONAR displays a clip containing the new material in the Clips pane (unless you've turned off this option on the **General** tab of the **Global Options** dialog (**Options > Global** command).
4. Click ■, press the SPACEBAR, or choose **Transport > Stop** to stop recording.

To listen to the new material, set the Now time to the start of the clip and press the SPACEBAR or click . If you're not happy with the recording, use **Edit > Undo** or press CTRL+Z to erase the new material.

When you stop recording, if you do not see a new clip in the Clips pane, you may have a problem with MIDI input. See "Troubleshooting" for more information.

See:

Recording Specific Ports and Channels

Input quantizing

Input quantizing allows you to automatically quantize MIDI input during recording. You can see the results immediately, and hear the results as soon as a track is looped.

Note: *Input quantizing does not destroy your original recording. If you press CTRL+Z after you finish recording with input quantizing enabled, the quantized clip is deleted, and the original unquantized clip appears, just as you recorded it. If you are using loop recording in Sound On Sound mode, all the quantized clips are deleted.*

You control input quantize options for single tracks from the input quantize controls in MIDI track strips. The input quantize controls appear in Track strips by default just before the **Input** field when the **All** tab is selected (see picture below). You control input quantize options for multiple tracks from the **Record** toolbar, and from the **Tracks** menu. The toolbar and menu commands affect selected tracks. If no tracks are selected, they affect ALL MIDI tracks.

A. *Input Quantize enable/disable button* ***B.*** *Input Quantize resolution menu*

You can set the input quantize options for either a single track or for multiple tracks.

To turn Input quantizing On or Off

- To turn input quantizing on or off for a *single track*, click the track's **Enable/Disable Input Quantize** button.
- To turn input quantizing on or off *for selected tracks*, select the tracks that you want to turn on or off, then use the **Tracks > Input Quantize > Enable/Disable Input Quantize** command, or click the **Enable/Disable Input Quantize** button in the **Record** toolbar.

- To turn input quantizing on or off *for all tracks*, make sure no tracks are selected (or press CTRL+A to select all tracks), then use the **Tracks > Input Quantize > Enable/Disable Input Quantize** command, or click the **Enable/Disable Input Quantize** button in the **Record** toolbar.

To set the resolution

- To set the resolution for a *single track*, click the track's **Input Quantize resolution** menu, and choose a resolution from the drop-down menu that appears. You can also click **Quantize Settings** in the resolution menu to open the **Input Quantize** dialog, and type a number of ticks in the **Resolution** field.
- To set the resolution for *selected tracks*, select the tracks that you want to configure, then use the **Tracks > Input Quantize > Quantize Settings** command or click the **Quantize Settings** button in the **Record** toolbar to open the **Input Quantize** dialog. Then choose a value in the **Resolution** field, and click **OK**.
- To set the resolution for *all tracks*, deselect all tracks (or select all tracks), then use the **Tracks > Input Quantize > Quantize Settings** command or click the **Quantize Settings** button in the **Record** toolbar to open the **Input Quantize** dialog. Then choose a value in the **Resolution** field, and click **OK**.

Note: *To quantize to a custom resolution value, open the **Input Quantize** dialog, and type a custom number of ticks in the **Resolution** field.*

To set options

- To set options for a *single track*, click the track's **Input Quantize resolution** menu, and choose **Quantize Settings** to open the **Input Quantize** dialog, or right-click the **Resolution** menu. Then choose options in the dialog, and click **OK**.

Note: *To get explanations of the options in the **Input Quantize** dialog, press F1 when the dialog is open.*

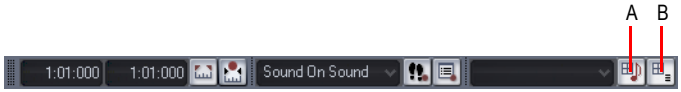
- To set options for *selected tracks*, select the tracks that you want to configure, and use the **Tracks > Input Quantize > Quantize Settings** command or click the **Quantize Settings** button in the **Record** toolbar to open the **Input Quantize** dialog. Then choose options in the dialog, and click **OK**.
- To set options for *all tracks*, deselect all tracks, then use the **Tracks >Input Quantize > Quantize Settings** command or click the **Quantize Settings** button in the **Record** toolbar to open the **Input Quantize** dialog. Then choose options in the dialog, and click **OK**.

Visual indicators

You will see the following visual indicators when **Input Quantizing** is enabled:

- The **Enable/Disable Input Quantize** button in the **Record** toolbar changes.

Figure 38. *The **Record** toolbar*



***A.** Enable/Disable Input Quantize **B.** Quantize Settings*

- The red swath that appears in a track in the area where recording is taking place changes color. You can choose a color for this in the **Configure Colors** dialog (**Options > Colors** command) by choosing Clips Pane in the **Color Category** menu, and changing the entry for **Input Quantize Record Preview Background**.
- The **Arm** button in a track that has **Input Quantizing** enabled changes color when it is armed, and displays Q instead of R.

Key bindings

You can choose key bindings for Input Quantize commands by opening the **Key Bindings** dialog (**Options > Key Bindings** command), choosing **Global Bindings** in the **Bind Context** menu, and scrolling to the **Tracks > Input Quantize** commands.

To set key bindings for note resolutions, choose **Track View** in the **Bind Context** menu, and scroll to the Input Quantize Resolution commands.

For more information, see Quantizing.

Arpeggiator

The arpeggiator lets you play intricate patterns of notes that would otherwise be extremely difficult or impossible to play manually and at speeds and octave ranges that exist beyond the physical limitations of the player or keyboard range.

Arpeggiated events are new events that are based on notes that you play on your controller keyboard. The new events are rhythmically and harmonically specified by the arpeggiator's preset, allowing you to "play" an endless variety sophisticated musical passages with simple key pressing.

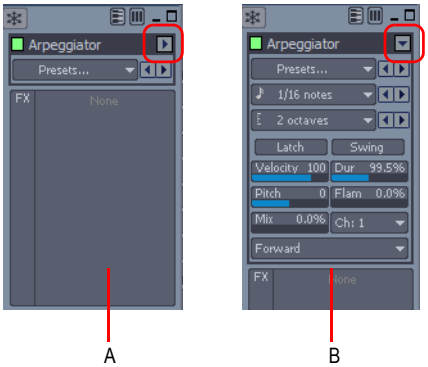
The most significant capability of the arpeggiator is its ability to apply algorithmic variations on your input as well as MIDI-based patterns.

In addition to note events, the arpeggiator can send parameter automation such as pan, volume, and even effects automation for the current track.

Each MIDI and instrument track has its own integrated arpeggiator, visually located in the Track view. Running multiple arpeggiators across tracks can help realize exciting melodic and rhythmic textures.

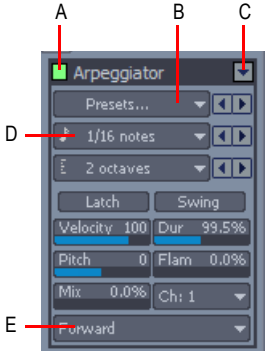
The arpeggiator appears as a control widget above the FX bin. You can expand the arpeggiator widget to show additional controls.

Figure 39. *Click the **Show/hide Arpeggiator Controls** button to see additional controls.*



***A.** Basic Arpeggiator controls visible **B.** Advanced Arpeggiator controls visible*

Figure 40. *Arpeggiator controls*



***A.** Enable/disable **B.** Presets **C.** Show/hide Arpeggiator Controls **D.** Rate menu **E.** Shapes menu*

Tip: *As with other widgets in the Track view, you can specify the visibility of the Arpeggiator widget for each tab at bottom of the Track pane. For details, see Widget Tab Manager.*

Arpeggiator controls

The following table describes the controls in the Arpeggiator.

Control	Description
Enable/Disable	Enables/disables the arpeggiator on a given track. This control can be assigned to MIDI remote control and modified in real-time during project playback.
Preset Control	You can create and edit arpeggiator presets; all user parameters are stored in the preset. • Arpeggiator settings are included in track templates. • Arpeggiator presets can be saved to a file and exchanged with other users. • Arpeggiator files are stored in a shared directory. For details, see Using patterns and presets.
Rate	Adjusts the relative speed of the arpeggiator sequence by changing all the note durations by a factor of the current tempo. This control can be assigned to MIDI remote control and modified in real-time during project playback.
Octave Range	Sets the number of octaves through which the arpeggio will play. A value of 1 means that a held chord will only arpeggiate the notes that are being held within the octave from which the notes are being transmitted. A value of 2 means a held chord will arpeggiate for two octaves. The held chord always represents the bass octave, meaning that the other octaves sound in a higher register. If you specify a range higher than the standard MIDI specifications, the Arpeggiator will repeat the pattern in the highest available octave as necessary. This control can be assigned to MIDI remote control and modified in real-time during project playback.
Latch	Latch keeps the arpeggio playing after you let go of the keys. This control can be assigned to MIDI remote control and modified in real-time during project playback.
Swing	Applies swing to the arpeggio. Swing is either on or off.
Velocity	An offset control that adds whatever velocity value you select to the velocities of the notes in the pattern.
Duration	Controls whether the notes in the pattern are held to their full value, or are held for shorter or longer durations.
Pitch Offset	A transposition control in half-steps, up or down a maximum of 2 octaves.
Flam Amount	If a pattern contains flams, this menu controls how big a difference there is between the attack time of the flam and the note it is attached to.
Source Mix	When 0, simultaneously held notes arpeggiate as single notes. At 50%, simultaneously held notes are heard as a chord in addition to the usual arpeggiated notes, both at equal levels. At 100%, only the held chord is audible. Control: Knob (0 – 100%); this control can be assigned to MIDI remote control and modified in real-time during project playback.

Table 46. *Arpeggiator controls*

Control	Description
Ch	MIDI input and output menu—the Arpeggiator only affects input data that's on the MIDI channels listed on this menu. The arpeggiator always obeys the track's assigned output channel, plus any additional channels specified in the arpeggiators **Ch** menu.
Shapes	Choose a shape that specifies the direction in which currently held notes are to be sequenced. The following shapes are available: • Rhythm (implicit rhythm mode) • Forward • Reverse • Forward Circle 1 • Reverse Circle 1 • Forward Circle 2 • Reverse Circle 2 • Inward • Outward • Inward Circle • Outward Circle • As Played • As Played Circle • Random

Table 46. *Arpeggiator controls (Continued)*

Note: *Most Arpeggiator parameters can be controlled via MIDI remote control, but automation data can not be recorded into tracks. For details, see To Set Up Remote Control for a Knob, Button, or Fader.*

See:

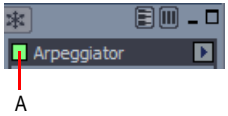
Using the arpeggiator

Using the arpeggiator

One arpeggiator device appears on every MIDI and instrument track, located in the Track view.

To enable/disable the Arpeggiator

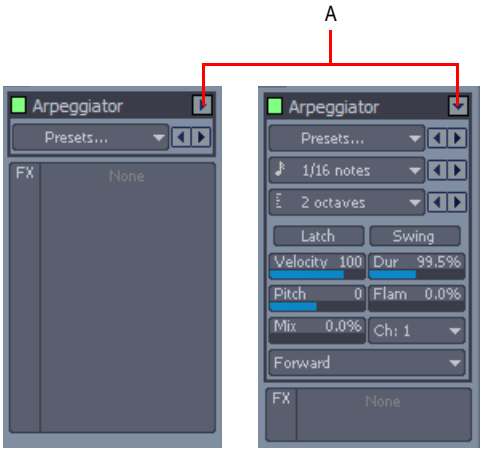
- Click the **Enable/Disable Arpeggiator** button.



A. *Enable/Disable Arpeggiator toggle*

To show/hide advanced Arpeggiator controls

- Click the **Show/Hide Arpeggiator Controls** button.



A. *Show/Hide Arpeggiator Controls*

Using patterns and presets

Pre-authored patterns are used to apply rhythmic and melodic variations to the arpeggio. SONAR includes many professionally-authored pattern files for you to experiment with. Pattern files have a .ptn file extension.

An Arpeggiator preset stores a pattern along with the current Arpeggiator parameter settings. Preset files have a .arp file extension.

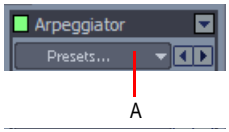
You use the Arpeggiator's **Preset** control to load patterns and load/save presets.

When playing back through the Arpeggiator, the first pitch in the pattern is moved to the lowest note currently played.

Note: *If the pattern file is a Free Mode pattern, the steps are quantized to the nearest 128th note value in order to better preserve timing nuances.*

To load an Arpeggiator pattern

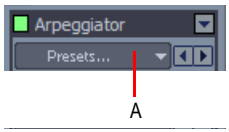
1. Click the **Preset** control in the Arpeggiator widget and select **Open Pattern** from the drop-down menu.
2. Navigate to the folder that contains your Arpeggiator pattern files (.ptn) and select the desired pattern.



A. *Click to load a pattern*

To load an Arpeggiator preset

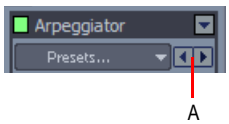
- Click the **Preset** control in the Arpeggiator widget, point to **Presets** and select the desired preset.



A. *Click to load a preset*

To load the next/previous Arpeggiator preset

- Click the **Next Preset** or **Previous Preset** button in the Arpeggiator widget.

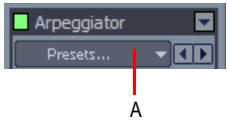


A. *Click to load the next/previous preset*

To save an Arpeggiator preset

- Click the **Preset** control in the Arpeggiator widget and select **Save Pattern As** from the drop-down menu.

  The current pattern is saved with the current Arpeggiator parameter settings.



A. *Click to save a new preset*

See:

Arpeggiator

Recording audio

Before you record audio, you should check your input levels. If the levels are too low, you may end up with too much hiss and background noise in your recording. If the levels are too high, your recording will be inaccurate or distorted. To check your audio levels, use the audio meters in the either the Track view or Console view. To adjust the input levels, you must use your sound card's software mixer program (or the Windows XP mixer) or an external hardware mixer for certain sound cards.

The audio meters indicate the volume at which the audio will be recorded, in units called decibels (dB). The meter values range from -INF (silent) to 0dB (maximum volume). You can change many options in the way SONAR's meters display data: see "Metering" on page 609. To maximize the dynamic range of your recording, you want to set the levels as high as possible without clipping.

When the audio level exceeds 0dB, some of the audio information is lost. This is known as **overload**. Many sound cards use clipping to deal with an overloaded signal, but clipping can distort the audio signal. As a result, you should avoid letting the meter level exceed 0dB.

Note: *Because SONAR is a digital recorder, a level of 0dB indicates digital zero. Digital distortion will occur at 0dB. You will not get analog compression or warmth from pushing the input levels. If you are transferring data from a DAT or another device, you may want to calibrate the input levels of your sound card with the output levels of other devices in your studio. This will ensure that 0dB on one unit will appear as 0dB in SONAR.*

To check the Input levels

1. In the Track view, choose the inputs for the tracks you want to record, and arm the tracks for recording. Make sure that the **Show/Hide All Meters** button at the top of the Track view is enabled.
2. The default meter range is from 0 dB to -60 dB. To change the range, right-click on the meter and choose a new range from the menu.
3. Perform at the loudest level at which you plan to record.

Watch the meters respond. Increase the input volume as high as possible without ever letting the meters move all the way to 0dB, even for an instant, or letting the **Clipping** indicator turn red. If either of these things happen, reduce the input volume just enough to avoid them during the entire performance. Note that some kinds of audio, such as percussive or plucked musical instruments, can produce very short, high-level “transients” when struck or plucked aggressively, which can lead to clipping if the input volume is set too high. Consider the possibility of these transients when examining the meters and setting your record level.

Note: *If the Clipping indicator is illuminated, click on it to reset.*

Once you have set your sampling rate and input levels, you are ready to start recording. If the meters do not move, check your sound card software’s mixer program and make sure that you have the proper input enabled for recording.

When you record audio, SONAR stores each audio clip in a separate file. These files have the same format as a Wave (.wav) file, but they have special names and are stored in a separate directory on your hard disk. SONAR automatically manages these audio files for you, making it easier for you to manage your projects. If you want to work with these files directly, or to learn more about how SONAR stores audio data, see “System Configuration” on page 843.

Tuning an Instrument

SONAR Chromatic Tuner analyzes any input signal from the sound card and displays the intonation (in cents) on the meter. The tuner automatically determines which string/pitch you are trying to tune, so that you can keep both hands on the instrument while tuning. The VU Meter shows how loud your input signal is–a strong signal is essential for accurate tuning.

The Tuner works just like an effect and each track can have its own instance.

With a microphone, you can also tune acoustic instruments.

To Tune an Instrument

1. In the track you want to record your instrument on, right-click in the Effects bin.
2. From the menu that appears, select **Audio Effects > Cakewalk > Tuner**.
3. **Click the track’s Input Monitor button.** If you don’t click the **Input Monitor** button on the track the Tuner is patched into, you will not be able to use the tuner.
4. With your instrument plugged into your sound card and turned up, play a note.

   The Tuner displays the intonation reading on the cents meter and the name of the note you played between the three arrows. One of the three arrows lights up, indicating one of the following:

   - Up arrow indicates the note is in tune.
   - Right arrow indicates the note is sharp.
   - Left arrow indicates the note is flat.

5. Adjust the pitch if necessary and repeat for the rest of the pitches you need to tune.

To Record Audio

1. Choose the audio inputs for the track(s) you want to record.
2. Arm the tracks for recording. The Clips pane next to each armed track turns a reddish hue when the track is armed.
3. Set the Now time to the point in the project where you want to start recording.
4. Click , press R, or choose **Transport > Record**. If your metronome count-in is turned on, it will play the count-in measures or beats.
5. Play or perform the material you want to record.

   As you record, SONAR displays a waveform preview of the new material in the Clips pane, unless you've turned off the **Display Waveform Preview** option on the **General** tab of the **Global Options** dialog (**Options > Global** command). If you've turned off the option, SONAR displays a red swath along the area of the Clips pane where you're recording.
6. Click , press the SPACEBAR, or choose **Transport > Stop** to stop recording.

SONAR displays a clip containing the new material in the Track window. To listen to the new material, set the Now time to the start of the clip and press the SPACEBAR or click . If you're not happy with the recording, use **Edit > Undo** to erase the new material.

If you do not see a new clip in the Clips pane, you may have a problem with audio input. See "Troubleshooting" for more information.

Important: *Make sure you have enough space on your hard disk when recording digital audio. Running out of hard disk space when recording can lead to unpredictable results.*

Confidence Recording and Waveform Preview

When you're recording audio or MIDI data, SONAR gives you many visual cues that tracks are armed and that SONAR is recording data.

When one or more tracks are armed:

- The **R** button in each armed track turns red.
- The Clips pane next to each armed track gets a reddish hue.
- The **R** button in the **Playback State** toolbar is depressed (to display the toolbar, use the **Views > Toolbars > Playback State** command).
- The Status bar displays the red Arm message.

While you're recording, SONAR displays these cues:

- Audio tracks display a waveform preview in the area in the Clips pane where you're recording. This is actually a visual record of the record meter's progress. When you stop recording, SONAR displays the actual waveform, which is slightly different from the preview. The preview is a

snapshot taken at certain time intervals, while the actual waveform represents all the data that is recorded.

- MIDI tracks display the actual data that they record, both in the Clips pane and the Piano Roll view (not the Staff view).
- Automation envelopes and nodes are drawn in real time as the automation data is being recorded.

If you want to turn off the real-time display of audio clips, see the following procedure.

To Turn Off Waveform Preview for Audio Recording

1. Use the **Options > Global** command to open the **Global Options** dialog.
2. On the **General** tab, uncheck the **Display Waveform Preview While Recording** option, and click **OK**.

Now when you record audio tracks, a red swath appears in the Clips pane in the area you're recording.

Input Monitoring

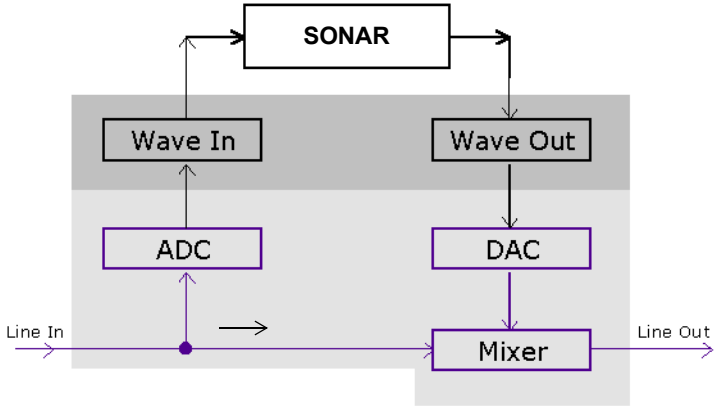
Being able to hear plug-in audio effects applied to a live signal is an exciting feature of SONAR. However, there are two issues that users commonly stumble upon when using the **input monitoring** feature. The first is that the monitored signal seems to have an echo associated with it. The second is that live input monitoring can lead to nasty feedback problems, particularly if you have an outboard audio mixer, or you record from a different sound card from the one you are playing back with.

SONAR has several buttons to control input monitoring:

- **Per-track Input Echo button .** Each audio track has an **Input Echo** button that turn's that track's input monitoring on or off.
- **Global Input Monitor button.** The **Playback State** toolbar (to display, use the **Views > Toolbars > Playback State** command) has the **Input Monitor** button on the right end, which turns input monitoring on or off on all audio tracks with one click.
- **Audio Engine button .** Clicking this button so that it's in its up position turns all audio activity in SONAR off, which includes input monitoring.

Note: *When you use input monitoring, make sure that the track you're playing through uses the same audio interface (sound card) for both input and output. Using different audio interfaces for a track's input and output can produce distortion during input monitoring.*

To understand the echo and feedback problems, let's look at how audio signals travel through your sound card, the drivers, and SONAR. The following diagram depicts a simplified version of this signal flow.



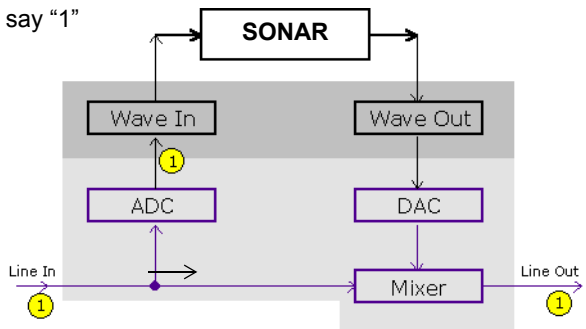
The bottom block of the picture represents the sound card. The shaded area above it represents the audio drivers. The unshaded area at the top represents the main environment of the operating system.

As the diagram shows, analog audio flows into the card's line input (on the left), and is immediately split in two. One branch goes up through the analog-to-digital converter (ADC), where the audio is digitized, buffered and fed to the driver (labeled Wave In in the diagram).

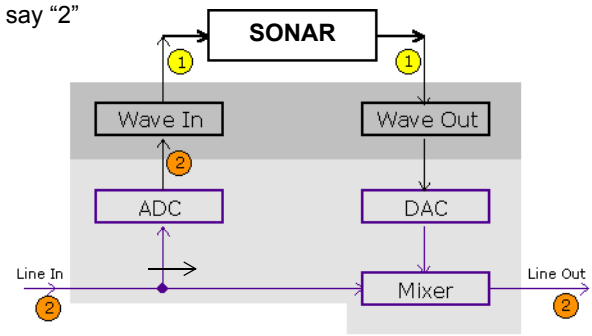
The digital audio data buffers are read by SONAR from the Wave In driver, processed, and then sent out to the Wave Out driver. The driver passes the digital audio buffers through a digital-to-analog converter (DAC), where the audio data is converted back to an analog signal.

Finally, this analog output signal is mixed with the original branch of the input analog signal, and the summed result is presented to the sound card's line output.

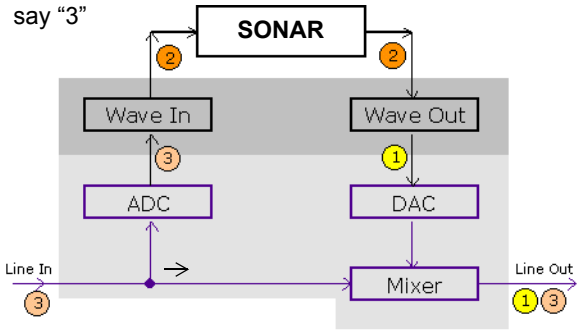
With this information in hand, let's follow a simple audio signal through the system to understand how echoes get introduced into the input monitor path.



Suppose you are counting "1, 2, 3" into your sound card very quickly. When you say the first "1," this sound immediately appears in all the places indicated in the illustration above. In other words, the analog audio signal is pure electrical signal traveling at the speed of light, so it is immediately present across all analog audio paths inside the sound card.



Next, you say "2." In the time it takes you do that, the ADC has converted the "1" to digital form and the Wave In driver has fed it to SONAR for processing. SONAR processes the buffer right away and passes the processed data right back to the Wave Out driver.



Finally, you say "3." By this time the original "1" has been converted back to analog audio by the DAC, and that analog signal is mixed in with the "3" you have just said. The ultimate result is that you hear a "1" and "3" mixed together at the line output of card—seemingly sounding like an echo, but actually just an artifact of the signal flow through the system.

You can eliminate the echo by muting the line-in from playing back (see “To Eliminate the Echo from Input Monitoring” on page 261); you’ll send only the processed signal to the sound card outputs. This technique introduces a little extra latency to what you hear coming out of your sound card, but if you use WDM or ASIO drivers with your sound cards, the latency is negligible.

The feedback problem results whenever you have a loop in your mixer path: the output of your mixer is patched into the input of your sound card. Feedback can happen with or without input monitoring, but since input monitoring can add several levels of gain to the signal flow, it's of greater concern when you have input monitoring enabled. Input monitoring is disabled by default when you install SONAR, and you enable it with the following procedure.

To Enable Input Monitoring

- Turn your speakers down, and on an audio track that you want to monitor, click the **Input Echo** button so that it's lit up (on) . **To disable monitoring** for this track, click the button off.

  Or

- Turn your speakers down, and on the **Playback State** toolbar (to display, use the **Views > Toolbars > Playback State** command), click the **Input Monitor** button so that it's lit up—this enables input monitoring on all tracks. To disable monitoring for all tracks, click the button off.

Now you can hear your instrument in real time with any plug-in effects that you want to patch into the current track. You might also hear an echo, because the dry signal is coming out of your sound card slightly ahead of the processed signal. To eliminate the dry signal, see the next procedure.

To Eliminate the Echo from Input Monitoring

1. Open the software mixer that controls your sound card. If your sound card uses the Windows mixer, open the mixer by using the **Start > Programs > Accessories > Entertainment > Volume Control** command, or double-clicking the speaker icon on the Windows taskbar.
2. In the Play Control window of the mixer, check the Mute check box in the Line-In column, or in the column of whatever jack your instrument is plugged into, and close the mixer window.

Now you can hear only the processed sound when you use input monitoring. Using WDM or ASIO drivers for your sound card keeps latency to a negligible amount.

Note: *This procedure does not eliminate feedback from your system, only the echo. If you experience feedback, you have a feedback loop somewhere in your mixer setup.*

To Enable input monitoring when arming tracks

Warning: *Be extremely careful when enabling input monitoring on an armed track if you are working in a room that contains both live microphones and studio monitors. In such a scenario, enabling input monitoring on an armed track can result in an extremely loud feedback loop between the mirophones and monitors and can damage your ears and speakers.*

SONAR makes it possible to automatically enable input monitoring when arming a track for recording. To do so, hold down the **SHIFT key** while you click on a track's **Arm** button . Likewise, holding down the SHIFT key while disabling record during playback will disable input monitoring.

To automatically disable input monitoring during playback

1. Go to **Options > Global** and click the **General** tab.
2. Click **Disable Input Monitoring during Playback** (off by default).

When this option is enabled, input monitoring will be disabled on all tracks during playback but not during recording.

See also:

Input Monitoring

Arming tracks for recording

The Audio Engine Button

SONAR has a button in the **Transport** toolbar called the **Audio Engine** button . This button lets you turn SONAR's audio engine off if you're getting distortion or feedback and want to cut the sound off. When playback or recording are in progress, SONAR enables the button automatically—however, the button appears greyed-out during playback or recording because you can't control the button at that time. Whenever the button is enabled, the Audio Running message lights up on the Status bar that's at the bottom of the SONAR window.

If you experience feedback during input monitoring, you can click the **Audio Engine** button to turn off the audio engine. However, if playback or recording are in progress, the button is unavailable, and you should click the **Reset** button that's just to the right of it instead, or else stop recording or playback first and then click the **Audio Engine** button.

You may experience slightly better playback and recording performance by turning the **Audio Engine** button off before you press the **Play** or **Record** buttons. This happens if your computer's resources are already stretched to the limit. When you start recording or playback with the audio engine already functioning, there is still some processing that SONAR has to do that's left over when you start the transport. This places an extra load on your system that can cause dropouts if your system is already stretched thin. A more effective solution than disabling the audio engine before starting the transport is to reduce the load on your system by hiding some meters, increasing latency slightly, reducing the number of plug-ins and/or tracks, etc.

See also:

Input Monitoring

Loop Recording

When recording a vocal or an instrumental section, you might want to record several different takes so that you can choose the one you like best. You might even want to record several takes to double a part or merge the best parts of each.

Normally, to record each take you would have to arm a track, start recording, perform the take, and then stop recording. You can record multiple takes more easily using a feature called **loop recording**. Loop recording lets you start recording and record as many takes as you like, all in a single step.

SONAR loops between the loop start and loop end time, allowing you to record one take on each pass. SONAR creates a clip for each take. You have three choices for where these clips are stored:

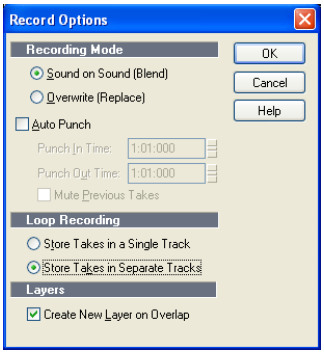
- All clips can be recorded in Sound on Sound mode and stored in a single track, where they are stacked on top of one another.
- All clips can be recorded in Overwrite mode in a single track, where each take is successively muted except the last one.
- Each clip can be recorded to a different track. SONAR automatically places each take into a new, empty track. No existing tracks are changed in any way.

When you finish recording, you can use the **Edit > Undo** command or CTRL+Z to erase all your takes in a single step.

To Use Loop Recording

1. Choose the input for the track(s) you want to record, and arm the track(s) for recording.
2. Set the loop start and end times in either the **Loop/Auto Shuttle** dialog box or in the **Loop** toolbar.
3. Choose **Transport > Record Options**, or click on the **Record** toolbar, to display the **Record Options** dialog box.

Figure 41. *The **Record Options** dialog*



4. Choose to stack all takes in a single track or to store them in separate tracks.
5. If you choose to stack all takes in a single track, choose either Sound on Sound or Overwrite mode.

   If you use single track and Sound on Sound with Track Layers enabled, checking the Create New Layer on Overlap check box will create another track layer if your new clip overlaps an existing clip.

6. If you stack all takes in a single track, you can audition them later by using the **Track Layers** button in the right of the Track pane (each take will have its own **Mute** and **Solo** buttons).
7. Click **OK** to close the **Record Options** dialog, and set the Now time to the point in the project where you want to start recording.
8. Click , or press R, or choose **Transport > Record**. If your metronome count-in is turned on, it will play the count-in measure.
9. Play or perform the material you want to record. At the end of the loop, SONAR will return to the start of the loop and you can record the next take.
10. If you want to erase the most recent take while loop recording is underway, choose **Transport > Reject Loop Take**.
11. Click , or press the SPACEBAR, or choose **Transport > Stop** when you want to stop recording.

The takes are stored in the manner you requested.

Punch Recording

Suppose you are happy with most of a track but want to replace some sound or add new material in one small section—perhaps as small as a couple of notes. This is where punch recording comes in handy, because it lets you record new material only within a specified range of times.

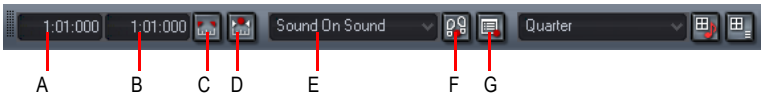
For example, suppose you recorded a 32-bar keyboard solo but made some mistakes in the 24th and 25th bars. With punch recording, you can play the entire solo again, so you make sure you can get the feel you want. However, only the bars you want to correct are actually recorded. That way, you don't have to worry about introducing new mistakes elsewhere in the recording.

To use punch recording, follow these steps:

- Enable punch recording.
- Set the start and end times of the punch.
- Choose Sound on Sound mode or Overwrite mode.
- Start recording by pressing R or clicking the button on the **Transport** toolbar.

The **Record** toolbar shows the punch settings, as shown here:

Figure 42. *The **Record** toolbar*



***A.** Punch In Time **B.** Punch Out Time **C.** Click here to set punch times to the selection start and end times*
***D.** Auto-punch on/off **E.** Record mode **F.** Step record **G.** Click to open the **Record Options** dialog box*

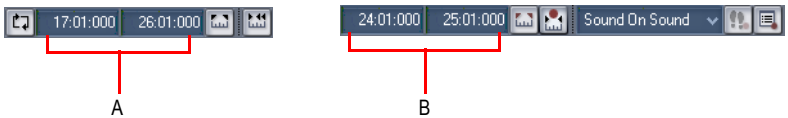
When punch recording is enabled, the punch times are indicated by special markers in the Time Ruler, which is at the top of the Clips pane:

***A.** Punch In* ***B.** Punch Out*

After you punch record, choosing **Edit > Undo** both discards any new material you recorded and restores the original material that had been deleted.

You can also combine loop and punch recording to record several takes of a punch. Say you are working on that perfect take of a guitar solo and you need to hear a couple of bars of the project as “pre-roll” before you punch in. By combining looping with punch, you can have each take begin before you start to play and still have the solo cut in at the appropriate instant.

In the example mentioned previously, you could loop from bar 17 to bar 26 but record only bars 24 and 25. Here’s what this looks like:



***A.** The loop starts and ends here* ***B.** The punch starts and ends here*

To Punch Record

1. Choose the input(s) for the track(s) you want to record, and arm the track(s) for recording.
2. Enable the **Auto Punch** button in the **Record** toolbar (the button is red when enabled).
3. Set the start and end times in one of the following ways:
   - Enter the times directly on the toolbar
   - Select a range of time and click on the **Record** toolbar
   - Select a range of time, then right-click in the Time Ruler and choose **Set Punch Points**
4. Choose either **Sound on Sound** or **Overwrite** from the **Record** toolbar (or in the **Record Options** dialog—use the **Transport > Record Options** command to open the dialog).
5. Set the Now time to a point where you want to start playback.
6. Click , or press R, or choose **Transport > Record**. If your metronome count-in is turned on, it will play the count-in measures or beats.
7. Play or perform the material you want to record.
8. Click , or press the SPACEBAR, or choose **Transport > Stop** to stop recording.

The material you play during the punch time is recorded in the chosen track, either replacing any existing material (Overwrite mode) or blending with it (Sound on Sound mode).

To Use Punch While Looping

1. Choose the input for the track(s) you want to record, and arm the track(s) for recording.
2. Set the loop start and end times.
3. Set the punch start and end times, as described previously.
4. Choose **Transport > Record Options**, or click on the **Record** toolbar, to display the **Record Options** dialog box.
5. Choose to stack all takes in a single track or to store them in separate tracks.
6. Set the Now time to the beginning of the loop.
7. Click , or press R, or choose **Transport > Record**. If your metronome count-in is turned on, it will play the count-in measures.
8. Play or perform the material you want to record. At the end of the loop, SONAR will return to the start of the loop and you can record the next take.
9. If you want to erase the most recent take while loop recording is underway, choose **Transport > Reject Loop Take**.
10. Click , or press the SPACEBAR, or choose **Transport > Stop** when you want to stop recording.

The takes are stored in the manner you requested.

Step Recording

Step recording is a method of recording MIDI notes one note or chord at a time. It's a very easy and precise way to record, but can sound mechanical if used in the wrong situation. You use step recording in its typical form by choosing a step size, such as a quarter note, and then playing a note on your MIDI keyboard. When you play the note, SONAR records the note, and moves the insertion point forward by the distance of the step size (moving the insertion point every time you press a note is the default behavior). You can then record more notes of the same duration by playing notes on your keyboard, or you can change the step size while you're recording and record different size notes. You can also choose how long the notes you play will sound, as a percentage of the step size. For example, even though you record some notes that have a step size of a quarter note, if you set the **Duration** field to **50%**, the notes will be recorded and displayed as a series of eighth notes, each followed by an eighth rest. The insertion point for each recorded note in this example moves by a quarter note (the step size) each time you record a note. If the duration is longer than the step size, the notes will overlap with the notes recorded at the next step.

SONAR displays your step-recorded notes in the Staff view, Piano Roll view, Event List, and Clips pane in real time as you step record them. SONAR also lets you:

- Use other commands while step recording

Note: *SONAR doesn't respond to sync signals while the **Step Record** dialog is open and enabled.*

- Change tracks while recording
- Add two step sizes together by pressing the + key between each step size selection
- Delete as many step-recorded notes as you want, while moving the insertion point back through the steps you delete
- Configure step recording key bindings (see Step Record Keyboard Shortcuts)
- Make any kind of tuplet
- Create a custom step size lasting any number of ticks (ticks are divisions of a beat—SONAR uses 960 by default); SONAR will remember the custom step size until you change it
- Move the insertion point by beats, measures, or step size
- Link the position of the Now Time to the insertion point
- Offset the insertion point by the number of ticks that you specify
- Randomize duration
- Record notes with constant pitch, and/or velocity, and/or channel
- Hold notes across steps

Tip: *With the new keyboard shortcuts, you can leave your left hand on your MIDI keyboard to enter notes with, and control most step recording functions with your right hand on the NumPad.*

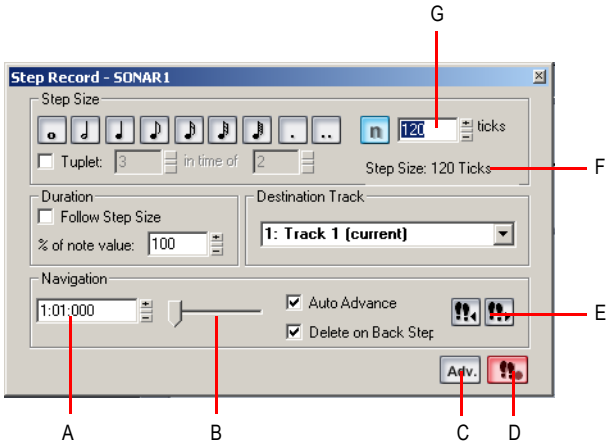
MIDI data is recorded using step record even if the track is not armed. Loop markers are ignored. And **step recording always uses the Sound on Sound (blend) record mode**, regardless of the current record mode.

With **Auto Advance** disabled, you must click **Advance** each time you want to advance to the next step. While this requires more effort, it also provides you with more flexibility. For example, with **Auto Advance** disabled, you do not even need to play the notes at a single step at the same time! You can play any number of notes one at a time, and they will all be recorded at the same step until you click the **Advance** button. You can even record notes of different durations at the same step—simply record the notes of one duration, change the duration, and play more notes, without clicking **Advance**.

The **Step Record** dialog has two modes: Basic (smaller with fewer options), and Advanced (larger, more options). To use Basic mode, click the **Bas./Adv.** button so that the **Adv.** button is displayed. To use Advanced mode, click the **Bas./Adv.** button so that the **Bas.** button is displayed.

Here's a picture of Basic mode:

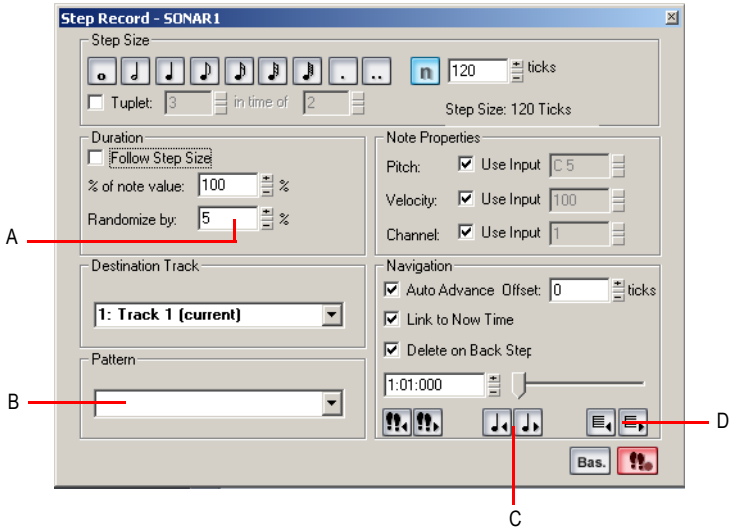
Figure 43. *The Step Record - Basic window*



A. *Insertion point location* ***B.*** *Position slider* ***C.*** *Basic/Advanced button* ***D.*** *Step Record Toggle button to enable/disable step recording* ***E.*** *Click to move insertion point by step size* ***F.*** *Total step size display* ***G.*** *Custom tick size field*

Here's a picture of Advanced mode:

Figure 44. *The Step Record - Advanced window*



A. *Randomize durations field* ***B.*** *Step pattern recording field* ***C.*** *Click to move insertion point by single beat*
D. *Click to move insertion point by single measure*

To Use Basic Step Recording

1. Open the **Step Record** dialog by using the **Transport > Step Record** command, or by clicking in the **Record** toolbar to display the **Step Record** dialog box, or press SHIFT+F4.
2. Make sure that the Basic mode of the **Step Record** dialog is displayed (the **Adv.** button will be showing if the Basic mode is displayed; if the **Bas.** button is showing, click it).
3. Set the insertion point by doing one or more of the following:
   - Click the **Step Advance** button to move the insertion point forward by the current step size, or click the **Step Backwards** button to move the insertion point backward by the current step size. SONAR displays the insertion point location in the **Insertion point location** field (see Basic mode picture above).
   - Drag the position slider left or right to move the insertion point one measure at a time.
   - Type a location in MBT (Measure-Beat-Tick) format in the **Insertion point location** field.
4. Choose a step size by doing one of the following:
   - For common step sizes, click one of the notehead icons to choose a step size as large as a whole note or as small as a 64th note. You can increase the step size you choose by 50% or 75% by clicking the dot icon, or double-dot icon, respectively. You can add different step sizes together by holding down the CTRL key while you click extra icons, or by pressing the + key on the NumPad.
   - For a tuplet step size, click a notehead icon to choose the “tuplet unit” (for example, for eighth-note triplets, choose an eighth note). Then enable the **Tuplet** check box and fill in the **“n” in time of “n”** fields. For example, if you want quarter-note triplets, click the quarter-note icon, enable the **Tuplet** check box, and fill in **3** in the time of **2**, which means 3 quarter notes in the time of 2 quarter notes. If you want eighth-note triplets, click the eighth-note icon, enable the **Tuplet** check box, and fill in **3** in the time of **2**. If you wanted 5 notes in one beat, click the quarter-note icon, enable the **Tuplet** check box, and fill in **5** in the time of **1**.
   - If you want to create a custom step size, click the **n** button, and fill in the number of ticks in the **Ticks** field.
5. Choose a duration by doing one of the following:
   - If you want duration and step size to be the same, enable the **Follow Step Size** check box.
   - If you want duration and step size to be different, disable the **Follow Step Size** check box and fill in a percentage value in the **% of Note Value** field.
6. Choose a destination track for your recording in the **Destination Track** field.
7. If you want the insertion point to advance automatically when you play your MIDI controller, enable the **Auto Advance** check box.
8. Play a note or chord on your MIDI controller. When you release the note(s), the insertion point moves by the step size, if the **Auto Advance** check box is enabled. If **Auto Advance** is not enabled, you can release the notes and record more notes, or you can use the Navigation

controls to advance the insertion point. If you are still holding down a note or notes when you advance the insertion point, the step size of the held notes is extended by the current step size.

9. Continue recording notes of the same step size and duration to the same track, or change any of those parameters and continue recording. To create a rest, advance the insertion point without playing any notes. To delete notes on previous steps, you can press CTRL+Z for each recorded step. If you want to delete previous steps and move the insertion point back at the same time, check the **Delete** on **Back Step** check box, and click the **Step Backward** button.
10. When you're finished recording, close the dialog by clicking the **X** icon in the upper right corner, or by pressing SHIFT+F4.

You can press CTRL+Z during or after recording to undo your recording one step at a time.

Note: *Options that you choose in Advanced mode, such as **Link to Now Time**, are still in force when you use Basic mode.*

To Use Advanced Step Recording

The procedure for Advanced step recording is the same as for Basic, but with these extra options, which become available when you click the **Bas./Adv.** button in the **Step Record** dialog so that it displays **Bas.**:

To do this	Do this
Randomize the note duration	Disable the **Follow Step Size** check box, enter a number into the **% of Note Value** field (leave it at **100** if you want to follow step size), and enter the maximum duration that the step size should be randomized in the **Randomize By** field.
Choose a constant pitch and/or velocity and/or MIDI channel for the recorded note(s)	To choose a constant value for pitch, velocity, or channel, disable the **Use Input** check box next to the desired field, and fill in the value you want to use for that particular parameter.
Add two step sizes together	See "To Add Two Step Sizes Together" on page 271
Link the insertion point to the Now Time	Enable the **Link to Now Time** check box.
Enter notes at an offset distance from the displayed insertion point.	Enter a positive or negative number of ticks in the **Offset** field.
Move the insertion point back or forward by one beat.	Click the **Beat Backward** button or the **Beat Advance** button.
Move the insertion point back or forward by one measure.	Click the **Measure Backward** button or the **Measure Advance** button.
Use step pattern recording.	See "Step Pattern Recording" on page 273.

Table 47.

To Add Two Step Sizes Together

1. Choose your first step size. If desired, use any combination of tuplet and dotted values.
2. Press the + key on the Num Pad.

   A plus sign appears after the value in the **Step Size “n” Ticks** field.
3. Choose your second step size. If desired, use any combination of tuplet and dotted values.

   The total step size appears in the **Step Size “n” Ticks** field.
4. Press the note on your MIDI keyboard that you want to enter.

The new note appears in your track, and the Now Time moves the distance of the two combined steps that you entered. To toggle the plus sign on or off in the **Step Size “n” Ticks** field, press the + key on the Num Pad. To clear a large value from the **Step Size “n” Ticks** field, click a smaller value, or use a keyboard shortcut for a smaller value.

To Use Other Commands While Step Recording

- Use the mouse to click the command you want to use.

  or
- Click the **Activate Step Recording** button in the **Step Record** dialog so that the button is not red. This disables step recording, allowing you to use both the mouse, and any keyboard shortcuts that the **Step Record** dialog uses, for other commands.

By default, opening the Step Record window will automatically enable step recording. SHIFT+R is the default shortcut to open the **Step Record** dialog. Once the **Step Record** window is open, you can enable/disable step recording at will without closing the Step Record window: just click the **Activate Step Recording** button in the **Step Record** dialog, or press SHIFT+R.

See also:

Step Record Keyboard Shortcuts

Step Pattern Recording

Step Record Keyboard Shortcuts

The default keyboard shortcuts for step recording are on the NumPad, so that you can keep one hand on your MIDI keyboard to play notes with, and use the other hand on the NumPad to use shortcuts.

To configure your own shortcut, use the **Options > Key Bindings** command to open the **Key Bindings** dialog, choose **Step Record** in the **Bind Context** field, select a key and a function you

want to bind, and click the **Bind** button to bind them together. Bind additional keys and commands as needed.

Default setting or option	Default shortcut
Whole note	NumPad 1
Half note	NumPad 2
Quarter note	NumPad 4
Eighth note	NumPad 8
16th note	NumPad 6
32nd note	NumPad 3
64th note	NumPad 7
Custom step size	NumPad 9
Tuplet	NumPad /
Dot	NumPad *
Double dot	SHIFT+NumPad *
Add next step size to previous step size	NumPad plus key “+”
Toggle the Delete on Back Step option	NumPad minus key “-”
Follow step size	CTRL+Num Lock (does not change Num Lock state)
Step backward	NumPad 0
Step advance	NumPad Enter
Beat backward	SHIFT+NumPad 0
Beat advance	SHIFT+NumPad Enter
Measure backward	CTRL+NumPad 0
Measure advance	CTRL+NumPad Enter
Auto Advance	NumPad Period “.”
Toggle step recording	SHIFT+ R

Table 48.

See:

Step Pattern Recording

Step Pattern Recording

The **Pattern** option lets you define a repeating rhythmic pattern of notes and rests so that you can use step recording more efficiently. For example, suppose your project is in 4/4 time, and one track has a pattern that is two measures long: quarter notes in the first measure and on the first two beats of the second measure, followed by a half-note rest on the last two beats. This pattern has six quarter notes followed by two quarter-note rests.

When you use step recording with **Auto Advance**, you can play the six quarter notes and SONAR will automatically advance to the next step. However, to skip over the rests, you need to click the **Advance** button two times.

With pattern recording, you define a pattern that indicates where the rests appear in the pattern. SONAR will then skip over the rests automatically, so you don't need to click the **Advance** button at all.

SONAR displays patterns as a combination of digits (which represent beats that contain notes) and dots (which represent beats that contain rests). The pattern described previously looks like this:

1 2 3 4 5 6 . .

Here is another example:

1 2 . 4

This pattern automatically skips over every third beat; SONAR interprets this pattern as "one, two, rest, four."

Here is one final example based on 4/4 time, with a step size of eighth-note triplets (twelve steps per measure):

1 2 3 4 . 6 7 . 9 0 . 2

No matter how you enter a pattern, SONAR displays the digits in sequence, with periods replacing digits at each step where a rest would occur. You can create patterns with up to 64 steps.

To Use Pattern-Based Step Recording

1. Choose **Transport > Step Record** to display the **Step Record** dialog box.
2. Set the insertion point where you want to start recording.
3. Click in the **Pattern** field.
4. Press any number key to indicate a beat at which notes will be played.
5. Press the SPACEBAR, period, or the letter R to indicate a beat on which there is a rest.
6. When the pattern is complete, click elsewhere in the dialog box.
7. Step record as before.

From now on, after you record each step, SONAR automatically advances past all rests to the next step on which notes will be played. If you change step sizes while recording, the size of each rest changes also. To stop pattern-based step recording, simply delete the pattern from the **Pattern** box. SONAR stores up to 10 patterns in the **Pattern** field.

Recording Specific Ports and Channels

Most MIDI instruments are capable of sending information on several different channels at once. By default, SONAR merges all incoming MIDI data and records it on whatever MIDI tracks are armed. However, SONAR also allows you to control which MIDI input ports and channels each track will record. Here are some examples of when this feature might be useful:

- There are several performers, each playing a different MIDI instrument. By setting each instrument to transmit MIDI on a different channel and/or port, you can record each player's performance into a separate track, even though they are all playing at the same time.
- You are using a MIDI guitar controller and want to record the notes played on each string on a separate track.
- Your electronic keyboard has a built-in auto accompaniment feature that plays a drum part and an accompaniment while you play lead. You want to record each of these three parts into a different track in a SONAR project.
- You have a MIDI sequence stored on your synthesizer's built-in sequencer, and you want to record each channel onto a different track.

You can use external MIDI synchronization to automate the process of loading multichannel sequences from other MIDI devices. For more information, see Synchronizing Your Gear.

You can choose MIDI inputs for a track by using either the **Inputs** field on each individual track, or by using the **Tracks > Property > Inputs** command to display the **Track Inputs** dialog box.

SONAR allows you to filter MIDI input so that you can record only certain kinds of MIDI data (see "Input Filtering" on page 275), and also allows you to automatically turn off the Local On setting of your master keyboard.

To Assign Input Ports and Channels to MIDI Tracks

1. Click the drop-down arrow on an individual track's **Input** field to display the **Input** drop-down menu (jump to step 4, below).

   Or

1. Use the **Tracks > Property > Inputs** command to display the **Track Inputs** dialog box.
2. In the **Track** column, select a MIDI track or tracks that you want to choose inputs for.
3. Click the **MIDI Inputs** button that's at the bottom of the dialog to open the **MIDI inputs** drop-down menu.
4. Choose track inputs from these choices:
   - **None.** This option actually sets the **Input** field to **Omni**. With this setting the track will record any MIDI input coming in on any enabled port (MIDI interface input driver) on any channel.
   - **All Inputs > (MIDI Omni or MIDI ch 1-16).** With this setting the track will record any MIDI input coming in on any enabled port (MIDI interface input driver) on any channel, unless you choose a particular MIDI channel instead of MIDI Omni. Then the track will only record input

that's on the MIDI channel you chose.

- (**name of MIDI input driver**) **> (MIDI Omni or MIDI ch 1-16).** Choosing this option causes the track to record any MIDI channel coming from the named MIDI interface input driver, unless you choose a particular MIDI channel instead of MIDI Omni. Then the track will only record input that's on the MIDI channel you chose, from the named input driver.
- **Preset.** If you've created any preset collections of input ports and channels, you can select one here.
- **Manage Presets.** If you want to create or edit any preset collections of input ports and channels, you can select this option (see following procedure).

5. Click **OK**.

SONAR shows new track inputs in the **Input** fields in the Track pane.

To Create or Edit a Preset Input Configuration

1. In the **Input** field of a track that you want to select inputs for, click the drop-down arrow and choose **Manage Presets** from the drop-down menu (this menu is also available from the **MIDI Inputs** button in the **Track Inputs** dialog).

   The **MIDI Input Presets** dialog appears.
2. In the **Input Port** column, find the input port that you want to use for this track (if you only use a single-port MIDI interface, you'll only see one choice).
3. To the right of the input port, select the MIDI channels that you want this track to respond to on this MIDI port. Clicking the **OMNI** button in this row of MIDI channels clears or fills all the check boxes in this row.
4. Select channels for any other MIDI port that's listed, if you want to use channels on that port also.
5. If you want to save this configuration, type a name for it in the window at the top of the dialog, and click the disk icon to save it.

Now, when you choose inputs for other tracks, you can choose the preset you saved by clicking the **Presets** option in the track's **Input** drop-down menu. If you want to edit a preset, select it in the top window of the **MIDI Input Presets** dialog, edit it, and click the disk icon. If you want to delete a preset, select it in the same dialog and click the **X** button to delete it.

Input Filtering

SONAR lets you filter out specific types of MIDI messages or filter the MIDI input stream channel by channel. Any MIDI information that is filtered out is neither recorded nor echoed to any other MIDI devices.

You can use the message type filter to screen out resource-intensive MIDI messages like key and channel aftertouch. By default, SONAR records all types of events except these two.

You can use message-type filtering to record short System Exclusive (Sysx) messages in real-time. These will end up in the track as Sysx data events, which can hold System Exclusive messages up to 255 bytes. Leave the Buffers setting at 128 unless you experience data not being recorded. For more information about Sysx, see "System Exclusive Data" on page 805.

To Filter Event Types

1. Choose **Options > Global** and click the **MIDI** tab.
2. Check the message types you want recorded.
3. Click **OK**.

From now on, SONAR records only the types of events you have chosen.

Importing Music and Sound

While recording is perhaps the most common way of adding material to a SONAR project, there are several other methods you can also use. SONAR lets you import music into a project from several different types of digital data files, including MIDI files; audio files in Wave, MP3, AIFF, and other formats; audio CD tracks and other SONAR project files.

See:

Importing Audio CD Tracks

Importing Material from Another SONAR Project

Importing MIDI Files

Importing Audio Files

SONAR lets you insert digital audio information into any track of a project. If the audio file you are importing is in stereo, then it can be imported into a single stereo track, a pair of mono tracks or a single mono track.

The **File > Import > Audio** command supports the following digital audio file types:

- Wave (extension .wav)
- MPEG (extensions .mpeg, .mpg, .mp2, and .mp3)
- Apple AIFF (extensions .aif and .aiff)
- Active Streaming (extension .asf)
- Next/Sun (extensions .au and .snd)
- REX (extensions .rex, .rx2, and.rcy)
- Sony Wave64 (extension .w64)
- FLAC (extension .flac)
- Sound Designer II (extension .sd2)
- Core Audio Format (extension .caf)

The sampling rate and bit depth for a project is set based on your default settings in the **Audio Options** dialog. If the sampling rate from the Wave file does not match the sampling rate in your project, then it will be converted to the current project's sampling rate and bit depth.

To Import an Audio File

1. Set the Now time and current track to indicate where the audio should be placed.
2. Choose **File > Import > Audio** to display the **Open** dialog box.
3. Choose the audio file you want to import. SONAR displays information about the file at the bottom of the dialog box.
4. Click **Play** to listen to the audio file before importing.
5. If the new file is stereo, check the **Stereo Split** option if you want to insert the file into two separate tracks.
6. Click **Open**.

SONAR loads the audio data from the audio file and places it in the selected track at the Now time.

Preview bus

Files in the **Import Audio** dialog box may be selected and previewed in any existing bus in SONAR.

To preview a file

1. Select the desired output bus in the **Preview Bus** combo box
2. Click on the file in the file explorer pane
3. Click the **Play** button.
4. During playback, the **Play** button becomes a **Stop** button. Click **Stop** to stop playback.

Broadcast Wave Files

Broadcast Wave files are wave files with some additional information stored in them. Broadcast Wave files have the following information:

- **Description.** A brief description of the contents of the Broadcast wave. Limited to 256 characters.
- **Originator.** The author of the Broadcast wave. This information is taken from the **Author** field in the File Info dialog.
- **Originator Reference.** A unique reference identifier created by SONAR.
- **Origination Date.** The date the file was created.
- **Origination Time.** The time the file was created.
- **Time Reference.** The SMPTE time stamp for the beginning of broadcast wave.

To import a Broadcast Wave file:

1. If you want SONAR to import Broadcast Wave files always at their timestamped location, select **Options > Global**, click the **Audio Data** tab and check the **Always Import Broadcast Waves At Their Timestamp** option. Otherwise, set the Now Time and current track to indicate where the audio should be placed.
2. Choose **File > Import > Audio** to display the **Open** dialog box.
3. Choose the audio file you want to import. SONAR displays information about the file at the bottom of the dialog box.
4. Click **Play** to listen to the audio file before importing.
5. If the new file is stereo, check the **Stereo Split** option if you want to insert the file into two separate tracks.
6. Click **Open**.

If the **Always Import Broadcast Waves At Their Timestamp** option is selected in the **Global Options** dialog, the imported Broadcast Wave file appears at its timestamp on the selected track. Otherwise, the file appears at the Now Time on the selected track.

Importing Audio CD Tracks

The **File > Import > Audio CD** command lets you import tracks from audio CD's into any track of a project.

Audio tracks on a CD always have a bit depth of 16, but you can choose to import the tracks at a higher bit depth if desired.

To Import a track from an Audio CD

1. Set the Now time and current track to indicate where the audio should be placed.
2. Insert an audio CD into the computer's CD drive.
3. Choose **File > Import > Audio CD** to display the Import Audio CD Tracks dialog box.
4. Make sure the correct CD drive is selected in the **Target Drive** drop-down list.
5. Choose the audio track you want to import. SONAR displays the length and size of all audio tracks.
6. Click **Play** to listen to the audio track before importing.
7. If you wish to import the audio with a different bit depth than the original audio track, choose the desired bit depth from the **Import Bit Depth** drop-down list.
8. Click **OK**.

SONAR loads the audio data from the audio CD and places it in the selected track at the Now time.

Importing Material from Another SONAR Project

You use the **Edit > Copy** and **Edit > Paste** commands to import material from one project to another using the Windows clipboard. The project that contains the material you want to import is the **source project**. The project into which the material is imported is the **target project**.

Normally, if you copy material from several different tracks to the Windows clipboard, the information will be pasted back into separate tracks. You can choose to paste all the material from the clipboard into a single destination track in the target project.

You can also copy material from one project to another by displaying the Track view for both projects side by side, then using drag-and-drop editing.

To Import Material from Another Project

1. Open the source project, or click in the Track view for that project.
2. In the Track view, select the material you want to import.
3. Choose **Edit > Copy** to display the **Copy** dialog box.
4. Make sure that **Events in Tracks** is checked. If you don't want to import tempo changes, meter/key changes, or markers, uncheck those options. Click **OK**.
5. Open the target project, or click in the Track view for that project.
6. Set the Now time and current track to indicate where the material should be placed.
7. Choose **Edit > Paste** to display the **Paste** dialog box.
8. Check **Paste to One Track** if you want all material imported into the current track (not recommended if you're importing both MIDI and audio data).
9. Click **OK**.

SONAR imports the material and displays it in the Track view.

Importing OMF Projects

With OMFI (Open Media Framework Interchange) support & Broadcast WAVE support SONAR lets you collaborate and exchange project files with users of other programs and platforms. Support for OMFI and Broadcast Wave files provides cross-platform compatibility with OMFI host applications such as Pro Tools, Avid and Logic systems. SONAR also exports projects as OMF files that you can open in Pro Tools and other audio software.

SONAR now allows you to select sample rate and bit depth during OMF import.

A few general guidelines for preparing OMF files for import into SONAR:

- OMF version 2 is preferred.
- AIFC can take slightly longer to open, as the data must be converted to WAVE on read, so WAVE is the best choice.
- If exporting from Avid Xpress DV, select "embed" (not "link") when exporting the OMF file, and don't include any video.

OMF Explained

The OMF format, or OMFI (Open Media Framework Interchange, means the same as OMF), is a file format that can be read by many professional-level audio programs. OMF files contain two basic types of information:

- Audio and/or video files, referred to as media
- Information needed to put the media data in sequence—known as the Composition

The OMF file supplies the following data and information:

- Tracks
- Clip positions—an OMF file's EDL edit resolution can be either frame accurate or sample accurate. SONAR can read either, but always writes sample accurate. The clip position is specified in absolute samples.
- Slip edits
- Fades and crossfades (as destructive edits)—SONAR renders any fades when it writes OMFs, creating separate clips for any fade-ins or fade-outs. SONAR slip-edits the original clip to make room for the fade-in and fade-out clips. If you export to an audio program that supports slip editing, the user can delete the fade clips and roll out the original clip to return to the original raw audio (without fades) if desired.
- Sample rate and audio bit depth, but only if the media are embedded in the OMF

The OMF file does NOT supply the following data and information:

- Volume and pan envelopes—OMF does actually support limited automation. However, as with Nuendo and most other OMF host programs, gains and pans are ignored (on both read and write) in SONAR as they are only supported on MONO tracks (OMF limitation).
- Plug-in effects.
- MIDI data
- Tempo

Whoever supplies the OMF file that you want to open in SONAR should also send along a text file containing all pertinent information about the project, especially tempo.

To Open OMF Files in SONAR

1. Use the **File > Open** command, which opens the **Open** dialog.
2. In the **Files Of Type** field, select **OMF File**.
3. Navigate to the folder that contains your OMF files, select the OMF file you want to open, and then click the **Open** button, which opens the **Unpack OMF** dialog.
4. If you know the exact tempo of the file, enter it into the **Initial Tempo** field. It is always preferable to know and enter the project tempo at this point. If you don't know the project tempo you can open the file at the default tempo and then change the file's tempo later, but this will cause the clips to move.
5. The **Sample Rate** field displays the sample rate of the imported audio (if the audio is embedded in the OMF). Use this field to change the sample rate, if you need to.

6. The **Bit Depth** field displays the bit depth of the imported audio if the audio is embedded. If the audio is external, the **Bit Depth** field defaults to the **Original** menu option, which will import the audio at the bit depth the audio is currently using. If you want to import the audio at a different bit depth, you can choose the bit depth in this field.
7. If you have previously enabled SONAR's **Use Per-Project Audio Folders** option, which is located in SONAR's **Global Options** dialog, then the **Store Project Audio In Its Own Folder** check box is already enabled, and the fields under it are available. If you want to use this option, fill out the fields below the check box; otherwise, disable the check box.
8. Click **OK**.

   SONAR opens the OMF file.

You can also export SONAR projects as OMF files (**File > Export > OMF** command).

See “Exporting OMF Files” on page 678.

Importing MIDI Files

You can create a new SONAR project from a MIDI file simply by opening the file. SONAR takes material from the file and places it into one or more tracks in the Track view.

To Import Data from a MIDI File into a Project

1. Open the MIDI file as a new, separate project.
2. Choose **Edit > Select > All.**
3. Choose **Edit > Copy** to display the **Copy** dialog box.
4. Make sure that **Events in Tracks** is checked. If you don’t want to import tempo changes, meter/key changes, or markers, uncheck those options. Click **OK**.
5. Open the target project, or click in the Track view for that project.
6. Set the Now time and current track to indicate where the material should be placed.
7. Choose **Edit > Paste** to display the **Paste** dialog box.
8. Check **Paste to One Track** if you want all material imported into the current track.
9. Click **OK**.

SONAR imports the material and displays it in the Track view.

Importing audio / MIDI files from the Clips pane

It is possible to import audio and MIDI files via the Clips pane context menu. Imported files are inserted at the Now time.

To import audio/MIDI files

1. In the Clips pane, right-click the track to which you want to import an audio or MIDI file.

   The Clips pane context menu appears.

2. Do *one* of the following:
   - Select **Import Audio** to import an audio file.
   - Select **Import MIDI** to import a MIDI file.

See:

Importing Music and Sound

Saving Your Work

Like most Windows programs, SONAR has a **File > Save** command and a **File > Save As** command to save your work. Normally, you save your projects in the standard project file format, with a file extension of .cwp. This file contains all your MIDI data and all your project settings. Any digital audio that is part of your project is stored in a separate file, as described in “System Configuration” on page 843.

SONAR also lets you save files in several other formats, as described in the table:

File type	Format	Explanation
Standard MIDI	.mid	Used to transfer MIDI-only projects to other software products that support Standard MIDI files.
Bundle	.cwb	A single file that includes all the material in your project: MIDI data, project settings, and audio data. This format is used for projects that contain digital audio, when you want to back up your work or transfer a project to a different computer. See “Backing Up Projects with Digital Audio” on page 839 for more information. **Note:** Bundle files do not save video data.
Template	.cwt	A file that is used as a pattern to create another. Templates make it easy to create and configure new projects. See “Layouts, Templates and Key Bindings” on page 731 for more information.

Table 49.

If you have made changes to a project and then attempt to close the project, either by closing the Track view or by choosing **File > Close**, SONAR asks if you want to save the changes you have made. This prevents you from accidentally losing your work. You can tell whether changes have been made to a project by looking for an asterisk (*) after the project name in the SONAR title bar.

SONAR has an Auto Save feature that periodically saves your work into a special backup file. You can request automatic backups at fixed time intervals or every time a certain number of changes have been made to the file. When the limit is reached, the file is saved automatically. If your original project is called `MyProject.cwp`, the Auto Save version is called `Auto Save Version of MyProject.cwp`.

If there is a power failure or if you make a significant mistake, you can recover the last-saved version of your project by opening this file. You should then save your project under a different name by using the **File > Save As** command.

To Save a Project

1. Choose **File > Save As** to display the **Save As** dialog box.
2. Choose the type of file you want to save from the **Save as Type** list.
3. Enter a file name and click **Save**.

   SONAR saves the file. You can also use File Versioning instead of using Save As. For more information, see “To Use File Versioning” on page 283.

To Change the Auto Save Settings

1. Choose **Options > Global** and click the **Autosave and Versioning** tab.
2. To enable Auto Save, set the number of minutes and/or the number of changes between saves.
3. To disable Auto Save, set both values to zero.
4. Click **OK**.

   From now on, your projects are saved automatically according to the settings you entered.

Using File Versioning

SONAR can be enabled to keep previously saved versions of your project in a temporary file. You can revert to any of these saved versions or use the default of the most recently saved version.

When file versioning is enabled, SONAR retains a list of previously saved project files in your project folder. The most recent version retains the original name of the project. Previously saved versions are saved with a time stamp following the original project name in order of most recently saved.

To Use File Versioning

1. Choose **Options > Global** and click the **Autosave and Versioning** tab.
2. Check the **Enable Versioning Of Project Files** check box.
3. Use the spinner to select the number of versions of your project you would like SONAR to keep.

Note: *If you exceed the maximum number of saved file versions selected in Step 3, the oldest version is discarded.*

To Revert to a Previously Saved File

1. Choose **File > Revert**.

   A dialog box appears containing a list of dates and file sizes for all previously saved versions of the current project.
2. Select the file version you want to work on.

3. Click **OK**.

Note: *If the current project is unsaved at the time you choose **File > Revert**, you will be prompted with a warning that reverting the project will cause all unsaved changes to be lost. When the reverted project is loaded, the timestamp is stripped off, and the reverted project assumes the project's original name.*

Labeling Your Projects

SONAR lets you attach subtitles, composer credits, copyright, and other information to your projects, as shown in the following table:

Label	Description
Title	The title for your project; prints automatically at the top of a Staff view printout.
Subtitle	For a subtitle or dedication; prints directly below the title in a Staff view printout.
Instructions	Use for performance instructions; prints flush left in a Staff view printout.
Author	Put your name here if you are the composer. Prints flush right in a Staff view printout.
Copyright	Copyright information prints flush right, under the author name, in a Staff view printout.
Keywords	Put keywords describing the project here for future reference.
Comments	Free text comments. Type as much as you like. You can enter approximately the same amount of text as you can in Windows *Notepad*.

Table 50.

This information is shown in the File Info dialog box, which is displayed using the **File > Info** command. If the File Info window is open when you save a file, then this window is displayed automatically the next time the file is opened. This is useful if you:

- Share files with others and want them to see special instructions when they open the file
- Want your copyright information to be displayed automatically

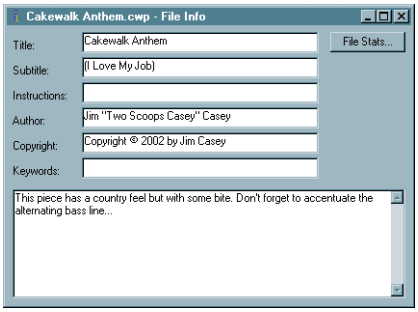
If the File Info window is closed when you save the file, it will not be automatically displayed the next time the file is opened.

Although you cannot use **Edit** menu commands while working in the File Info window, standard Windows hot keys like CTRL+X, CTRL+C, and CTRL+V can be used to cut, copy, and paste text.

To Display and Edit Project Information

1. Choose **File > Info** to display the File Info window.
2. Edit the information as desired.

Figure 45. *The File Info window*



3. If you want the File Info window to display automatically, save the file.
4. Click **Stats** to see statistics about the contents of the file.
5. Choose **File > Print Preview** if you want to print the project information
6. Close the File Info window.

File Statistics

To open the **File Statistics** dialog, select **File > Info** and click the **Stats** button in the **File Info** dialog. The **File Statistics** dialog box displays the following information about the contents of the project file:

Statistic	What it means
Created	The date the project was first saved.
Editing time	The total time you've had the project open, from the time it was created to the last time it was saved. This does not include time spent editing the project since you last saved it. If you want to update this value, save the project.
Revision	Each time you save a file that has been changed, this number is incremented. If you open a project, make no changes, then save it, the revision number is not changed.
Events	The total number of events in the project.
Sample rate	The sample rate for digital audio.
Bit depth	The audio driver bit depth of digital audio.
File version	The SONAR version number.

Table 51.

Arranging and editing

The Track view makes it easy to arrange and mix your projects from a single view. From one location, you can select, copy, move, mix, and rearrange the parts of your project, using menu commands or drag-and-drop tools. You can add real-time audio and MIDI effects from the Effects bin and buses. Markers provide easy-to-use reference points and labels for the different parts of your project, and the snap grid makes it easy to align your clips to the desired time points. Slip-editing allows you to non-destructively change the start and/or end time of a clip, just by dragging its borders. With Groove clips, you can easily create repetitions of your clips using your mouse. Both the Track view and Console view have a full set of record and playback meters, which you can configure in several ways. SONAR also has a variety of tools and commands for changing the tempo of your project. Composite tracks allow you to keep all your takes in one track if you want, and selectively mute and solo the various clips in the track. Track folders let you edit multiple tracks at once and conserve screen space.

Arranging Tracks

Working with Track Templates

Track Icons

Arranging Clips

Working with Partial Clips

Markers and the snap grid

Working with Linked Clips

Splitting and Combining Clips

Take Management and Comping Takes

Clip Muting and Isolating (Clip Soloing)

Track Folders

Adding Effects in the Track View

Changing Tempos

Undo, Redo, and the Undo History

Slip-editing (Non-destructive Editing)

Arranging Tracks

SONAR provides a variety of commands that let you work with the tracks in your project. Here are some of the things you can do:

You can	Here's why
Rearrange the tracks in the Track view so that they appear in a different order	This makes it easier to see and work with a subset of tracks, like the rhythm section, or the vocals and vocal backing tracks, or all muted tracks.
Hide individual tracks	This makes it easier to work in a large project. You can display only the tracks you want to see at a given time.
Move tracks into a track folder	Lets you group tracks by function, edit several tracks at once, hide groups of tracks easily, and mute, solo, archive, arm, or input monitor a group or tracks with one click. See "Track Folders" on page 334 for more information.
Make copies of a track	Copying a track and then adding a time offset or changing the patch is an easy way to double a part. You can also copy and then transpose a track to add harmony.
Erase or delete a track	Tracks and clips that you are no longer using in your project are distracting and take up space in your project file.

Table 52.

All the commands you use to arrange tracks work on selected tracks. The current track (the one with the lighter titlebar) is always selected. You can select additional tracks as shown in the table:

To do this	Do this
Select a track	Click the track number (click the right side of the track number; the upper left corner of the track number is for grouping tracks) in the Track view. The track is selected, and all other tracks—except the current track—are deselected. When a track is selected, both the track number and all the data in the track appear highlighted.
Select several adjacent tracks	Click the track number for the first track in the group, drag the mouse to the last track number in the group, and release the mouse button.
Select/deselect all tracks	Double-click a track number.
Add or remove a single track from the selection	Hold the SHIFT key and click the track number to add it to the selection; hold the CTRL key and click the track number to toggle its selection status.

Table 53.

See:

Changing the Order of Tracks

Configuring the Display of Tracks in the Track View

Inserting Tracks

Copying Tracks

Erasing Tracks

Changing the Order of Tracks

There are several ways you can change the order of tracks in the Track view:

- Drag a track to a new position in the Track view.
- Use the **Tracks > Sort** command to rearrange the tracks in order based on the track name, status, or other setting.

To Drag a Track to a New Position

1. Position the mouse just to the right of the track number, over the track icon of the track you want to move.

   The cursor changes to an up/down arrow.
2. Drag the track to its new location, and release the mouse button.

SONAR rearranges and renumbers the tracks.

You can sort the tracks in a project based on several parameters, in either ascending or descending order:

Sort by	What happens
Name	Ascending puts track in alphabetic order, descending puts them in reverse order
Size, output, or channel	Ascending puts them in increasing numeric order, descending puts them in decreasing numeric order
Muted, archived, selected	Ascending puts qualifying tracks at the end, descending puts them at the beginning

Table 54.

No matter how you sort, blank tracks always go to the end of the list.

Note that track numbers are used for reference only. When you re-arrange the order of tracks, they are automatically assigned sequential numbers based on the order in which they are displayed in the Track view.

To Sort the Tracks

1. Choose **Tracks > Sort** to display the **Sort Tracks** dialog box.
2. Choose the attribute by which to sort from the **Sort By** list:

Attribute	How it works
Name	If you choose this attribute, SONAR puts the tracks into alphabetical order, either ascending or descending, depending on what you choose in the Order list.
Muted	If you choose this attribute, SONAR puts all the muted tracks at either the top or bottom of the Tracks window, depending on whether you choose descending (top) or ascending (bottom) in the Order list.
Archived	If you choose this attribute, SONAR puts all the archived tracks at either the top or bottom of the Tracks window, depending on whether you choose descending (top) or ascending (bottom) in the Order list.
Selected	If you choose this attribute, SONAR puts all the selected tracks at either the top or bottom of the Tracks window, depending on whether you choose descending (top) or ascending (bottom) in the Order list.
Size	If you choose this attribute, SONAR puts the tracks in order by size, either in descending or ascending order.
Output	If you choose this attribute, SONAR sorts the tracks by output number, either in descending or ascending order. SONAR considers non-numbered outputs to have lower numbers than numbered outputs.
Channel	If you choose this attribute, SONAR sorts the tracks by channel number, either in descending or ascending order: • If you choose ascending order, SONAR puts all MIDI tracks at the bottom of the Tracks window, with the lower channel numbers first. • If you choose descending order, SONAR puts all MIDI tracks at the top of the Tracks window, with the higher channel numbers first.

Table 55.

3. Choose the order in which to sort from the **Order** list.
4. Click **OK**.

SONAR sorts the tracks according to the settings you chose.

Inserting Tracks

You can insert new tracks by a variety of methods. When you insert multiple tracks, you can set track output properties at the same time. If you want new audio tracks to always use the same output bus, you can set that bus as the default bus.

For step-by-step instructions, follow these procedures:

To Insert a Single Track

- Click the **Insert New Tracks or Buses** button that's in the **Track View** toolbar, and choose options from the pop-up menu.

  Or

- Right-click in the Track pane at the place where you want to insert a track, and select **Insert Audio Track** to add an audio track or **Insert MIDI Track** to add a MIDI track.

  Or

- Press INSERT to add a track of the same type (audio or MIDI) as the current track.

SONAR shifts the current track and all tracks below it down by one, and inserts a blank, new track at the location of the highlight.

To Insert Multiple Tracks

1. Use the **Insert > Multiple Tracks** command to open the **Insert Tracks** dialog.
2. If you want to insert audio tracks, do the following:
   - Fill in the number of audio tracks you want to insert in the **Audio** section's **Track Count** field.
   - Pick a main audio output for the tracks in the **Main Destination** field.
   - If you want the main output that you chose to be the default output for new audio tracks, enable the Set as Default Bus check box. You can also choose the default bus by right-clicking a bus, and choosing **Set as Default Bus** from the pop-up menu.
   - If you want your new audio tracks to contain a Send module that outputs to a specific bus, choose the bus in the **Send** field. If you choose **None**, the new audio tracks will not contain a Send module.
3. If you want to insert MIDI tracks, do the following:
   - Fill in the number of MIDI tracks you want to insert in the **MIDI** section's **Track Count** field.
   - Pick a MIDI output for the tracks in the **Port** field.
   - Pick a MIDI output channel for the tracks in the **Channel** field.
4. Click **OK** to insert your tracks, or click **Cancel** to cancel the operation.

Your new tracks appear below any pre-existing tracks, with new audio tracks appearing above new MIDI tracks.

Note: *You can also choose the default output bus for new audio tracks by right-clicking a bus, and choosing **Set as Default Bus** from the pop-up menu.*

Configuring the Display of Tracks in the Track View

There are several commands in the Zoom tool drop-down menu that allow you to configure the appearance of your tracks in the Track view. You can use these commands to zoom in or out, show

or hide any combination of tracks, and revert back to previous display settings. The following table lists each of these commands and provides an explanation of each:

Command	Description	Shortcut
Show and Fit Selection	This command hides all tracks which are not selected. The remaining tracks are adjusted in size vertically and horizontally to fit in the Track view, without scrolling if possible. All track selections are lost after this command is executed.	SHIFT+S
Fit Tracks to Window	All currently displayed tracks are adjusted in size vertically to fit in the Track view, without scrolling if possible.	F
Fit Project to Window	This command resizes all tracks both vertically and horizontally to fit in the Tracks view.	SHIFT+F
Lock Height	This command maintains the track's height when you use a zoom or fit command. See "To Lock or Unlock the Height of a Track" on page 292.	n/a
Show Only Selected Tracks	This command hides all tracks which are not selected. The remaining tracks are adjusted in size vertically.	H
Hide Selected Tracks	Hides all selected tracks.	SHIFT+H
Show All Tracks	Shows all tracks in your project, including these hidden using the Track Manager.	A
Track Manager	Opens the **Track Manager** dialog. For more information about the **Track Manager** dialog, see Track Manager dialog.	M
Undo View Change	This command restores the view to its previous state. There are up to 16 levels of undo.	U
Redo View Change	This command restores the view to the state prior to the Undo View Change command.	SHIFT+U
Vertical FX Bins	Changes track FX bins from vertical position into horizontal FX fields located with other track property fields.	n/a

Table 56.

To Lock or Unlock the Height of a Track

1. Right-click an empty area in one of the desired track's controls to display the Track pane context menu.
2. Choose **Lock Height** from the menu.

When a track is locked, the **Maximize Strip** button in the track appears filled-in:

A. *Maximize Strip button*

When you lock the height of a track, its height does not change when you use a Zoom or Fit command. When a track's height is locked, you can still drag the track strip's lower border to adjust the track's height. After you drag the border, the altered track height becomes the track's locked height.

Copying Tracks

When you copy one or more tracks using the **Tracks > Clone** command, you can choose any of the following options:

- What to copy: events, properties, effects, sends
- Repetitions: how many copies of each selected track
- Starting track: where you want the first new track to appear

To Copy Tracks

1. Select the tracks that you want to copy.
2. Choose **Tracks > Clone** to display the **Clone Track(s)** dialog.
3. Check the **Clone Events**, **Clone Properties**, **Clone Effects**, and/or **Clone Sends** boxes to indicate which items you want to copy.
4. If you want copied events to become linked clips, check the **Link to Original Clips** check box.
5. Select the number of repetitions of each selected track that you want to create.
6. Select the track number where you want the first new track to appear. The other new tracks appear right after it.
7. Click **OK**.

SONAR copies the tracks and pastes the selected tracks, with the first new track appearing at the track number you selected. All tracks appear consecutively.

Erasing Tracks

You can easily delete an entire track, including all of the track properties and all of its clips and events. Sometimes, you only want to erase, or **wipe**, the contents of a track, leaving the track properties as they are. If you delete or wipe a track by mistake, you can use **Edit > Undo** to restore the deleted material.

When you delete or wipe a track, the track information is not placed on the SONAR clipboard. To remove material from a track and place it on the clipboard, use the **Edit > Cut** command instead.

To Delete Tracks

1. Select the tracks you want to delete.
2. Choose **Tracks > Delete**.

SONAR deletes the selected tracks. You can also right-click individual tracks and choose **Delete Track** from the pop-up menu.

To Wipe Tracks

1. Select the tracks you want to wipe.
2. Choose **Tracks > Wipe**.

SONAR deletes all clips and events from the selected tracks, but leaves the track properties intact.

Working with Track Templates

You can create an unlimited number of track templates for quickly recalling your most often used track settings including the following:

- Track type (MIDI or Audio)
- Mute, Solo and Record state
- Hardware input
- Output destination
- Bus send settings
- Track parameters
- Track icons
- Effects and their settings
- Instrument and Bank/Patch
- Track name

To Create a Track Template

1. Select the track or tracks you want to save as a preset.
2. Select **File > Export > Track Template** from the main menu.

   The **Save As** dialog appears.
3. Enter a name for the template and click **Save**.

Track templates use the file extension .cwx.

To Insert a Track or Tracks from a Template

- Select **Insert > Insert From Track Template > [track template name]** or select **More Track Templates** if you don't see the one you want on the menu.

  Or
- Right-click in the Tracks pane and select **Insert From Track Template > [track template name]**

or select **More Track Templates**.

This inserts tracks that are exactly like the template. If you don't want to use all of the track characteristics that are in the template, you can filter the characteristics that you don't want by selecting **Import Filter** from the pop-up menu. This opens the **Track Template Import Options** dialog, which allows you to specify what track characteristics you want to import.

Note: *If the template you insert contains buses, using the **Edit > Undo** command after you insert the template will remove the new tracks, but not the new buses. If you don't want to insert buses, deselect buses in the **Track Template Import Options** dialog before you insert a template. You can delete a bus by right-clicking just left of the bus name, and selecting **Delete Bus** from the pop-up menu.*

Track Icons

Track icons allow you to quickly identify a track's contents by instrument. You can assign a new track icon, create your own track icons, and save an icon as part of a track template.

To Show or Hide Track Icons

- To show or hide Track Icons in all views, use the **Options > Icons > Show Icons** command.
- To show or hide Track Icons in a specific view, use the **Options > Icons > [name of desired view] > Show Icons** command.

  Or
- To hide a track icon, right-click a track icon in the desired view, and choose **Show Icons** from the pop-up menu. This option is not available in Track view headers.

To Configure Track View Icons

- To show standard track icons in the header of each track in the Track view, use the **Options > Icons > Track View > Show in Header** command.
- To show custom track icons in the header of each track in the Track view, use the **Options > Icons > Track View > Show Custom In Header** command.
- To show track icons on the left side of the track controls of each track in the Track view, use the **Options > Icons > Track View > Show In Strip** command.

To Change the Size of Track Icons

- Right-click a track icon in the desired view, and choose **Small Icons** or **Large Icons** from the pop-up menu.

  Or
- Select **Options > Icons > [name of desired view] > Small Icons** or **Large Icons** from the main menu

4. Select **Small Icons** or **Large Icons** from the menu that appears.

To Change a Track Icon

1. Right-click on the icon you want to change.
2. Select **Load Track Icon** from the menu that appears.

   The **Open** dialog appears.
3. Select an icon and click **Open**.

   Or
1. Put the focus on the track you want to change.
2. Use the **Tracks > Property > Icon > Load Icon** command.

   The **Open** dialog appears.
3. Select an icon and click **Open**.

Note: *The right-click option is not available when you right-click a track icon in a track header in the Track view. However, you can load a new track icon into a track header by ALT-clicking the track icon to display the **Open** dialog, and then choosing a new icon. You can ALT-click a track icon in any view to display the **Open** dialog.*

To Reset a Track Icon to its Original Icon

1. Right-click on the icon you want to reset.
2. Select **Reset Track Icon** from the menu that appears.

   Or
1. Put the focus on the track you want to change.
2. Use the **Tracks > Property > Icon > Reset Icon** command.

To Create a Track Icon

1. Create or edit a graphics file in .bmp format, preferably 128 by 128 pixels.

   You can use any image as a track icon. You can use any size image, but for best results scale the image to 128 pixels square. Images must be in the .bmp format.
2. Save the image as a .bmp file in the Track Icons directory in your SONAR program folder.

Track Icon Size(s) and Transparency

You can configure the size of small and large icons in `Cakewalk.ini`. By default, small icons are 32x32 pixels and large icons are 48x48 pixels. Use the following INI variables to change the default size:

[WinCake]

SmallIconHeight=32

LargeIconHeight=48

If you wish to create custom track icons, we recommend that you author them as 96x96 pixel 24-bit bitmaps (.BMP).

The top left pixel in the BMP determines the transparent color. If you prefer to not have transparent icons, add the following variable to `Cakewalk.ini`:

[WinCake]

IconTopLeftPixelTransparent=0

When transparency is enabled, the global color entry (**Options > Colors**) called "Track View Icons Background" determines the background color ("Console Strips Icons background" does the same for the Console view and Track Inspector).

Configuring Track View Controls

The Track view strips no longer have a special header section:

- The **Number**, **Name**, **Peak Meter Indicator** and **Size** buttons still have fixed placements in the top row of the strip.
- All other parameter controls now flow over the full available space in the entire strip.

As a result:

- The **MSR** buttons (and the **Automation Read/Write**) buttons follow the same layout rules as any other parameter widget.
- The Vertical VU meter spans the full height of the strip. So even when a strip is minimized, you can still see a 22 pixel high meter.
- The min track height has been slightly increased from 18 to 22 pixels.
- SHIFT-clicking on the minimize or maximize buttons in a Track view strip resizes that strip to its default height.

You can hide, reorder, and visually group the controls in tracks and buses. You can also control how the display tabs at the bottom of the Track pane function.

Changes you make to tracks affect tracks of the same kind in all projects. In other words, the way you configure a MIDI track controls the display of all MIDI tracks in all projects. The way you configure an audio track controls the way all audio tracks appear in all projects. The way you configure a bus controls the way buses appear in all projects. Synth audio tracks follow audio track configuration, and synth MIDI tracks follow MIDI track configuration.

You can reorder each individual control with the exception of AUX controls: these all move as a group. For tracks with more than one send, all send controls move as one.

To Reorder a Track or Bus Control

1. Hold down the ALT key, and drag the control that you want to move. A rectangle appears around the control you are dragging.

   A small vertical insertion line appears just to the left of the area where the control will be placed.
2. Release the mouse button at the location where you want the control to appear.

The control moves to the location where you dropped it.

To Restore the Default Order

- Right-click the kind of track that you want to restore to the default order, and choose **Restore Default Widget Order** from the pop-up menu. If you want to restore buses to the default order, right-click a bus. Surround buses are separate from stereo buses.

To Configure Track and Bus Tabs

1. Right-click a tab, and choose **Widget Tab Manager** from the pop-up menu.

   The **Widget Tab Manager** dialog appears.
2. In the **Tab Name** field, choose the tab that you want to configure, or choose **<new>**, and type a name to create a new tab.
3. In each of the four Strip columns (Audio Strip, MIDI Strip, etc.), check all the controls you want to see on this type of tab in each track or bus type (Audio track, MIDI track, Bus, Surround Bus).
4. To select all available controls, click **Select All Widgets**; to select the default controls, select **Restore Tab Defaults** (this will delete any new tabs you've created).
5. To configure a different tab, select it in the **Tab Name** field.
6. Click **OK** to implement your changes, or **Cancel** to delete them.

The order that a control (also called a *widget*) appears in is the same for all tabs in the same strip type. For example, if the pan control appears first on the **Mix** tab of audio tracks, it also appears first on any other tabs for audio tracks that display the pan control.

To Change the VU Meter to Horizontal or Vertical Display

- Click the drop-down arrow next to the **Show/Hide Meters** button , and choose either **Horizontal Meters** or **Vertical Meters** from the menu.

Track view control size and layout

It is possible to alter the default size and layout of the controls in the Track view. This requires adding entries to the `Cakewalk.ini` file.

This variable should be set in the `[WinCake]` section. For example:

```
[WinCake]
TVBoldStripNames=0
```

Below are the variables that affect the control appearance:

```
TVControlHeight=<number of pixels>, default = 17
```

Specifies the height of controls. The default height is 17 pixels. This value shouldn't be changed more than 1 or 2 from the default value, or you may experience unexpected results.

```
TVControlWidth=<number of pixels>, default = 41
```

Specifies the width of controls. The default width is 41 pixels.

```
TVControlSpacingX=<number of pixels>, default = 3
```

Specifies the horizontal space, in pixels, between controls. The default spacing is 3 pixels.

`TVControlSpacingY=<number of pixels>, default = 3`

Specifies the vertical space, in pixels, between controls. The default spacing is 3 pixels.

`TVSpacingXInCluster=<number of pixels>, default = 2`

Specifies the horizontal space between each button in a “cluster”. The default value is 2 pixels. The following controls are grouped into clusters:

- Mute, Solo, Arm for Recording (MSR)
- Automation Read, Automation Write
- Phase, Interleave (mono/stereo)

`TVBoldStripNames=<0 or 1>, default = 1`

Specifies whether track/bus names use bold (value=1) or regular (value=0) font style.

`TVLargeStripNames=<0 or 1>, default = 1`

Specifies the size of track/bus names. The default size is large (value=1).

Arranging Clips

The Track view provides many ways for you to rearrange, copy, and paste clips to arrange your music the way you want. The easiest is to select the clips or portions of clips you want to arrange and then drag and drop them wherever you want. You can drag and drop clips in the Track view even while playback is in progress. You can also arrange clips via the clipboard using the **Edit > Cut**, **Edit > Copy**, and **Edit > Paste** commands, which work like those in almost all Windows programs.

The **snap grid** enables you to move clips to or by an exact amount of time, such as a quarter note or whole measure. See “To Change the Snap Options” on page 317.

Displaying Clips

Opening Views by Double-clicking Clips

Selecting Clips

Moving and Copying Clips

Displaying Clips

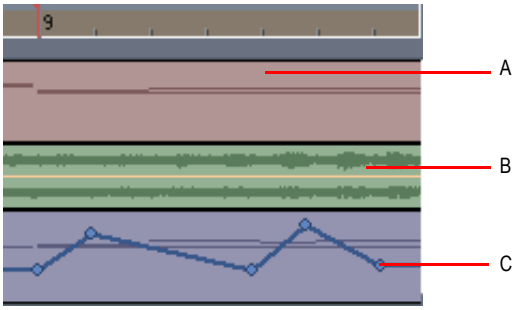
Clips are displayed as rectangles in the Clips pane. Their position and length show you at a glance their starting times and lengths. You can control four aspects of their appearance:

- **Color.** By default, each track’s clips are drawn in a different color. The clip colors restart at the tenth track. You can customize the default colors of clips in the **Configure Colors** dialog or change the color of any individual clip in the **Clip Properties** dialog.

Note: *In audio clips, the waveform changes color, unless no clip contents are displayed. In MIDI clips, the clip background changes color.*

- **Name.** You can also assign each clip a descriptive name, which is displayed in the upper-left corner of the clip.

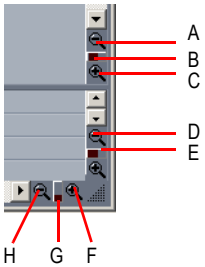
Contents. At your option, clips can be displayed with a graphical representation of the events in the clip. The effect is slightly different for MIDI and audio information.



A. *A MIDI clip shows each event; by looking at the clips, you can "see" the notes that are being played* ***B.*** *An audio clip shows the actual waveform* ***C.*** *Controller or automation data are also displayed*

To inspect the clip contents more closely, use the zoom tools to increase the size in which clips are displayed. Note that displaying the contents of each clip makes your computer work a little harder. As a result, if your computer has an older, slower CPU you may want to turn off the display of clip contents.:

Figure 46. *Zoom controls*



A. *Zoom Clips pane out vertically* ***B.*** *Vertical Zoom fader for Clips pane* ***C.*** *Zoom Clips pane in vertically* ***D.*** *Zoom Bus pane out vertically* ***E.*** *Vertical Zoom fader for Bus pane* ***F.*** *Zoom in horizontally* ***G.*** *Horizontal zoom fader* ***H.*** *Zoom out horizontally*

The **Track view** toolbar contains the Zoom tool:

To Zoom Horizontally

- Click the horizontal zoom buttons to zoom in or out by a fixed percentage each time you click.

  Or

- Drag the horizontal zoom fader to zoom in or out by the amount you drag.

Or

- Hold down the CTRL key and press the right arrow key (to zoom in) or the LEFT ARROW key (to zoom out).

To Zoom Vertically

- Click the vertical zoom buttons to zoom in or out by a fixed percentage each time you click.

  Or

- Drag the vertical zoom fader to zoom in or out by the amount you drag.

  Or

- Hold down the CTRL key and press the UP ARROW key (to zoom out) or the DOWN ARROW key (to zoom in).

To Zoom into a Selected Area

- Use the Zoom tool to drag-select an area of a clip or clips that you want to zoom to. When you release the mouse, the area you selected expands to fill the Clips pane window.

Zoom command keyboard shortcuts:

To do this	Use this shortcut
Zoom in vertically	CTRL+DOWN ARROW
Zoom in horizontally	CTRL+right arrow
Zoom out vertically	CTRL+UP ARROW
Zoom out horizontally	CTRL+LEFT ARROW
Undo Zoom	U
Redo Zoom	SHIFT+U
Turn On Zoom tool (use the Zoom tool to select the area to zoom to)	Hold down Z
Display Now Time in Center of Clips Pane	G
Fit project to window	SHIFT+F
Fit tracks and buses to window	F

Table 57.

To Zoom Using the Mouse Wheel (Fast Zoom)

- Hold down the ALT key and roll the mouse wheel forward to zoom in, backward to zoom out.
- Hold down ALT+SHIFT to intensify mouse wheel zoom effect.
- Hold down ALT+CTRL to adjust track scale (Track View Clips Pane only)

To Select Fast Zoom Options

1. Select **Fast Zoom Options** from the Zoom tool drop-down menu.

   The **Fast Zoom** dialog box opens.
2. Select the intensity of the Zoom effect in **Zoom Factor** by using the spinners or manually entering a value.
3. Select the vertical and horizontal Zoom focus.
4. Check or uncheck **Simultaneous Vertical and Horizontal Zoom**.

   The default is for **Simultaneous Vertical and Horizontal Zoom** to be checked. If you uncheck it, **Fast Zoom** exhibits the following behaviors.

   - ALT+Mouse Wheel zooms vertically
   - ALT+SHIFT+Mouse Wheel zooms faster vertically
   - CTRL+ALT+Mouse Wheel zooms horizontally
   - CTRL+ALT+SHIFT+Mouse Wheel zooms faster vertically
5. Click **OK**.

To Display Clip Names and Contents

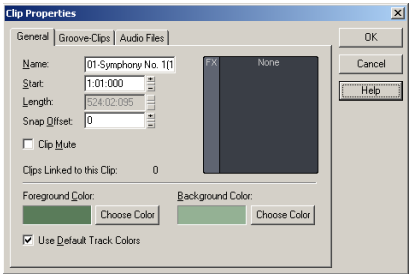
1. Right-click in the Clips pane, and choose **View Options** from the menu.
2. Check the **Display Clip Names** option to show clip names, or leave it unchecked to hide them.
3. Check the **Display Clip Contents** option to show clip contents, or leave it unchecked to hide them.
4. Click **OK**.

SONAR modifies the clips pane to show the information you want.

To Change Clip Names

1. Select the clips you want to rename.
2. Right-click on one of the selected clips and choose **Clip Properties**. SONAR opens the **Clip Properties** dialog box.

Figure 47. *The **Clip Properties** dialog*



3. Enter a name for the selected clips, and click **OK**.

SONAR renames the selected clips.

To Change Clip Colors

1. Select the clips whose color you want to change.
2. Right-click on one of the selected clips and choose **Clip Properties**. SONAR opens the **Clip Properties** dialog box.
3. Choose a color as follows:

To do this	Do this
Use the default color	Check the **Default Color** box
Use a custom color	Click the **Choose Color** button and pick a color from the **Color** dialog box

Table 58.

4. Click **OK**.

SONAR changes the color of the selected clips.

Using the Navigator View

The Navigator view displays a large part of your project so you can see an overview of your song. The Navigator view is a floating version of the Navigator pane found at the top of the Track view.

Track Rectangle

The Track Rectangle appears as a green rectangle within the Navigator view. The Track Rectangle indicates the section of your project which appears in the Clips pane of the Track view. You can move the Track Rectangle or change its size.

To Move the Track Rectangle

1. Position your cursor inside the Track Rectangle until the icon changes to look like this: .
2. Click and drag the rectangle where you want and release.

To Change the Size of the Track Rectangle

1. Click one of the nodes on the rectangle border.
2. Drag to change the rectangle size.

To Change the Now Time in the Navigator view

1. Hold down the CTRL key.
2. Click where you want the Now Time to be.

Opening Views by Double-clicking Clips

By default, double-clicking a MIDI clip in the Clips pane opens a Piano Roll view for that track, and double-clicking an Audio clip opens the Loop Construction view for that track.

To Open a View From a Clip

1. Right-click in the Clips pane, and choose **View** from the pop-up menu.
2. Choose the type of view you want to work with from the submenu.

Selecting Clips

Before you move, copy, edit, or delete clips you need to select them. There are several ways to select whole clips, as shown in the table:

To do this	Do this
Select a single clip	Click on the clip in the Clips pane.
Select several clips at once	Drag in a rectangular pattern that touches each clip.
Select all the clips in a track	Click on the track number in the Track view.
Select a portion of one or more clips	Press and hold the ALT key and drag across the clips. The Snap to Grid setting determines the size portion you can select.
Add clips to the selection	Hold the SHIFT key and either click on the clips or drag a rectangle around the clips.
Add or remove clips from the selection	Hold the CTRL key and either click on the clips or drag a rectangle around the clips.
Add or remove all clips in a track from the selection	Hold the CTRL key and click on the track number.

Table 59.

Moving and Copying Clips

You can copy or move clips using drag-and-drop editing or the **Cut**, **Copy**, and **Paste** commands. If you copy or move clips into tracks that contain existing material, you need to let SONAR know how to combine the two.

You have these options:

Option	How it works
Blend Old and New	Events in the copied or moved clip are placed into a new clip that overlaps with the existing clip. This is the same effect as sound-on-sound recording.
Replace Old with New	Events in the copied or moved clip are placed into a new clip, and any overlapping events in the existing clip are erased. This is the same effect as overwrite recording.
Slide Over to Make Room	The existing clips are shifted in time to make room for the new clips, so they will not overlap. If you check the **Align to Measures** option, shifted clips are always aligned to measure boundaries; otherwise, the clips are placed end to end.

Table 60.

When you use the **Edit > Paste** command to add information to a track that contains existing material, there is one final option you can choose.

Option	What it means
Paste as New Clips	New clips are created containing the events on the clipboard, exactly as described in the preceding table.
Paste into Existing Clips (MIDI clips only)	The events on the clipboard are merged into any existing clips that occupy the same region of time. This means you will never end up with clips that overlap.

Table 61.

Note that if you copy or move clips to new, empty tracks, you don't have to worry about these settings. In this case, the track properties that go with the clips are automatically applied to the new track.

When you use drag-and-drop editing:

- You can set the above options every time you perform an edit, or you can set them once and have the same settings carry over automatically. Check or uncheck the **Ask This Every Time** box in the **Drag and Drop Options** dialog to indicate your preference. Open the **Drag and Drop Options** dialog by right-clicking in the Clips pane and choosing **Drag and Drop Options** from the pop-up menu.
- If you drag to the edge of the Clips pane, it will scroll automatically in the direction you drag.
- If you change your mind while dragging clips, press the ESC key to cancel the operation.

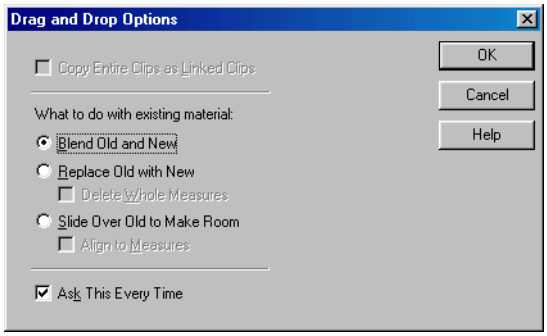
SONAR also lets you move and copy clips between projects.

To Move Clips Using Drag and Drop

1. Select the clips you want to move.

2. If you want to move the clips by an exact amount of time, enable the snap grid (see “To Change the Snap Options” on page 317).
3. Position the mouse over one of the selected clips.
4. Press and hold down the left mouse button. A rectangle is displayed around the selected clips.
5. Drag the clips to their new location, and release the mouse button.
6. If necessary, choose the options you want from the **Drag and Drop Options** dialog box (use **Options > Global** and open the **Editing** tab, or right-click in the Clips pane and select **Drag & Drop Options** from the menu that appears), and click **OK**.

Figure 48. *The **Drag and Drop Options** dialog*



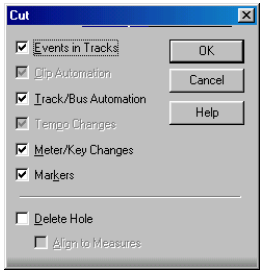
SONAR moves the clips to their new location.

Note: *Moving an audio clip (other than a Groove clip) to a part of your project that has a different tempo changes the size of the clip.*

To Move Clips Using Cut and Paste

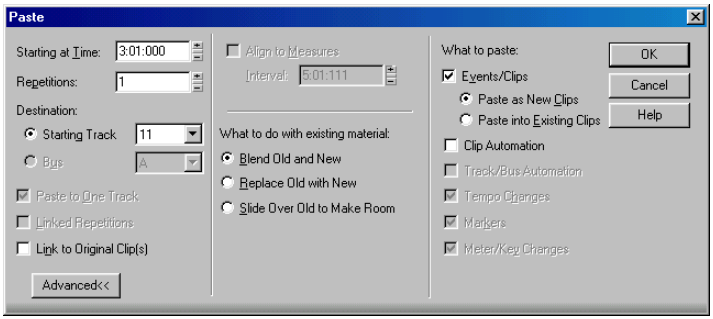
1. Select the clips you want to move.
2. Choose **Edit > Cut** to display the **Cut** dialog box.

Figure 49. *The **Cut** dialog*



3. Choose the options you want and click **OK**. SONAR cuts the clips from the project and places them on the Windows clipboard.
4. Click in the Track pane to set the current track to be the one where clips should be pasted.
5. Set the Now time to be the time at which the clips should be pasted.
6. Choose **Edit > Paste** to display the **Paste** dialog box.

Figure 50. *The **Paste** dialog*



7. Choose the options you want and click **OK**.

SONAR places the clips in their new location.

To Choose a Specific Start Time and/or Length for a Clip

1. Select the clip you want to edit.
2. Right-click on the selected clip and choose **Clip Properties**. SONAR opens the **Clip Properties** dialog box.
3. Choose the units you want to use for the new start time and/or length by clicking one of the radio buttons:
   - **M:B:T.** Click this if you want the clip to begin and end on a specific measure, beat, or tick.
   - **Samples.** Click this is you want the clip to begin and end on a specific sample.
   - **H:M:S:F.** Click this is you want the clip to begin and end on a specific hour, minute, second, or frame. This is also known as SMPTE time, and lets you start the clip at an absolute-time-based (as opposed to musical-time-based) point in your project.
   - **Seconds.** Click this is you want the clip to begin and end on a specific second.
4. Enter a new start time and/or length, or use the spinners or keyboard to change values.
5. Choose a value in the **Time Base** field—choose one of the two options in this section to control what happens to the clip's start time when you change the tempo:
   - **Musical (M:B:T).** If the clip is set to the Musical time base, the clip's M:B:T position stays constant, and its Absolute (SMPTE) position shifts.
   - **Absolute (SMPTE).** If the clip is set to the Absolute (SMPTE) time base, its Absolute position

stays constant, and its M:B:T position shifts.

Note: *The length of a clip may also change when you change the tempo—audio clips maintain their absolute (SMPTE) length, while a MIDI clip will follow the value in the **Time Base** field. If a MIDI clip is set to use musical time, the clip maintains its M:B:T length. If a MIDI clip is set to use absolute time, the clip maintains its absolute length.*

6. Click **OK** when you are done.

SONAR adjusts the clip to the values you chose.

Note: *The **Snap Offset** field is for audio clips only. The value of this field is the snap offset of the selected clip, in samples. When you set a snap offset value for a clip, and then drag the clip, the left edge of the clip does not snap to the current snap resolution--the clip snaps to a point on the clip that is the distance from the left edge of the clip to the snap offset value. For example, if you set the snap resolution to move to a measure, and the snap offset of a clip to 1500 samples, when you drag the clip, instead of the left edge of the clip moving to a measure line, the spot on the clip that's 1500 samples right of the beginning of the clip moves to the measure line.*

To Copy Clips Using Drag and Drop

1. Select the clips you want to copy.
2. Enable the snap grid, if desired.
3. Position the mouse over one of the selected clips.
4. Press and hold the CTRL key and click and hold the left mouse button. A rectangle is displayed around the selected clips.
5. Drag the clips to the new location, and release the mouse button.
6. If necessary, choose the options you want from the **Drag and Drop Options** dialog box, and click **OK**.

SONAR copies the clips to their new location.

To Copy Clips Using Copy and Paste

1. Select the clips you want to copy.
2. Choose **Edit > Copy** to display the **Copy** dialog box.
3. Choose the options you want and click **OK**. SONAR copies the clips to the Windows clipboard.
4. Click in the Track pane to set the current track to be the one where clips should be pasted.
5. Set the Now time to be the time the clips should be pasted.
6. Choose **Edit > Paste** to display the **Paste** dialog box.
7. Choose the options you want and click **OK**.

SONAR copies the clips to their new location.

To Delete Clips

1. Select the clips you want to delete.
2. Do one of the following:
   - Choose **Edit > Delete**, which brings up a dialog box—choose options and click **OK**.
   - Press the DELETE key.

SONAR deletes the selected clips.

See:

Splitting and Combining Clips

Working with Partial Clips

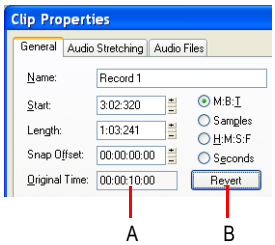
Working with Linked Clips

Reverting clip(s) to original time stamp

All audio and MIDI clips in SONAR have a **Original Time** property, which stores the original SMPTE time stamp associated with a clip. The Original Time clip property is based on absolute time, not tempo. This allows you to freely re-arrange clips and later revert them back to their original time.

SONAR automatically assigns the **Original Time** property during import or immediately after record. When an audio clip containing a SMPTE time stamp is imported into SONAR (such as a Broadcast Wave file), the **Original Time** field is populated with this time stamp. When opening previous SONAR projects, existing clips will be populated with their current time.

Note: *The **Original Time** property can not be edited. If a clip is bounced to a new clip, the **Original Time** stamp will not propagate to the new clip.*



***A.** Original Time property **B.** Click to revert clip to the original time stamp*

To revert clip(s) to original time stamp

To revert selected clips to their original SMPTE time stamp, do *one* of the following:

- Choose **Edit > Revert Clip(s) to Original Time Stamp**.

- Right-click a clip and choose **Revert Clip(s) to Original Time Stamp** from the context menu.
- Open the **Clip Properties** dialog and click **Revert**. See Clip Properties dialog—General.

Locking Clips

You can lock a clip so that it can't be accidentally modified or deleted. You can lock the clip's position and/or its data.

To Lock or Unlock a Clip's Position and/or Data

1. Right-click the clip, and choose **Clip Properties** from the pop-up menu to open the **Clip Properties** dialog.
2. In the **Clip Properties** dialog, click the **Lock** check box.
3. If you're locking the clip, use the drop-down menu next to the **Lock** check box to choose what clip attributes you want to lock:
   - **Position and Data.** This choice locks position and data, and causes a lock icon to appear on the clip .
   - **Position Only.** This choice locks position only, and causes a yellow lock icon with the clasp unlocked to appear on the clip .
   - **Data Only.** This choice locks data only, and causes a blue lock icon with the clasp unlocked to appear on the clip .
4. Click **OK**.

   Or

1. Select a clip.
2. Use one of the following commands:
   - **Edit > Clip Lock > Lock Position.** In lock mode, this choice locks position only, and causes a yellow lock icon with the clasp unlocked to appear on the clip, If data is already locked, then both position and data become locked, and a "locked" lock icon appears on the clip. In unlock mode, if both position and data are locked, and you unlock position, then the blue "unlocked" lock icon appears on the clip, meaning that only data is locked.
   - **Edit > Clip Lock > Lock Data.** In lock mode, this choice locks data only, and causes a blue lock icon with the clasp unlocked to appear on the clip. If position is already locked, then both position and data become locked, and a "locked" lock icon appears on the clip. In unlock mode, if both position and data are locked, and you unlock data, then the yellow "unlocked" lock icon appears on the clip, meaning that only position is locked.

   Or

1. Right-click a clip.
2. From the pop-up menu, choose one of the following commands:
   - **Clip Lock > Lock Position.** In lock mode, this choice locks position only, and causes a yellow lock icon with the clasp unlocked to appear on the clip. If data is already locked, then

both position and data become locked, and a “locked” lock icon appears on the clip. In unlock mode, if both position and data are locked, and you unlock position, then the blue “unlocked” lock icon appears on the clip, meaning that only data is locked.

- **Clip Lock > Lock Data.** In lock mode, this choice locks data only, and causes a blue lock icon with the clasp unlocked to appear on the clip. If position is already locked, then both position and data become locked, and a “locked” lock icon appears on the clip. In unlock mode, if both position and data are locked, and you unlock data, then the yellow “unlocked” lock icon appears on the clip, meaning that only position is locked.

Note: *If a clip’s position is locked, and you change tempo, what happens to the clip’s position depends on what option the Clip Properties* ***Time Base*** *field is set to:* ***Musical (M:B:T)****, or* ***Absolute (SMPTE)****. If the clip is set to the Musical time base, the clip’s M:B:T position stays constant, and its Absolute position shifts. If the clip is set to the Absolute time base, its Absolute position does not move, but its M:B:T position shifts.*

Auto Scroll Lock in Clips pane

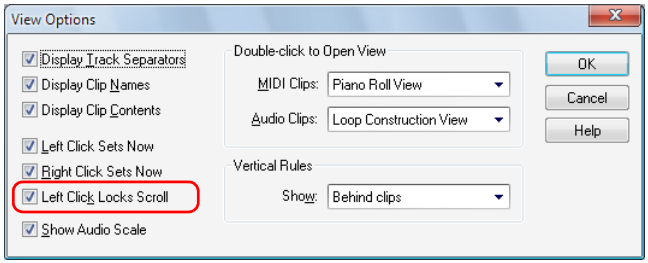
While editing, you can prevent the Clips pane from scrolling horizontally during playback. This allows you to focus on the edit location without worrying that the screen will eventually scroll away from the edit location.

When the **Left Click Locks Scroll** option is enabled (default behavior), the Clips pane will not scroll if you click any object in the Clips pane. When you are done with the edit and want the Clips pane to scroll again during playback, click in the background of the Clips pane to clear auto scroll lock.

To enable/disable auto scroll lock

1. On the **Options** menu, click **Clips Pane** to open the **View Options** dialog.
2. Select the **Left Click Locks Scroll** check box.
3. Click **OK** to close the **View Options** dialog.

Figure 51. ***View Options*** *dialog*



Nudge

Nudging is moving a clip or a MIDI note by a small amount to the left or right or up and down. There are three customizable settings for the Nudge feature. You can also nudge clips (in the Track view) or notes (in the Piano Roll view) up or down, and you can use keyboard shortcuts (see “To Nudge a Clip Using Keyboard Shortcuts” on page 313).

See: Nudge Settings

Nudge Settings

The Nudge tab in the **Global Options** dialog allows you to set the three Nudge settings.

To Nudge a Clip Left or Right

Use the following procedure to nudge a clip.

1. Select the clip you want to nudge.
2. Select **Process > Nudge Left(1-3)** from the menu to move the clip left or **Process > Nudge Right(1-3)** to move the clip right.

The amount the clip or note moves is determined by the settings in the Nudge tab of the **Global Options** dialog.

To Nudge a Clip Up and Down

Use the following procedure to nudge a clip (in the Track view) or MIDI note (in the Piano Roll view) up or down.

1. Select the clip or note you want to nudge.
2. Select **Process > Nudge > Up** to move the clip or note up or **Process > Nudge > Down** to move a clip or note down.

Clips move up or down one track at a time. Notes move up or down one pitch at a time.

To Change Nudge Settings

1. Select **Process > Nudge > Settings** to open the **Nudge** tab in the **Global Options** dialog box.
2. In one of the three Nudge groups, select one of the following:
   - **Musical Time.** Select a note length setting.
   - **Absolute Time.** Select one of the following absolute time options and a number in the first

field:

Absolute time setting	Description
Seconds	Whole seconds.
Milliseconds	Thousands of a second.
Frames	Number of frames. The default frame count is 30 frames per second. The number of frames varies depending on the setting in the **Project Options** dialog's **Clock** tab.
Samples	A very small amount of time. For CD-quality audio there are 44,100 samples per second, so a value of 1 here would not move a clip by a perceptible amount.
Ticks	The number of ticks per quarter note varies depending on the setting in the **Project Options** dialog's **Clock** tab. The default setting is **960**.

Table 62.

- **Follow Snap Settings.** Moves the clip or note by the current snap setting.

To Nudge a Clip Using Keyboard Shortcuts

1. Select the clip you want to nudge.
2. If necessary, turn on Num Lock (press the Num Lock key on your keyboard).
3. Press the appropriate Num Key.

Nudge	Shortcut
Left 1	NumPad 1
Right 1	NumPad 3
Left 2	NumPad 4
Right 2	NumPad 6
Left 3	NumPad 7
Right 3	NumPad 9
Up	NumPad 8
Down	NumPad 2

Table 63.

Working with Partial Clips

SONAR lets you select, copy, move, and delete portions of a project even if they do not match clip boundaries. There are two ways to do this:

- Directly select portions of one or more clips.
- Select a range of times and one or more tracks. SONAR automatically selects the portions of clips that are in both the selected time range and the selected tracks.

You can then copy, move, or delete the material the same way you do with whole clips.

When you select portions of a clip, SONAR may round off the start and end times of your selection based on the snap grid. For more information, see “Defining and Using the Snap Grid” on page 316.

To Select a Portion of a Clip

1. Press and hold the ALT key.
2. Drag the mouse across part of a clip.

SONAR highlights the selected portion of the clip. You can edit this portion of the clip using all the normal editing commands.

To Select a Portion of Several Clips

1. Press and hold the ALT key.
2. Drag the mouse across part of several clips in adjacent tracks.

SONAR highlights the selected portions of all the clips. You can edit these portions of clips using all the normal editing commands.

To Select Partial Clips Using Time Ranges and Tracks

1. Select a range of time in one of the following ways:
   - Drag the mouse in the Time Ruler.
   - Click between two markers to select the time between the markers.
   - Use the F9 and F10 keys to set the beginning and end selection times.
   - Select a clip (SONAR selects the range of time covered by the clip).
   - Choose **Edit > Select > By Time**, enter the start and end time, and click **OK**.
2. Select one or more tracks by clicking, SHIFT-clicking, or CTRL-clicking on the track numbers in the Track view.
3. To adjust the start and end time of the selection, hold the SHIFT key while clicking on the Time Ruler.

The relevant portions of clips in the selected tracks are highlighted. You can edit these portions of clips using all the normal editing commands.

To Clear the Partial Clip Selection

You can clear the time-restricted selection in any of the following ways:

- Click in an empty area of the Clips pane to completely clear the selection.
- Choose **Edit > Select > None** or press CTRL+SHIFT+A to completely clear the selection.
- Click on a single clip in the Clips pane to clear the time selection and select the clip.

Markers and the snap grid

SONAR has a collection of features you can use to simplify and speed the work you do arranging your projects. Here are a few of the most important things you can do:

- Show gridlines on measure boundaries in the Track view.
- Define and use the snap grid to make drag-and-drop editing more accurate.
- Create markers to identify and work with key time points in your project.

See:

Showing gridlines

Defining and Using the Snap Grid

Snap Offsets

Creating and Using Markers

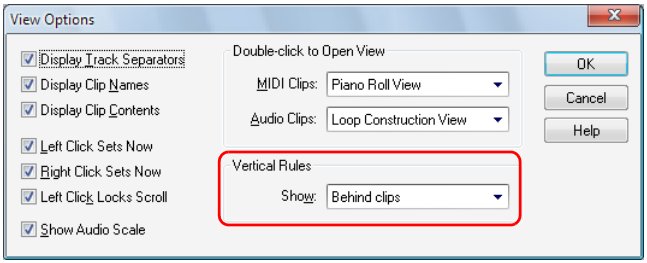
Showing gridlines

Displaying gridlines, or vertical rules, in the Clips pane of the Track view makes it easy to see at a glance how clips align with each other, how they align with measure boundaries, and when they start and end.

To show/hide vertical grid lines

1. On the **Options** menu, click **Clips Pane** to open the **View Options** dialog.
2. Under **Vertical Rules**, select one of the following options in the **Show** list:
   - **None.** No vertical grid lines are displayed
   - **Behind Clips.** Vertical grid lines are displayed, but clips will draw on top of them, so clip contents will not be obstructed.
   - **In Front of Clips.** Vertical grid lines are displayed and drawn on top of clips, always visible.
3. Click **OK** to close the **View Options** dialog.

Figure 52. ***View Options*** *dialog*



SONAR displays the Track view as you requested.

Defining and Using the Snap Grid

SONAR lets you define a snap grid that makes it easier to arrange clips, select time ranges, and control envelope shape drawing. To use the snap grid, enable the **Snap to Grid** button and set the grid resolution to an interval of musical time, such as a whole note, half note, or quarter note; a unit of absolute time: a number of frames, seconds or samples; an event; the start or end of a clip; a marker; or audio transients. The grid can use multiple resolutions at the same time, such as a whole note, and audio transients. When the **Snap to Grid** button is enabled, if you move or paste clips or markers, items will be snapped to the nearest point on the snap grid.

You can also use the snap grid to move clips **by** a certain interval, rather than snap them **to** the interval. Moving **by** an interval can be useful during drag-and-drop operations, if your data are not exactly aligned with measure or note boundaries.

The snap grid in each view is independent. For example, you can enable the snap grid in the Track view without enabling it in the Piano Roll or Staff views. You can also enable the snap grid in several different views, with different grid intervals in each one.

In the Clips pane, the snap grid in the Inline Piano Roll view is independent from the snap grid in Clips view. When you open the **Snap to Grid** dialog in the Clips pane, the dialog has separate tabs for Clips view and Inline Piano Roll view (called PRV mode in the dialog).

Magnetic snap. Cakewalk's snap grid has an option (on by default) called magnetic snap. This means that when you're dragging the boundary of an object, you can move the boundary freely until the boundary gets within a certain number of ticks from the snap target. The closer the object gets to the snap target, the more strongly the object is pulled to the target. You can set the strength of magnetic snap to low, medium, high, or off. Note that if you are zoomed out a certain amount, the time boundary around the snap target will appear to be quite small, and you might think that the snap grid is not functioning. If this is the case, zoom in closer to enhance your editing experience. If you're dragging a whole clip, magnetic snap is not in effect.

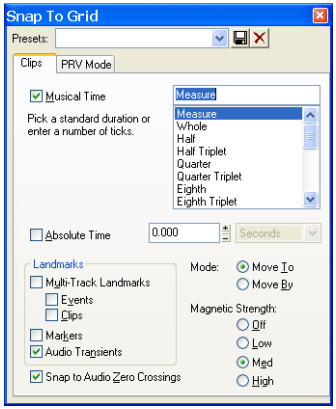
To Enable or Disable the Snap Grid

- To toggle the **Snap to Grid** button on or off, press N, or click the button.

To Change the Snap Options

1. Click the down arrow in the **Snap to Grid** combo button or right-click on the Time Ruler and select **Snap Properties** from the pop-up menu to display the Snap to Grid window

Figure 53. *The Snap to Grid window*



2. If you open the Snap to Grid window in the Track view, the window contains two tabs: one for the Inline Piano Roll view (the PRV Mode tab), and one for the Clips pane (the Clips tab). Click the tab of the area that you will be editing in.
3. Select one or more of the following resolution options:
   - **Musical Time.** Note intervals (whole, half, etc.)
   - **Absolute Time.** A number of samples, frames, or seconds set by you (choose the units in the drop-down menu on the right)
   - **Events.** Any data in a clip
   - **Clips.** The start or end of any clip
   - **Markers.** Any marker in a project
   - **Audio transients.** These are represented by vertical grid lines, which you can display by using the AudioSnap Palette.
   - **Snap to Audio Zero Crossings.** This option automatically snaps edited audio clips to the nearest zero crossing of the waveform, the point at which there is no volume, to minimize the glitches that can happen when waveforms are spliced together.
4. Select **Move To** to align data to the grid, or **Move By** to move data by the grid resolution.
5. If you want to change the magnetic snap strength, or turn off magnetic snap, select one of the buttons in the **Magnetic Strength** section.
6. If you're using the **Snap to Grid** dialog in the Track view, you can leave it open or close it while you edit. If you're using it in another view, click **OK** to close the dialog.

All time selections and drag-and-drop editing operations use the new snap grid resolution(s).

Snap Offsets

Snap offsets allow you to set a point other than the beginning of a clip as the “snap” point used by the Snap to Grid. A snap offset is the number of samples from the beginning of the clip. Snap offsets affect all edits that obey the Snap to Grid setting. Once the snap offset is added, you can set the Timer Ruler to SMPTE or MBT time.

Note: *You cannot set a snap offset for a Groove clip.*

Creating a Snap Offset

Use the following to add a snap offset to a clip:

1. Locate the place in the clip where you want to put the snap offset, and set the Now Time to that location. Use the Scrub tool if necessary.
2. Right-click on the clip and select **Set Snap Offset to Now Time** from the menu that appears.

Edits to that clip, when the **Snap to Grid** button is depressed, now snap to the snap offset rather than the beginning of the clip.

Deleting a Snap Offset

1. Right-click on the clip and select **Clip Properties** from the menu that appears.
2. In the **Snap Offset** field enter **0** (zero) and click **OK**.

Creating and Using Markers

Markers are a way of associating a name with a time point in your project. You use markers to name sections of a project, to mark hit points in a film score, or simply to provide a shortcut for working with any time point in a project. Markers make it easy to:

- Jump to a specific time point in a project.
- Select a portion of a project.
- Enter a time in any dialog box, by pressing F5 and choosing the marker you want.

You can see and work with markers in four ways:

- They are displayed in the Time Ruler at the top of the Track, Staff, and Piano Roll view.
- The **Markers** toolbar lets you add markers and jump to specific marker locations.
- The Markers view displays all markers and lets you add, edit, and delete markers.
- You can press F11 while playback is in progress to add a marker on the fly.

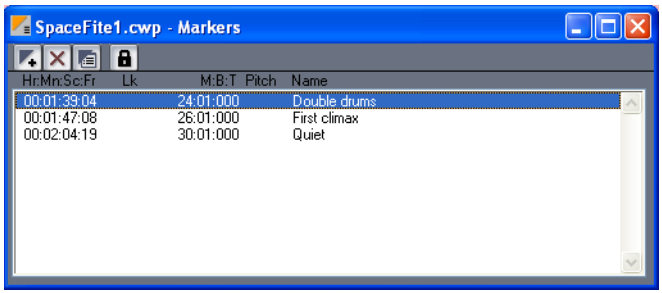
The time associated with a marker can be expressed in musical time or as a locked SMPTE time. If a marker has a musical time (measures, beats, and ticks), the marker stays at that musical time regardless of changes in tempo. If a marker has a locked SMPTE time (hours, minutes, seconds, and frames), the marker stays at the same time even when the tempo is changed. Locked markers

are useful for projects that require you to sync the music or sound with film scores or multimedia presentations. See “To Add a Marker” on page 319.

SONAR takes the current snap grid settings into account when you move or copy markers. For example, if the snap grid is set to even measure boundaries, any time you move or copy a marker, the marker will be snapped to the beginning of the nearest measure. You are allowed to have any number of markers at a single time point.

To display the Markers view, choose **View > Markers** or click on the **Views** toolbar. From the Markers view, you can use the **File > Print** and **File > Print Preview** commands to print a listing of markers.

Figure 54. *The Markers view*



You can add markers while playback is stopped or while playback is in progress (on the fly). When you add a marker while playback is stopped, you can enter a name for the marker and either use the Now time or enter a different time. When you add a marker on the fly, the marker is named automatically and assigned the Now time. Using the Markers view, you can edit the names and times whenever you want.

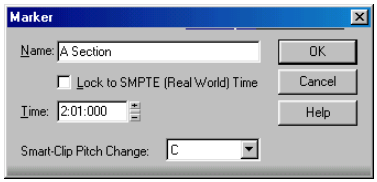
To Add a Marker

1. Open the **Markers** dialog in one of the following ways:

- Click in the **Markers** toolbar.
- Press F11.
- Choose **Insert > Marker.**
- Click in the Markers view.
- CTRL-click in the marker section of the Time Ruler.
- Right-click in the Time Ruler and select **Insert Marker.**

SONAR displays the **Marker** dialog box.

Figure 55. *The **Marker** dialog*



2. Enter a name for the marker in the **Name** box.
3. The time is set to the Now time. If you want, use the spinners to change the time or type in a new marker time.
4. Check the **Locked to SMPTE** box if you want to lock the marker to the SMPTE time.
5. Click **OK**.

SONAR adds the marker and displays it in the Time Ruler, the Markers view, and the **Markers** toolbar.

To Add a Marker on the Fly

- Click in the **Markers** toolbar, or Press F11.

SONAR adds a marker at the Now time and displays it in the Time Ruler, the Markers view, and the **Markers** toolbar.

To Edit a Marker

1. Either right-click on the marker in the Time Ruler, or choose a marker in the Markers view and click . SONAR displays the **Marker** dialog box.
2. Change the marker name, time, or other settings as desired.
3. Click **OK**.

SONAR updates the marker in the Time Ruler and the Markers view.

To Copy a Marker

1. Press and hold the CTRL key.
2. Drag a marker in the Time Ruler of the Track view, Staff view, Tempo view, or Piano Roll view. SONARdisplays the **Marker** dialog box.
3. Enter the desired marker settings and click **OK**.

SONAR copies the marker and displays it in the Time Ruler and the Markers view. You can also cut and paste markers directly from the Markers view.

To Lock or Unlock Several Markers

1. In the Markers view, select one or more markers. Use the CTRL and SHIFT keys if necessary to modify the selection.
2. Select or deselect .

SONAR updates the markers.

To Move a Marker

- Drag the marker in the Time Ruler.

SONAR updates the marker time and shows it at the new location.

To Delete a Marker

1. Press and hold the left mouse button while pointing to a marker in the Time Ruler.
2. Press DELETE, and release the mouse button.

SONAR deletes the marker. You can use **Edit > Undo** if you make a mistake.

To Delete Markers from the Markers View

1. In the Markers view, select one or more markers. Use the CTRL and SHIFT keys if necessary to modify the selection.
2. Click ✕ or press DELETE.

SONAR deletes the selected markers. You can use **Undo** if you make a mistake.

To Jump to a Marker

There are many different ways to jump to a specific marker:

- Choose a marker from the drop-down list in the **Markers** toolbar to jump to that marker.
- Click the Now time in the **Position** toolbar, press F5 to display a list of markers, choose the marker you want, and click **OK**.
- Press F5 twice to display a list of markers, choose the marker you want, and click **OK**.
- Click on a marker in the Markers view to set the Now time to that marker.
- Click ▶ or ◀ in the **Markers** toolbar to jump to the next or previous marker.
- Choose **Go > Next Marker** or **Go > Previous Marker** to jump to the next or previous marker.

To Select a Time Range Using Markers

You can select a range of times by clicking in the marker section of the Time Ruler:

- Click to the left of the first marker to select the time between the start of the project and the first marker.
- Click to the right of the last marker to select the time between the marker and the end of the project.
- Click between two markers to select the time between the markers.
- If looping is enabled, click to the right of the **Loop Start** marker to select the loop region

- If punch recording is enabled, click to the right of the **Punch In** marker to select the punch region

Tip: *If you press TAB or right-click while holding down the left mouse button over the markers, you can toggle through which of the overlaid markers you'd like to move.*

For example, if the Now Time marker, a regular Marker, a Loop point, and a Punch point are all at measure 5, pressing Tab (while holding down the left mouse button) toggles through T (Now Time), M (regular), L (Loop), and P (Punch). If you want to change the regular marker, simply drag the mouse when M is displayed; if you want to adjust the position of the Loop point, tab through to L, and so on.

TAB to transients

You can use the TAB and SHIFT+TAB keys to jump to audio transients, and MIDI Note events. Tabbing is only possible when the transport is not rolling.

TAB to transients is selection-based, which means tabbing will go to the next/previous transient amongst all selected clips. If there is no selection, tabbing operates on the current track.

Note: *When using the Free Edit Point, TAB to transients always operates on the current track, regardless of selection.*

To move the Now Time to the next transient

- Press TAB.

To move the Now Time to the previous transient

- Press SHIFT+TAB.

TAB to transients landmarks

The following table shows how TAB to transients applies to different SONAR clip types.

Clip type	TAB target
Audio Groove clips.	Each slice.
"Stretch to tempo" clips (clips that are not groove clip looped but use groove clip for rendering).	Each slice.
Regular audio clips.	Each transient as detected by AudioSnap.
Slip stretched audio clips.	Each transient as detected by AudioSnap, scaled to the stretch amount so tabbing continues to line up perfectly.

Table 64. *TAB to transients landmarks*

Clip type	TAB target
MIDI clips.	Each Note event (MIDI Controller data is ignored). **Note:** If there are multiple Note events at the exact same tick position, only one of the notes will be tabbed to.
MIDI Groove clips.	Each Note event.
Step Sequencer clips.	Each step that contains a note.

Table 64. *TAB to transients landmarks (Continued)*

TAB to transients in the Piano Roll view

In addition to the Track view inline Piano Roll, TAB to transients also works in the Piano Roll view. If multiple tracks are displayed in the Piano Roll view, tabbing only operates on the current track.

Working with Linked Clips

SONAR makes it easy to repeat a pattern over and over using a feature called **linked clips**. Linked clips always have the same contents, name, and display color. Any change you make to the internal contents of one of the clips, such as adding or editing notes or effects, automatically applies to all of them. Any number of clips may be linked with each other.

To create linked clips, copy the clips and when pasting, check the **Linked Clips** option in the **Paste** dialog box or the **Drag and Drop Options** dialog box. Linked clips are displayed with a dotted border, so they are easy to spot. You can also identify linked clips using the **Clip Properties** dialog box or the **Select All Siblings** (available in the Clips pane pop-up menu) command.You can easily unlink linked clips, and then edit them individually. You have two options when unlinking linked clips:

Option	How it works
New linked group	The clips you selected will still be linked to each other, but won't be linked to any clips that are not selected
Independent	Every selected clip will be completely independent

Table 65.

Once you have unlinked linked clips, you cannot re-link them except by using **Edit > Undo**.

If you attempt to copy only a portion of a linked clip, the copy will not be linked to the original. Copies of a clip can be linked to the original only when you select and copy the entire clip.

To Make Linked Copies of a Clip Using Drag and Drop

1. Right-click in the Clips pane and choose **Drag & Drop Options** to display the **Drag and Drop Options** dialog box.
2. Check the option labeled **Copy Entire Clips as Linked Clips**.

3. Click **OK**.
4. Select the clips you want to copy.
5. Position the mouse over one of the selected clips.
6. Press and hold down the CTRL key.
7. Press and hold down the left mouse button. A rectangle is displayed around the selected clips.
8. Drag the clips to their new location, and release the mouse button.
9. If necessary, confirm the options in the **Drag and Drop Options** dialog box, and click **OK**.

SONAR creates copies of the selected clips that are linked to the originals. Any change you make to one of the clips is applied to all linked clips, including the original clip.

To Make Linked Copies of a Clip Using Copy and Paste

1. Select the clips you want to copy.
2. Choose **Edit > Copy** to display the **Copy** dialog box.
3. Choose options as desired and click **OK**. SONAR copies the clips to the Windows clipboard.
4. Click in the Track pane to set the current track to be the one where clips should be pasted.
5. Set the Now time to be the time at which the clips should be pasted.
6. Choose **Edit > Paste** to display the **Paste** dialog box.
7. In the **Paste** dialog, choose one of two options:
   - **Linked Repetitions.** If you choose this option, only the new copies of the original clip are linked together. Edits you make to the new copies do not affect the original, and vice versa.
   - **Link to Original Clip(s).** If you choose this option, the new copies and the original clip are linked together. Edits you make to any of the linked clips, including the original, affect all other linked clips in the group.
8. Choose the other options you want and click **OK**.

SONAR creates copies of the selected clips that are linked in the way you chose.

To Unlink Linked Clips

1. In the Clips pane, select the clips you want to unlink.
2. Right-click on any selected clip and choose **Unlink** from the pop-up menu. SONAR displays the **Unlink Clips** dialog box.
3. Choose the unlink option you want, and click **OK**.

SONAR unlinks the clips and updates the Clips pane accordingly. From now on, any changes you make to one of the clips are applied only to remaining linked clips, if any.

To Select the Clips That Are Linked to Another Clip

1. Select one or more clips in the Track view.
2. Right-click on any selected clip and choose **Select All Siblings** from the pop-up menu.

SONAR selects any clip that is linked to one of the currently selected clips.

Splitting and Combining Clips

SONAR provides several commands that are used to split and combine clips. Specifically, you can:

- Split a clip into several smaller clips
- Create a new clip from a selected portion of an existing clip
- Combine adjacent or overlapping clips into a single, longer clip

The following table summarizes the commands you can use:

To do this	Use this command	Notes
Split clips into parts	**Edit > Split**	Works on all selected clips. You can also press the **s** key to split all selected clips at the Now Time.
Combine several clips into one	**Edit > Bounce to Clip(s)**	If the selected clips are in separate tracks, one clip is created for each track. All clip automation is applied destructively to the new clip.

Table 66.

Note: *Combining a stereo and mono clip always produces a stereo clip.*

The **Split** command lets you split clips four different ways:

Option	How it works
Split at Time	Splits selected clips at a specific point in time. By default, the split occurs at the Now time, but you can choose any time you want.
Split Repeatedly	Splits selected clips at regular intervals, beginning at a specified time, with a specified duration. For example, you could split a long clip into 4-bar clips starting at measure 5.
Split at Markers	Splits selected clips at any marker location. This option is available only if your project has markers.
Split when Silent	Removes “silent” stretches of one measure or more from selected clips. The presence in a measure of any event—including those that make no sound, such as a patch change or lyric event—will cause that measure to be retained.

Table 67.

While the **Split** command works for both MIDI and audio clips, for audio clips, the **Split** command provides sample accurate editing and snap-to-zero capability.

Note that the **Edit > Undo** and **Edit > Redo** commands work with all three of these editing commands.

To Split Clips into Smaller Clips

1. Select the clips you want to split.
2. Right-click on any selected clip, and choose **Split** from the pop-up menu. SONAR shows the **Split** dialog box or press the S key to split the clip(s) at the Now Time.
3. Choose the Split option you want to use, and enter the settings you want to use.
4. Click **OK**.

   Or

1. Select the clips you want to split.
2. Set the Now Time to the time you want to split the clips.
3. Press the S key.

SONAR splits the selected clips according to your instructions.

To Combine Clips

1. Select the clips you want to combine (the clips must be on the same track).
2. Right-click on of the clips and select **Bounce to Clip(s)** from the pop-up menu.

SONAR combines the selected clips into a single, new clip.

Take Management and Comping Takes

By default, SONAR stacks any overlapping clips on top of each other, but you can choose to display them in separate layers (lanes) in the same track. When you store clips in separate layers, it's easy to mute and solo them individually and eventually come up with a composite take, with only the best clips playing back. You can also mute and solo whole layers.

When you use loop recording, you can store all your takes in the same track, and then use the Mute tool or Audition (Selection Playback) to hear only the ones you want.

If you enable a track's Show Layers option, SONAR stores the track's clips in separate layers whenever any of the following happens:

- You use loop recording in Sound on Sound mode, and choose to store takes in a single track.
- You record over some pre-existing data while in Sound on Sound mode.
- You enable the **Tracks > Show Layers** menu option for a track that contains at least one overlapping clip.

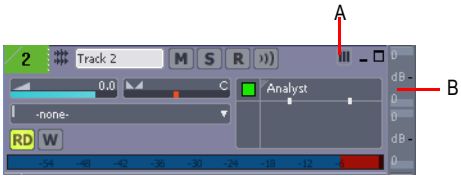
Note 1: *You can create as many layers as you want.*

Note 2: *A multi-layer layer track has only one set of track automation envelopes.*

For step-by-step instructions, see the following procedures:

To Enable or Disable the Multi-layer Option

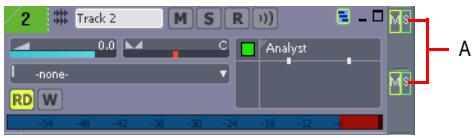
- For single tracks, you can right-click the Track Scale, and choose **Show Layers** from the pop-up menu, or use the **Layers > Show Layers** command on the Track pane right-click menu, or click the **Track Layers On/Off** button.



A. *Track Layers On/Off button* ***B.*** *Track Scale before showing layers*

- For multiple tracks, select the tracks you want to configure by CTRL-clicking the track number of each track, and use the **Tracks > Layers > Show Layers** menu option.

When the option is first enabled, SONAR moves all overlapping clips in the affected tracks to separate layers, and displays **Mute** and **Solo** buttons on the Track Scale for each layer.



A. *Track Layers Mute and Solo on/off buttons*

After the option is enabled, you can move clips on top of each other without creating new layers. To move overlapping clips back into separate layers, use the Rebuild command (see below).

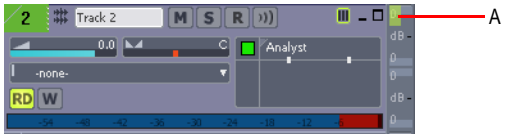
Note 1: *If you want to move a clip to the exact same time placement in an adjacent layer, hold the SHIFT key down while you drag.*

Note 2: *If the* ***Automatic Crossfades*** *button is enabled, SONAR adds a crossfade between any newly overlapped clips that are on the same layer.*

To Mute or Unmute One or More Layers

- On the Track Scale, click the **M** button that's at the same vertical level as the layer you want to mute or unmute. You can drag across multiple mute buttons to mute or unmute multiple layers.

Note: If you mute a layer and then disable the **Show Layers** feature, the Track Scale displays a small blue indicator to show that a hidden layer is muted:

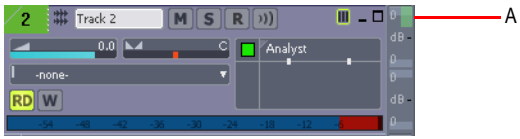


A. *Hidden layer mute indicator*

To Solo or Unsolo a Layer

- On the Track Scale, click the **S** button that's at the same vertical level as the layer you want to solo. You can solo one layer at a time.

Note: If you solo a layer and then disable the **Show Layers** feature, the Track Scale displays a small yellow indicator to show that a hidden layer is soloed:



A. *Hidden layer solo indicator*

To Rebuild Layers

- To rebuild layers (move overlapping clips to separate layers) in a single-track, right-click the Track Scale and choose **Rebuild Layers** from the pop-up menu.
- For multiple tracks, select the tracks you want to rebuild, and use the **Tracks > Layers > Rebuild Layers** command.

To Remove Empty Layers

- To remove empty layers in a single-track, right-click the Track Scale and choose **Remove Empty Layers** from the pop-up menu.
- For multiple tracks, select the tracks you want to compact, and use the **Tracks > Layers > Remove Empty Layers** command.

To Add an Empty Layer to a Track

- Right-click the Track Scale at the position where you want the new layer, and choose **Insert**

Layer from the pop-up menu.

To Delete a Layer from a Track

- Right-click the Track Scale at the position where you want to delete a layer, and choose **Delete Layer** from the pop-up menu.

To Select a Layer

- Right-click the Track Scale at the same vertical position where the desired layer is, and choose **Select Layer** from the pop-up menu. You can de-select the layer by clicking an empty area of the Clips pane.

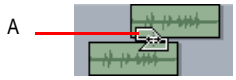
To Loop Record Multiple Takes into Separate Track Layers

1. Use the **Transport > Record Options** command to open the **Record Options** dialog.
2. Under the **Recording Mode** options, choose **Sound on Sound (Blend)**.
3. Under **Loop Recording**, choose **Store Takes in a Single Track**, and click **OK**.
4. Make sure that the armed track has its **Show Layers** option enabled.
5. Set your loop boundaries and start recording multiple passes through the looped area.
6. Stop recording.

When you finish recording, SONAR displays all your takes in separate layers in the recording track.

To Crop Overlapping Clips to Eliminate Overlap

1. In a multi-layer track, move either the Select tool or the Mute tool between two overlapping clips until the cursor turns into the overlap cropping tool.



A. *Overlap cropping tool*

2. In the space between the clips, click the spot where you want the first clip to end and the second one to begin. SONAR crops both clips so that they no longer overlap.

See:

Clip Muting and Isolating (Clip Soloing)

Clip Muting and Isolating (Clip Soloing)

Together with multi-layer tracks, clip muting and isolating (clip soloing) make it easy to build a composite take from multiple takes.

With the new Mute tool , that's in the **Track view** toolbar, SONAR offers two styles of clip muting:

- **Default style.** After you activate the Mute tool, you can drag through time ranges to mute all or part of a clip: dragging through the bottom half of a clip mutes the time range you drag through; dragging through the top half of a clip unmutes the range you drag through. The default setting in the Mute tool drop-down menu produces this behavior (you'll see a checkmark next to **Mute Time Ranges** under **Click+Drag Behavior**). If you want to temporarily switch to the Alternate style (see below), hold down the ALT key while you click.
- **Alternate style.** Use the Mute tool to mute or unmute entire clips by clicking clips instead of dragging through time regions. A clip that is completely muted displays the **Mute** icon in its upper left corner. You can choose this behavior by choosing **Mute Entire Clips** under **Click+Drag Behavior** in the Mute tool drop-down menu. If you decide you want to temporarily switch to the Default style, hold down the ALT key while you drag.

In addition, you can also play back only selected data if you want by pressing the SHIFT key and the SPACEBAR at the same time.

See:

Clip Muting with the Default Style

Clip Muting with the Alternate Style

Isolating (Clip Soloing)

Audition (Selection Playback)

Clip Muting with the Default Style

When you choose **Mute Time Ranges** under **Click+Drag Behavior** in the Mute tool drop-down menu, you can use the following procedures to mute all or parts of clips. This is the default behavior.

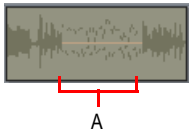
To Enable or Disable the Mute Tool

- Click the tool or press K on your keyboard. The Mute tool turns blue when it is enabled.

To Mute a Time Range Using Default Style

1. Make sure that **Mute Time Ranges** under **Click+Drag Behavior** in the Mute tool drop-down menu has a check mark.
2. If you want to mute a precise amount of time, enable the **Snap to Grid** button and set its menu to an appropriate value.
3. Using the Mute tool, drag inside the lower half of a clip.

SONAR mutes the area you dragged through and displays the muted waveform or MIDI data as a dotted line.



A. *Muted area of clip*

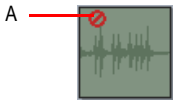
To Unmute a Time Range Using Default Style

1. Make sure that **Mute Time Ranges** under **Click+Drag Behavior** in the Mute tool drop-down menu has a check mark.
2. Using the Mute tool, click inside the upper half of a clip in the muted area.

To Mute or Unmute an Entire Clip Using Default Style

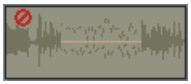
1. Make sure that **Mute Time Ranges** under **Click+Drag Behavior** in the Mute tool drop-down menu has a check mark.
2. Using the Mute tool, ALT-click anywhere in the clip (hold down the ALT key while you click).

When a clip is currently muted, SONAR displays the Mute icon in the upper left corner of the clip.



A. *Mute icon*

Note: *If the clip you're muting or unmuting with this method already has one or more muted time ranges, these time ranges remain muted while you ALT-click the clip, so you don't lose any precise mute edits you've performed. To* ***completely*** *unmute the clip in the picture below, first ALT-click the clip to remove the Mute icon, and then drag through the upper half of the clip in the muted area(s).*



See:

Clip Muting with the Alternate Style

When you choose **Mute Entire Clips** under **Click+Drag Behavior** in the Mute tool drop-down menu, you can use the following procedures to mute all or parts of clips. This is the alternate style.

To Enable or Disable the Mute Tool

- Click the Mute tool or press K on your keyboard. The Mute tool turns blue when it is enabled.

To Mute or Unmute an Entire Clip Using Alternate Style

1. Make sure that **Mute Entire Clips** under **Click+Drag Behavior** in the Mute tool drop-down menu has a check mark.
2. Using the Mute tool, click anywhere in the clip.

SONAR displays the Mute icon in the upper left corner of a muted clip.

Note: *If the clip you're muting or unmuting with this method already has one or more muted time ranges, these time ranges remain muted while you ALT-click the clip, so you don't lose any precise mute edits you've performed.*

To Mute a Time Range Using Alternate Style

1. Make sure that **Mute Entire Clips** under **Click+Drag Behavior** in the **Mute tool** drop-down menu has a check mark.
2. If you want to mute a precise amount of time, enable the **Snap to Grid** button and set its menu to an appropriate value.
3. Using the Mute tool, ALT-drag inside the lower half of a clip.

SONAR mutes the area you dragged through and displays the muted waveform or MIDI data as a dotted line.

To Unmute a Time Range Using Alternate Style

1. Make sure that **Mute Entire Clips** under **Click+Drag Behavior** in the Mute tool drop-down menu has a check mark.
2. Using the Mute tool, ALT-click inside the upper half of a clip in the muted area.

Toggling a Clip's Mute Status

You can mute or unmute a clip without using the Mute tool if you want. Pressing Q on your keyboard toggles the mute status of all selected clips. Any muted time ranges remain muted.

See:

Audition (Selection Playback)
Isolating (Clip Soloing)

Audition (Selection Playback)

The **Transport > Audition** command plays back only selected clips and/or time ranges.

To use the command, hold down the SHIFT key and then press the SPACEBAR. Only the selected data plays back.

Isolating (Clip Soloing)

Isolating works by muting all the clips in a track in the same time region except the ones that you want to hear. Just like clip muting, isolating has two styles:

- **Default style.** After you activate the Mute tool, you can CTRL-drag through time ranges to isolate all or part of a clip. The default setting in the Mute tool drop-down menu produces this behavior (you'll see a checkmark next to **Mute Time Ranges** under **Click+Drag Behavior**). If you want to temporarily switch to the Alternate style (see below), hold down the ALT key along with the CTRL key, and click whole clips instead of dragging through regions.
- **Alternate style.** Use the Mute tool to isolate entire clips by CTRL-clicking clips instead of dragging through time regions. You can choose this behavior by choosing **Mute Entire Clips** under **Click+Drag Behavior** in the Mute tool drop-down menu. If you decide you want to temporarily switch to the Default style, hold down the ALT key along with the CTRL key, and drag through the regions you want isolated.

To Isolate a Region with the Default Style

1. Make sure that **Mute Time Ranges** under **Click+Drag Behavior** in the Mute tool drop-down menu has a check mark.
2. Using the Mute tool, hold down the CTRL key and drag through the region of a clip or clips that you want isolated (soloed).

Any overlapping regions become muted. To de-isolate the isolated region, release the CTRL key, and drag through the upper half of any muted regions.

If you want to temporarily switch to the Alternate style of isolating (see procedure below), hold down the ALT key along with the CTRL key, and click whole clips instead of dragging through regions.

To Isolate Clips with the Alternate Style

1. Choose **Mute Entire Clips** under **Click+Drag Behavior** in the Mute tool drop-down menu.
2. Using the Mute tool, hold down the CTRL key and click the clips that you want isolated.

Any overlapping clips become muted. To de-isolate the isolated clips, release the CTRL key, and click any muted clips.

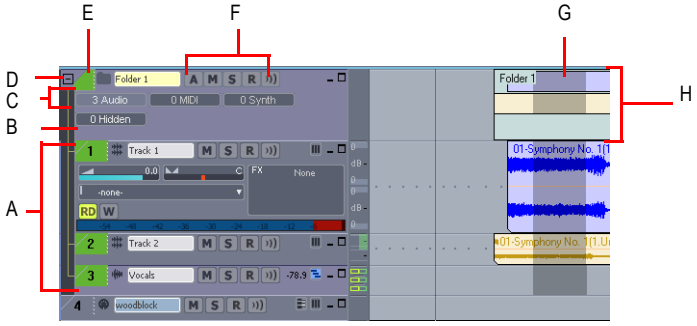
If you want to temporarily switch to the Default style of isolating, hold down the ALT key along with the CTRL key, and drag through the regions you want isolated.

Track Folders

A track folder contains tracks in the Track pane of the Track view. Track folders make larger projects much easier to manage—you can group different types of tracks in their own folder: vocals, soft synths, ReWire instruments, drums, etc.

The main characteristics of a track folder are:

- You can edit all the tracks in the folder as if you were editing a single track—especially valuable for drum tracks. The track folder displays a composite clip in the Clips pane of all the clips in the folder. Selecting a time range in the composite clip selects data in all the enclosed tracks in the same time range; now you can edit all the tracks in the folder by editing the selected area of the composite clip.
- You can hide tracks in a folder, freeing up space on your screen.
- A folder can contain any type of track—you can put MIDI, audio, and synth tracks in the same folder.
- You can archive, mute, solo, arm, or input monitor all the tracks in a folder with one click—just click the **A**, **M**, **S**, **R**, or **Input Echo** button on the track folder.



__A.__ The tracks in a track folder are indented __B.__ Description box __C.__ Track folder info __D.__ Open/Close folder __E.__ Track folder—click here to select all data in track folder __F.__ A, M, S, R, and Input Echo buttons __G.__ Selected area of composite clip __H.__ Composite clip

To Create a Track Folder

- Right-click in the Track pane of the Track view, and choose **Insert Track Folder** from the pop-up menu.

  Or

- Use the **Insert > Track Folder** menu command.

  Or

- Right-click a track that's not in a track folder and select **Move to Folder > New Track Folder** from the pop-up menu.

A new track folder appears in the Track pane.

To Add a Track to a Track Folder

- In the Track view, move the mouse cursor just to the right of the track number of a pre-existing track until the cursor turns into a black, double-ended arrow, and then click and drag the track's titlebar onto the track folder. Release the mouse.

  Or

- Insert a track when a track within a track folder has focus.

  Or

- Right-click a track that's not in a track folder and select **Move to Folder > Track Folder "n"** from the pop-up menu.

  Or

- Select the tracks you want to add to the folder, right-click on the folder and select **Add Track(s) to Folder** from the menu that appears.

The added track appears in the track folder, and is indented a little to show that it's inside the track folder.

To Remove a Track from a Track Folder

- In the Track view, move the cursor just to the right of the track number of a track until the cursor turns into a black, double-ended arrow, and then click and drag the track's titlebar out of the Track Folder. Release the mouse.

  Or

- Right-click the track and select **Remove From Folder** from the pop-up menu.

To Add Multiple Tracks to a Track Folder

1. Select the tracks you want to add.
2. Right-click a selected track and choose **Move to Folder > Track Folder "n"** from the pop-up menu.

To Remove Multiple Tracks from a Track Folder

1. Select the tracks you want to remove.
2. Right-click a selected track and choose **Remove From Folder** from the pop-up menu.

To Delete a Track Folder

1. In the Track view, right-click and select **Delete Track Folder** from the menu that appears.
2. SONAR asks you if you want to delete all the tracks in the folder along with the track folder—click **Yes** or **No**.

SONAR deletes the track folder. If you didn't choose to delete the tracks in the track folders, SONAR moves these tracks to the top level.

To Open or Close a Track Folder

- Click the folder icon that's just left of the track folder's name.

To Select or Deselect all the Tracks in a Track Folder

- Click just to the left of the folder icon.

To Rename a Track Folder

- Double-click the track folder's name, type a new name, and press ENTER.

  Or

- Right-click the track folder, choose **Folder Properties** from the pop-up menu, type a name in the **Name** field of the **Folder Properties** dialog, and click **OK**.

To Add a Description to a Track Folder

- Double-click the **Description** box, type a description, and press ENTER.

  Or

- Right-click the track folder, choose **Folder Properties** from the pop-up menu, type a description in the **Description** field of the **Folder Properties** dialog, and click **OK**.

To Select all Clips in a Time Range

- Hold down the ALT key while dragging a selection on the composite clip.

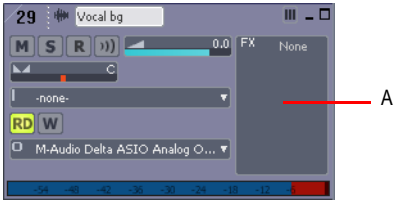
Now you can edit, move, cut and paste all the selected clips by editing the selected part of the composite clip.

Adding Effects in the Track View

You can add both MIDI and audio effects directly from the Track view. SONAR adds these effects in real-time, preserving your track's original data.

To Add Effects in the Track View

1. Right-click in the FX bin of the track you want to add effects to. You may have to click the **FX** tab or the **All** tab that's at the bottom of the Track pane to display the FX bin, and also expand the track pane a little.



A. *Right-click here to add an effect*

An effects pop-up menu appears. SONAR displays MIDI effects if you are editing a MIDI track, and audio effects for an audio track.

2. Select an effect from the menu.

The name of the effect appears in the Effects bin and the effect's property page appears. To delete the effect, right-click the effect name and choose **Delete** from the pop-up menu.

3. Set the effects parameters or choose a preset.

Play your track and listen to the effect(s).

Note: *If you use the same effects for more than one track, it's more efficient to add the effects to an bus. See "To Patch a Track Through a Bus" on page 608.*

Changing Tempos

Your project can incorporate all kinds of tempo changes, including step changes from one tempo to another, gradual increases (accelerandos) or decreases (ritardandos), and almost any other type of change you can imagine. The tempo changes you add to your project become part of the project and are saved with the project file.

You can add tempo changes to your project in the following ways:

- Using the **Tempo** toolbar.
- Using the **Insert > Tempo Change** and **Insert > Series of Tempos** commands.
- By drawing tempo changes graphically in the Tempo view.
- Inserting tempo changes in the Tempo view's Tempo List pane.

The **Process > Fit to Time** and **Process > Fit Improvisation** commands can also be used to introduce tempo changes into your work file. For more information, see "Stretching and Shrinking Events" on page 486 and "Fit Improvisation" on page 498.

When you change the tempo of a project that contains audio, SONAR allows you to stretch or shrink audio clips when you have converted them to Groove clips and have enabled the Follow Project Pitch option in the Loop Construction view. Otherwise, the MIDI tracks will speed up or slow down

while the audio tracks will play at the same speed. For more information about Groove clips, see “Working Groove Clip audio” on page 419. Audio clips that are not Groove clips change in size when moved to a part of your project that has a different tempo.

Sometimes you don’t want to adjust the speed of your audio. Here are some examples:

- If your project contains background music and a voice-over, you might want to change the tempo of the background music without altering the voice-over.
- If you’re trying to modify the speed of some MIDI tracks to match a sampled drum groove, you want to leave the audio unchanged.

When you change the tempo of your project, clips having stretching enabled change tempo along with the project, while those that do not have stretching enabled do not. For more information about stretch-enabling clips, see “Enable Stretching” on page 413.

Tempos set when the clock source is set to MIDI Sync do not have any effect, because SONAR follows the external tempo. For more information, see “Synchronizing Your Gear” on page 819.

See:

Using the Tempo Toolbar

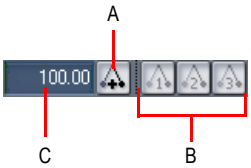
Using the Tempo Commands

Using the Tempo View

Using the Tempo Toolbar

The **Tempo** toolbar displays the current tempo and lets you change the tempo as shown below:

Figure 56. *The **Tempo** toolbar*



***A.** Click to insert a tempo change **B.** Tempo ratio buttons **C.** Click to enter a new tempo*

When you enter a new tempo directly in the toolbar, you change the most recent tempo setting in the project.

The tempo ratio buttons temporarily change the speed of playback, without affecting the actual tempo that is stored with your project (see Note, below). During playback, the tempo is multiplied by the current tempo ratio. By default, the three tempo ratios are 0.50 (half speed), 1.00 (normal

speed), and 2.00 (double speed). You can change the tempo ratios that are associated with each button.

Note: *Tempo ratios can only be used in projects that contain no audio tracks and cannot be used when using any form of synchronization. For more information, see Synchronizing Your Gear.*

To Change the Current Tempo in the Tempo Toolbar

1. Enable **Groove Clip Looping** on any audio clips that you want to follow the tempo changes. Do this by selecting one or more clips, right-clicking a selected clip, and choosing **Groove > Clip Looping** from the pop-up menu. Each clip that has **Groove Clip Looping** enabled has beveled edges instead of sharp corners. The same command disables **Groove Clip Looping** on any selected clip that has **Groove Clip Looping** enabled.
2. Click the current tempo in the **Tempo** toolbar.
3. Type a new value and press ENTER, or use the spinners to change the tempo value.

SONAR changes the current tempo to the desired value.

To Set the Tempo Ratio

You can set the tempo ratio in several ways (remember, this function is not available if you have audio clips in your project):

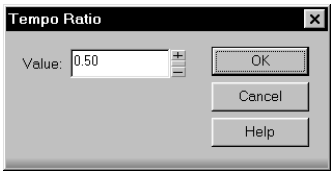
- Click one of the tempo ratio buttons.
- Choose **Transport > Tempo Ratio 1**, **2**, or **3**.
- Press CTRL+1, CTRL+2, or CTRL+3.

SONAR changes the speed of playback.

To Change the Tempo Ratio

1. SHIFT-click one of the tempo ratio buttons to display the **Tempo Ratio** dialog box.

Figure 57. *The **Tempo Ratio** dialog*



2. Enter a new value for the tempo ratio.
3. Click **OK**.

From now on, that tempo ratio button uses the ratio you entered.

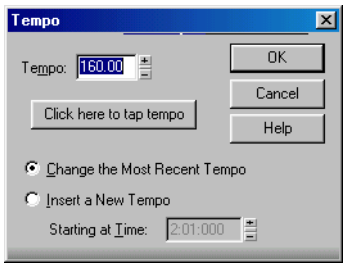
Using the Tempo Commands

The **Insert > Tempo Change** and **Insert > Series of Tempos** commands can be used to change the existing tempo of a project or to introduce one or more tempo changes at various points in a project. You can enter tempo values directly, introduce smooth increase or decreases in tempo, or even use your mouse to tap out the tempo you want for some portion of a project.

To Insert a Tempo Change

1. Enable **Groove Clip Looping** on any audio clips that you want to follow the tempo changes. Do this by selecting one or more clips, right-clicking a selected clip, and choosing **Groove > Clip Looping** from the pop-up menu. Each clip that has **Groove Clip Looping** enabled has beveled edges instead of sharp corners. The same command disables **Groove Clip Looping** on any selected clip that has **Groove Clip Looping** enabled.
2. Click in the toolbar or choose **Insert > Tempo Change** to display the **Tempo** dialog box.

Figure 58. *The **Tempo** dialog*



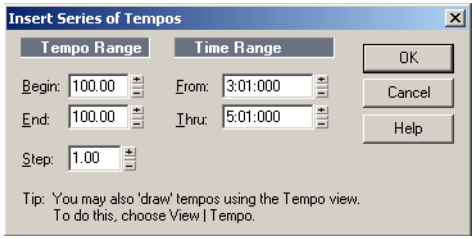
3. Check the Insert a New Tempo box.
4. Enter a new tempo in one of the following ways:
   - Type a value in the **Tempo** field.
   - Click the arrows to change the value.
   - Tap a new tempo in the space indicated in the dialog box.
5. Enter a starting time for the new tempo.
6. Click **OK**.

SONAR inserts a tempo change at the designated time.

To Insert a Series of Tempos

1. Enable **Groove Clip Looping** on any audio clips that you want to follow the tempo changes. Do this by selecting one or more clips, right-clicking a selected clip, and choosing **Groove > Clip Looping** from the pop-up menu. Each clip that has **Groove Clip Looping** enabled has beveled edges instead of sharp corners. The same command disables **Groove Clip Looping** on any selected clip that has **Groove clip Looping** enabled.
2. Choose **Insert > Series of Tempos** to display the **Insert Series of Tempos** dialog box.

Figure 59. *The **Insert Series of Tempos** dialog*



3. Enter a starting tempo, ending tempo, and step size.
4. Enter a starting and ending time for the series of tempo changes.
5. Click **OK**.

SONAR erases any existing tempo changes between the starting and ending time, and inserts a series of tempo changes that change smoothly between the starting and ending time. This command never inserts more than one tempo change on the same clock tick. Audio clips which you want to follow tempo changes can also be converted to Groove clips in the Loop Construction view.

To Modify the Most Recent Tempo Change

1. Enable **Groove Clip Looping** on any audio clips that you want to follow the tempo changes. Do this by selecting one or more clips, right-clicking a selected clip, and choosing **Groove > Clip Looping** from the pop-up menu. Each clip that has **Groove Clip Looping** enabled has beveled edges instead of sharp corners. The same command disables **Groove Clip Looping** on any selected clip that has **Groove Clip Looping** enabled.
2. Choose **Insert > Tempo Change** to display the **Tempo** dialog box.
3. Check the **Change the Most Recent Tempo** box.
4. Enter a new tempo in one of the following ways:
   - Type a value in the **Tempo** field.
   - Click the arrows to change the value.
   - Tap a new tempo in the space indicated in the dialog box.
5. Click **OK**.

SONAR changes the most recent tempo to the new value.

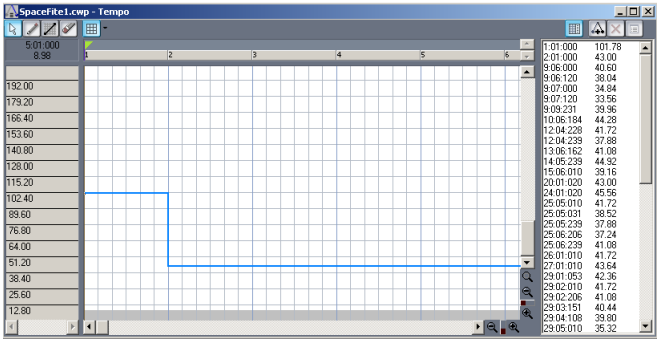
Using the Tempo View

The Tempo view provides a graphic display of the tempo. In the Tempo view you can use your mouse to draw tempo changes directly onto the graph. Choose **View > Tempo** or click on the toolbar to display the Tempo view

The Tempo view provides both a graphic display of the tempo and a list of all tempo changes in your project. In the graphical display you can use your mouse to draw tempo changes directly onto the graph. In the tempo list, you can insert, edit, and delete individual tempo changes. Choose **View >**

Tempo or click on the toolbar to display the Tempo view. Click the **Tempo List** button to display or hide the tempo list.

The Tempo view If an entire project has a single tempo, the graph shows a straight horizontal line, and



a single tempo in the list.

The graph has several tools you can use to add or modify tempo changes:

Tool	Name	What it's for
	Select	Drat the Select tool in either the Tempo list or graphic display to select tempos to edit
	Draw	Draw a custom curve indicating changes in tempo
	Line	Draw a straight line indicating a steady increase or decrease in tempo
	Erase	Eliminate tempo changes already in place for some portion of a project
	Snap grid	Controls how often you can insert tempo changes—for example, every measure, every eighth note, every 3 samples, etc.

Table 68.

If you make a mistake using any of these tools, you can use **Edit > Undo** to correct the error. When you use the Draw tool, the speed with which you drag the mouse determines the density of tempo events. To insert a larger number of relatively small tempo changes, move the mouse slowly. To insert a smaller number of relatively large tempo changes, drag the mouse quickly.

The Tempo List Pane has its own tools for editing tempo changes:

Tool	Name	What it's for
	Insert Tempo	Insert a new tempo change
	Delete Tempo	Delete a tempo change
	Tempo Properties	Edit a tempo change

Table 69.

To Insert a Tempo Change in the Tempo View

1. Enable **Groove Clip Looping** on any audio clips that you want to follow the tempo changes. Do this by selecting one or more clips, right-clicking a selected clip, and choosing **Groove > Clip Looping** from the pop-up menu. Each clip that has **Groove Clip Looping** enabled has beveled edges instead of sharp corners. The same command disables **Groove Clip Looping** on any selected clip that has **Groove Clip Looping** enabled.
2. Select the or the tool.
3. Click in the Tempo view at any desired time point and tempo level.

SONAR introduces a tempo change at the indicated point.

To Steadily Increase or Decrease the Tempo in the Tempo View

1. Enable **Groove Clip Looping** on any audio clips that you want to follow the tempo changes. Do this by selecting one or more clips, right-clicking a selected clip, and choosing **Groove > Clip Looping** from the pop-up menu. Each clip that has **Groove Clip Looping** enabled has beveled edges instead of sharp corners. The same command disables **Groove Clip Looping** on any selected clip that has **Groove Clip Looping** enabled.
2. Select the tool.
3. Drag a line in the graph from the starting time and tempo to the ending time and tempo.

SONAR introduces a linear series of tempo changes.

To Draw a Series of Tempo Changes in the Tempo View

1. Enable **Groove Clip Looping** on any audio clips that you want to follow the tempo changes. Do this by selecting one or more clips, right-clicking a selected clip, and choosing **Groove > Clip Looping** from the pop-up menu. Each clip that has **Groove Clip Looping** enabled has beveled edges instead of sharp corners. The same command disables **Groove Clip Looping** on any selected clip that has **Groove Clip Looping** enabled.
2. Select the tool.
3. Drag the cursor across the graph, adjusting the tempo level as you move left to right.

SONAR introduces a series of tempo changes.

To Erase Tempo Changes in the Tempo View

1. Enable **Groove Clip Looping** on any audio clips that you want to follow the tempo changes. Do this by selecting one or more clips, right-clicking a selected clip, and choosing **Groove > Clip Looping** from the pop-up menu. Each clip that has **Groove Clip Looping** enabled has beveled edges instead of sharp corners. The same command disables **Groove Clip Looping** on any selected clip that has **Groove Clip Looping** enabled.
2. Select the tool.
3. Drag the mouse over the graph to highlight the region you want to erase.
4. Release the mouse button.

SONAR deletes all tempo changes in the area you marked. The last tempo setting prior to the erased region is now in effect in that region.

To Insert a Tempo Change in the Tempo List in the Tempo View

1. Enable **Groove Clip Looping** on any audio clips that you want to follow the tempo changes. Do this by selecting one or more clips, right-clicking a selected clip, and choosing **Groove > Clip Looping** from the pop-up menu. Each clip that has **Groove Clip Looping** enabled has beveled edges instead of sharp corners. The same command disables **Groove Clip Looping** on any selected clip that has **Groove Clip Looping** enabled.
2. Click the **Tempo List** button to display or hide the tempo list.
3. Select any tempo change in the list.
4. Click **Insert Tempo** to open the **Tempo** dialog box.
5. Set the tempo, time, and other properties.
6. Click **OK**.

SONAR inserts the new tempo into the list.

To Edit a Tempo Change in the Tempo View

1. Enable **Groove Clip Looping** on any audio clips that you want to follow the tempo changes. Do this by selecting one or more clips, right-clicking a selected clip, and choosing **Groove > Clip Looping** from the pop-up menu. Each clip that has **Groove Clip Looping** enabled has beveled edges instead of sharp corners. The same command disables **Groove Clip Looping** on any selected clip that has **Groove Clip Looping** enabled.
2. Click the **Tempo List** button to display or hide the tempo list.
3. In the tempo list, select the tempo change to be edited.
4. Click **Tempo Properties** or double-click the tempo change to open the **Tempo** dialog box.
5. Edit the tempo properties as desired.
6. Click **OK**.

To Delete a Tempo Change from the Tempo List in the Tempo View

1. Enable **Groove Clip Looping** on any audio clips that you want to follow the tempo changes. Do this by selecting one or more clips, right-clicking a selected clip, and choosing **Groove > Clip Looping** from the pop-up menu. Each clip that has **Groove Clip Looping** enabled has beveled edges instead of sharp corners. The same command disables **Groove Clip Looping** on any selected clip that has **Groove Clip Looping** enabled.
2. Click the **Tempo List** button to display or hide the tempo list.
3. In the **Tempo** list, select the tempo change to be deleted.
4. Click **Delete Tempo**, or press DELETE.

SONAR deletes the selected tempo change. You cannot delete the first tempo in the list.

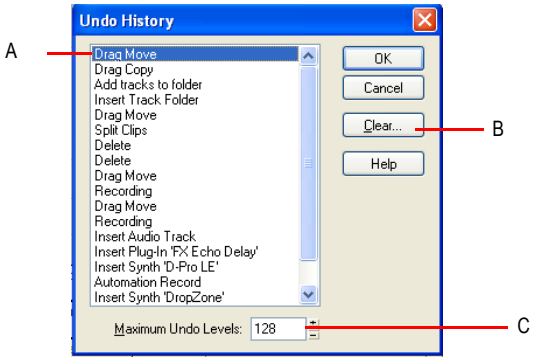
Undo, Redo, and the Undo History

SONAR provides very powerful **Undo** and **Redo** commands that let you move forward or backward through any portion of an editing session. Every project has its own independent undo history. This means you can return to any open project and use the **Undo** and **Redo** commands, even if you've spent the last hour working on a different project. The undo history of a project is lost when you close the project.

Remembering everything that is necessary to undo the changes you have made can use a lot of memory. If a change you are about to make requires too much memory and cannot be undone, you will be advised that the operation is too big to undo later and asked if you want to go ahead anyway. If you do choose to perform the operation, you will not be able to undo it. Therefore, you may want to save your project first.

The **Edit > History** command displays a complete history of the commands and actions you can undo for the current project. The **Undo History** dialog box looks like this:

Figure 60. *The **Undo History** dialog*



***A.** Most recent change **B.** Click to clear the undo history **C.** Adjust the number of steps you can undo*

The **History** command is grayed out until you make a change to the current project that can be undone.

The History list is updated every time you make a change to a project. For example, if you insert a new note into a project using the Piano Roll view, that action is added to the History list. This entry remains on the list—even if you undo the change—so that you can redo the change later on. If you delete the note, this change is added to the **History** list.

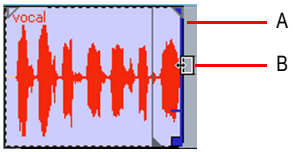
You can click the **Clear** button in the **Undo History** dialog box to erase the undo history for the current project and free up some memory. If SONAR is low on memory, it may offer to erase the History list.

To revert to an earlier version of a project, highlight the entry in the History list that represents the point to which you'd like to return, and click **OK**. SONAR performs the necessary undo or redo actions to take you to that point. Once you edit the project (for example, by inserting a note), the History list is truncated at that point. Then, as you do further work, the History list grows again. Any events occurring before the event you highlighted remain on the list.

By default, SONAR keeps a history of up to 128 editing actions for each open project. Once that limit is reached, each new action pushes out the oldest item from the History list. You can raise or lower that number in the **Undo History** dialog box.

Slip-editing (Non-destructive Editing)

Slip-editing allows you to non-destructively hide or reveal the beginning of a clip, the end of a clip, or both. The hidden material in a clip is not heard during playback. All hidden material remains intact and can be restored. All slip-editing movements correspond to the current snap to resolution. For more information about the snap to grid, see "Defining and Using the Snap Grid" on page 316.



A. *Clip handle* ***B.*** *Slip-edit cursor*

Important: *Like any clips, slip-edited clips can be combined with other clips using the* ***Bounce to Clip(s)*** *command and slip-edited clips in a track can be mixed down to another track. When a slip-edited clip is combined with another clip or an effect is applied to a clip using the* ***Edit > Apply Audio Effects*** *command, any slip-edited data (audio clips or MIDI events that are cropped from view) is* ***overwritten****.*

See also:

Using Slip-editing

Using Slip-editing

SONAR makes it easy to edit audio and MIDI clips by way of prominent clip handles that appear as your cursor comes close to the edges of clips. The clip handles are easy to see and are equipped with broad functionality for fade-ins, fade-outs, and crossfades, as well as non-destructive editing of the beginning and end of clips.

To Slip-edit a Clip

1. Set the **Snap to Grid** to an appropriate interval.
2. If you're slip editing an audio clip, right-click the clip to open the **Clip Properties** dialog. Select the **Audio Stretching** tab, make sure the **Enable Looping** check box is unchecked, and click **OK**.
3. Move the cursor over the beginning of the clip until the clip handle appears.

.

A. *Clip handle*

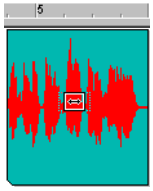
4. Click and drag the clip handle until the unwanted information has been removed.

The hidden information in the slip-edited clips remains intact but is not heard during playback.

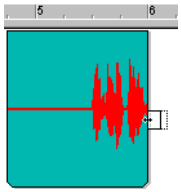
To Move Data Without Moving its Clip

1. Hold down ALT+SHIFT while moving the cursor over the middle of the clip you wish to edit.

   The cursor changes to look like this .



2. Click and drag the clip to the left or right as desired.

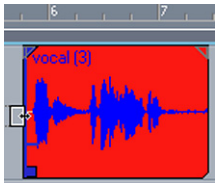


As in the case of slip-editing, the hidden information in the clip remains intact but is not heard during playback.

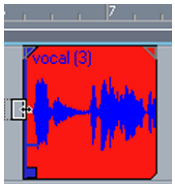
To Move Data and the Clip Edge

1. Hold down ALT+SHIFT and move the cursor to the edge of the clip you wish to edit.

   A clip handle appears at the edge of the clip you are editing.



2. Click and drag the edge of the clip to the desired location.



The hidden information in the clip remains intact but is not heard during playback.

To Permanently Delete Slip-edited Data

1. Select the clips that contain the slip-edited data you want to delete.
2. Select the **Edit > Apply Trimming** command.

SONAR permanently deletes the slip-edited data from the clips you selected.

Slip-editing Multiple Clips

You can slip-edit multiple clips at the same time.

To Slip-edit Multiple Clips at Once

1. Make sure all clips are not loop-enabled.
2. Select the clips you want to slip-edit.
3. Move your cursor over the beginning or end range of the selected clips until the blue clip handle appears.
4. Drag the boundary to the desired location and release.

Fades and Crossfades

Fades are a gradual increase or decrease in volume at the beginning (fade-in) or end (fade-out) of a clip. A crossfade is when one clip fades out while another fades in. There are two ways to create fades and crossfades in SONAR: offline (destructive) and real-time (non-destructive). To create fades and crossfades offline, see “Applying Fades and Crossfades Offline” on page 565.

See:

Using Fades and Crossfades in Real Time

Using Fades and Crossfades in Real Time

You can create real-time fades and crossfades in the Track view’s Clips pane. Real-time fades and crossfades do not change the data in the clip. SONAR reads the fade-in, fade-out, or crossfade in the clip and adjusts the gain accordingly. You can edit the crossfade’s start time and end times. You can set the type of fade-in or fade-out you want to use as a default:

- **Linear.** A straight line, raising or lowering the volume at a steady rate.
- **Slow Curve.** A curved fade which starts to change the volume slowly at first and then rapidly increasing (fade-in) or decreasing (fade-out) the volume.
- **Fast Curve.** A curved fade which starts to change the volume quickly at first and then rapidly decreasing (fade-out) or increasing (fade-in) the volume.

To Choose the Fade Type

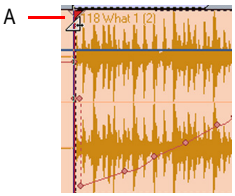
1. Click the drop-down arrow located at the right of the Fade tool
2. Choose **Fade-in**, **Fade-out**, or **Crossfade** from the drop-down menu by hovering your cursor over the type of fade you want to make.

   A second menu of available fade-in, fade-out, and crossfade envelopes appears.
3. Click the envelope you want as your default.

To Create a Real-time Fade-in in a Clip

1. In the Track view's Clips pane, move your mouse over the top part of the beginning of a clip until the cursor looks like this: , and a red line appears at the edge of the clip.

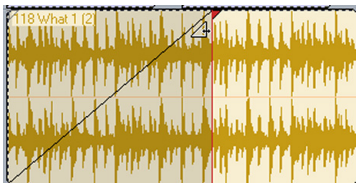
   A filled red triangle appears at the top of the red line indicating the fade marker is ready to be dragged.



A. *Filled red triangle*

2. When your cursor changes and the filled red triangle appears, click and drag to the right until you reach your desired fade-in length.

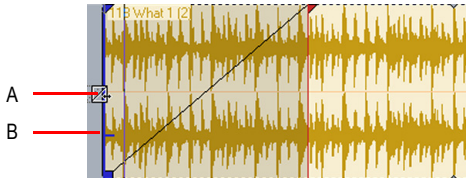
   As you drag your mouse, a fade-in appears on your clip, and the red line moves with the mouse to mark the end of the fade-in.



To Edit a Fade-in in a Clip

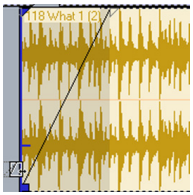
- To move the entire fade-in to a later point in the clip, drag above the blue horizontal line located a quarter of the way up the blue vertical line

.



A. *Cursor above horizontal blue line* ***B.*** *Horizontal blue line*

- To move only the starting point of the fade-in, drag below the horizontal blue line.



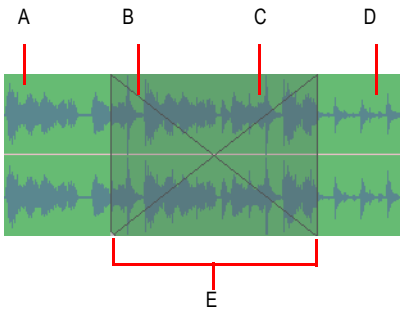
- To delete a fade-in from an audio clip, simply drag the triangular fade handle to the front edge of the clip.

  The filled blue triangle at the top of the clip handle indicates that dragging the top edge of the clip handle will move the fade along with the crop. The filled blue rectangle at the bottom of the clip handle indicates that dragging the bottom of the clip handle will slip edit the edge, but leave the end of the fade-in where it is.

To Create an Automatic Crossfade (Real-time)

1. In the Track view, click the **Enable/Disable Automatic Crossfades** combo button located next to the **Snap to Grid** button or press the X key.
2. Click the down arrow on the **Enable/Disable Automatic Crossfades** combo button, select **Default Crossfade Curves** and select a crossfade curve.
3. Select and drag an audio clip so that it overlaps another audio clip. You should overlap the clips by the length you want the crossfade.
4. When you have the clip positioned where you want it, release the mouse button to drop the clip.

   The **Drag and Drop Options** dialog appears.
5. In the **Drag and Drop Options** dialog, check the **Blend Old With New** check box and click **OK**.
6. The two clips now overlap with a crossfade, looking something like this:



***A.** First clip **B.** Fade-out **C.** Fade-in **D.** Second clip **E.** Crossfade*

You can edit fade-ins and fade-outs. You can change the start, end and position of a fade. The following procedures all demonstrate edits to a fade-in, but fade-outs work exactly the same.

To Change an Existing Fade

1. Move your cursor over the beginning of a fade-out or the end of a fade-in, until your cursor looks like this: .
2. Right-click to and select the desired fade type from the menu that appears.

To Change an Existing Crossfade

1. Move your cursor over the region where the crossfade is.
2. Right-click and select the desired crossfade from the menu that appears.

To Edit or Create Fades from the Process Menu

1. Select the clip or clips in which you want to create or edit fade-ins and/or fade-outs.
2. Select **Process > Fade Selected Clips**.

   The **Fade Selected Clips** dialog appears.
3. Adjust parameters according to the following table:

Parameter	Description
Fade In (mS)	Select the number of milliseconds you want the fade-in to last.
Fade Out (mS)	Select the number of milliseconds you want the fade-out to last.
Fade In Curve	Choose a fade-in type. Options are linear, slow or fast curve.
Fade Out Curve	Choose a fade-out type. Options are linear, slow or fast curve.

Table 70.

Parameter	Description
Alter Existing Times	Select this option if you wish to change the existing fade lengths. You don't need to check this option if you're creating new fades.
Alter Existing Curves	Select this option if you wish to change the existing fade types. You don't need to check this option if you're creating new fades.
Only Show if Pressing Shift	Select if you want to apply previous dialog settings without opening the dialog. Hold shift when selecting command to override this option.

Table 70.

4. Click **OK** to close the dialog.

SONAR creates or edits the fade(s) according to the options you chose in the dialog.

AudioSnap

SONAR's AudioSnap engine and tempo analysis features give you unprecedented rhythmic and tempo control over your audio. Employing sophisticated transient detection technology, the AudioSnap engine automatically analyzes all recorded and imported audio files for rhythmic content to determine where the beats are in the music.

AudioSnap is completely non-destructive, similar to Groove clips and V-Vocal clips. AudioSnap, V-Vocal, and Groove clips are mutually exclusive. Groove clip markers are typically placed at a zero-crossing point before a transient; AudioSnap transient markers are placed where musical changes occur, but may not be exactly at a zero crossing.

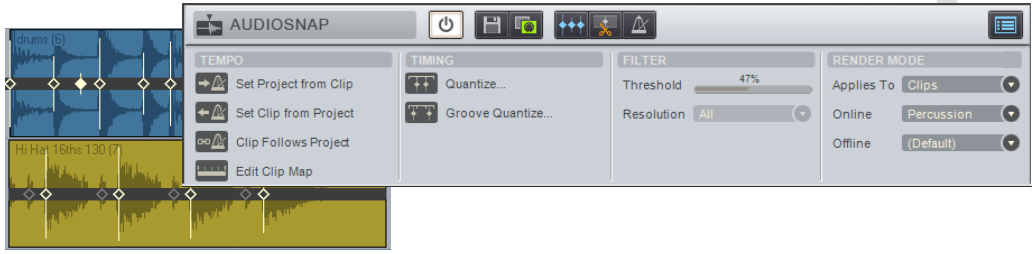
What is AudioSnap?

AudioSnap is not a single feature, but rather a collection of different tools that can be used for different tasks. The AudioSnap palette ties it all together in a task-oriented layout.

AudioSnap does several things, in a variety of ways:

- Stretches audio clips to fit project tempo or for quantizing.
- Changes project tempo to fit audio or MIDI clips.
- Copies audio rhythms for groove quantizing or doubling sounds.

Figure 61. *The AudioSnap palette*



How does it work?

AudioSnap works by finding the *transients* in audio clips. Transients are the areas in an audio clip where the level increases suddenly. These make good locations to shrink, stretch, or split a clip,

without changing its sound quality too drastically. SONAR contains a variety of high-quality stretching algorithms for different kinds of material. You can choose a lower-quality algorithm for real-time playback of your edits, and then choose a better algorithm for mixdown or bouncing to track (see “Algorithms and rendering” on page 406).

SONAR lets you define the default online and offline algorithms via the AudioSnap palette, and you can override the default algorithm(s) on a clip-by-clip basis.

Note: *The online algorithm is for preview purposes only during playback. The final audio quality will be greatly improved after the offline algorithm is applied during mixdown/export.*

The transients also make it possible for SONAR to calculate a clip’s tempo map (see “Editing a clip’s tempo map” on page 375).

Figure 62. *Audio clip*

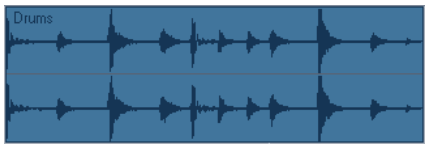
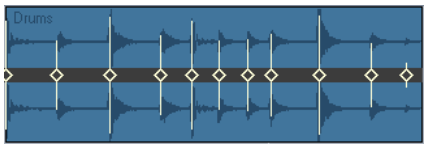


Figure 63. *Audio clip showing transient markers*



AudioSnap finds transients automatically, but the transient markers don’t always appear exactly where you might want them for the kind of editing you want to do. You can edit the markers by moving them to new locations, adding markers, filtering out markers, deleting markers, and promoting markers (protecting them from being filtered). For information about editing transient markers, see “Editing transient markers” on page 360.

Why would I use it?

Here are some common uses for AudioSnap:

- Aligning measure lines and tempo to audio or MIDI tracks that were recorded without a metronome (see Synchronizing audio and the project tempo).
- Fixing timing errors (see Fixing timing problems in audio clips).
- Synchronizing the rhythms of out-of-sync tracks (see Making multiple clips/tracks groove together).
- Doubling existing sounds with other sounds (see Extracting MIDI timing information from audio).
- Changing the tempo of existing projects (see Changing a project’s tempo).
- Snapping both audio and MIDI edits to audio beats (see Snapping edits to audio beats).

- Fixing timing errors in multi-track recordings while maintaining phase relationships (see Adjusting the timing of a multi-track performance while maintaining phase relationships).

If you want to edit audio right away with AudioSnap, see Synchronizing audio and the project tempo and Fixing timing problems in audio clips. If you want to learn more about all the AudioSnap tools and options, see the following links.

See:

Using the Transient tool

Editing transient markers

Using the AudioSnap palette

Synchronizing audio and the project tempo

Fixing timing problems in audio clips

Extracting MIDI timing information from audio

General editing

Using the Pool

Algorithms and rendering

Keyboard shortcuts

Using the Transient tool

At the heart of AudioSnap are transient markers. SONAR automatically detects transients for all audio clips in your project. The Transient tool lets you exclusively edit transient markers without worrying about accidentally editing clips or automation data.

Although you can also edit transient markers with the Select tool and Free Edit tool, this chapter focuses on the Transient tool since it is the easiest way to edit transient markers.

To enable the Transient tool

- Click the **Transient Tool** button in the **Track View** toolbar.

  All audio clips show transient markers and the AudioSnap palette appears.

Note: *Displaying transient markers does not mean that AudioSnap is enabled. AudioSnap is only active on a clip when at least one transient marker has been stretched.*

  If you select another tool, transient markers will no longer be visible and the AudioSnap palette closes.

The following table describes how the Transient tool behaves when interacting with transient markers and clips.

Action	On transient marker	On clip
Click	Selects the transient marker.	Selects the clip and opens the AudioSnap palette.
Right-click	Opens the transient marker context menu.	Opens the AudioSnap context menu.
Double-click	Selects transients from other tracks (from selected clips) that fall within a certain window of time of the transient the user is clicking on. If no clips are selected, only non-hidden tracks are affected.	--
Drag	Non-proportional stretch with selected transients. **Note:** You can drag a marker from either the head or the line of the marker. Drag the line to stretch a marker and drag the head to move a marker.	Lasso selects transient markers.
Hold down the CTRL key and drag	Proportionally stretches selected transients.	Lasso selects transients to add to the current selection.
Hold down the CTRL key and click	Adds transient marker to current selection.	--
Hold down the CTRL key and double-click	Like double-click, but adds transients to the current selection.	--
Hold down the CTRL and SHIFT keys and double-click	Like double-click, but extends the range of selected transients.	--
Hold down the ALT key and click	--	Inserts a new transient marker.

Table 71. *Transient tool actions*

For more information about editing transient markers, see Editing transient markers.

Transient tool (clip) context menu

The Transient tool context menu gives you quick access to commands related to time stretching and tempo mapping:

- **Set project tempo from clip.** This command copies the clip's tempo map to the project's global tempo map. This allows the project's measure boundaries to align with the audio clip. Whenever the project's tempo map is generated from a clip, the clip's **Lock Position** property is enabled

automatically.

- **Clips follow project tempo.** This command forces the clip to follow the project's global tempo map.

> **Note:** *The **Clips follow project tempo** command only works on clips that are configured to use musical time (the **Time Base** property is set to **Musical (M:B:T)** in the **Clip Properties** dialog).*

- **Edit clip tempo map.** Each audio clip has an internal tempo map. This command exposes controls that allow you to edit a clip's tempo map. For details, see Editing a clip's tempo map.
- **Merge and Lock Markers.** This command combines all transient markers on all selected tracks, so that all selected tracks share identical transient markers. The clip positions are also locked. This will ensure that phase relationships are maintained when quantizing or moving clips across multiple tracks. When using the Transient tool to drag transient markers, all transient markers at exactly the same point in time on selected clips move together as a group.
- **Save as groove.** This command opens the **Define Groove** dialog, which lets you save the groove to a file. The groove can then be applied to other audio or MIDI clips.
- **Copy as MIDI.** This command saves the selected audio as a MIDI clip, which you can paste from the Clipboard into a MIDI track. You select the MIDI note that the transients in the audio clip will be converted to in the **AudioSnap Options** dialog, which opens when you click the **Options** button.
- **Quantize.** This command opens the **Quantize** dialog, which has options to quantize **AudioSnap Beats** and **Audio Clip Start Times**, and also to set automatic crossfade options.
- **Groove Quantize.** This command opens the **Groove Quantize** dialog, which has an option to quantize **AudioSnap Beats**, and controls to set automatic crossfade options.
- **Reset transient markers.** This command resets all transient markers on the selected clips to their default state.
- **Pool > Add MBT to pool.** The Track view Time Ruler can be added to the Pool (see Using the Pool). This command adds the current Musical Time snap resolution to the pool, and also displays dotted pool lines in the Clips pane. This can be useful as either a basic visual guide, or for adding the Musical Time to an extracted groove, or to fill in any transients that may be "missing" in a syncopated or sparse section. In the **Snap to Grid** dialog, set the **Musical Time** value to the resolution you would like to add to the Pool.
- **Pool > Add clip to pool.** This command adds or deletes the clip's transient markers from the Pool. The markers do not have to be visible to be added to the Pool. See "Using the Pool" on page 404 for more information.
- **Pool > Show pool lines.** This command hides or shows the Pool lines.
- **Pool > Quantize to pool.** This command quantizes the selected clips to the Pool.
- **Enable AudioSnap.** This command enables or disables AudioSnap on selected audio clips.

See:

Editing transient markers
Using the AudioSnap palette
Fixing timing problems in audio clips
Synchronizing audio and the project tempo
Extracting MIDI timing information from audio
General editing
Using the Pool
Algorithms and rendering
Keyboard shortcuts

Editing transient markers

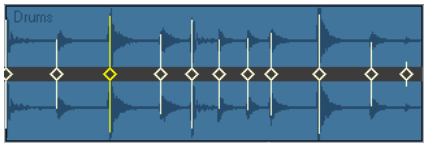
Transient markers show where the transients of a clip are (areas where the level increases suddenly), and are used to edit the timing of audio clips.

AudioSnap finds transients automatically, but the transient markers don't always appear exactly where you might want them for the kind of editing you want to do.

Most AudioSnap commands edit transient markers automatically as a result of an editing operation, but sometimes you achieve the best results by editing the markers manually.

You can edit the markers by moving them to new locations, adding markers, filtering out markers, deleting markers, and promoting markers (protecting them from being filtered).

Figure 64. *Transient markers*



See:

To show/hide transient markers

To select a transient marker

To select multiple adjacent transient markers

To select multiple discontiguous transient markers

To select the same transient in multiple clips

To extend a multi-track marker selection

To select all similar transient markers in a clip

To move a transient marker (without stretching audio)

To drag a transient marker and stretch audio

To stretch multiple transient markers in a clip

To stretch multiple transient markers in a clip proportionally

To reset a transient marker

To disable a transient marker

To delete a transient marker

To insert a new transient marker

To copy transient markers from one track to another track

To enable/disable transient markers

To navigate to the next/previous transient (TAB to transients)

Transient marker appearance

Transient marker context menu

To show/hide transient markers

- Click the **Transient Tool** button in the **Track View** toolbar.

or

1. On the **Views** menu, click **AudioSnap Palette** to open the AudioSnap palette.
2. Select the clips you want to display transient markers on.
3. In the AudioSnap palette, click the **Show Transient Markers** button .

Note: *Showing/hiding transient markers only affects the display of transient markers, but does not enable/disable AudioSnap.*

To select a transient marker

1. Click the **Transient Tool** button in the **Track View** toolbar.
2. Click the desired transient marker.

   The marker is highlighted.

To select/deselect all transient markers in a clip

1. Select the desired clip.
2. Do one of the following:
   - To select all transient markers, press ALT+SHIFT+A.
   - To deselect all transient markers, press ALT+SHIFT+C.

To select multiple adjacent transient markers

1. Click the **Transient Tool** button in the **Track View** toolbar.

2. Do *one* of the following:
   - Draw a lasso around the desired transient markers.
   - Click the first marker in the range, hold down the SHIFT key, and click the last marker in the range.

   The markers are highlighted.

To select multiple discontiguous transient markers

1. Click the **Transient Tool** button in the **Track View** toolbar.
2. Hold down the CTRL key and click the desired transient markers.

   The markers are highlighted.

To select the same transient in multiple clips

1. Select the clips that you wish to edit.
2. Click the **Transient Tool** button in the **Track View** toolbar.
3. Double-click a transient marker in any selected clip.

   All transient markers near the same position (within a defined time window) in all selected clips are selected.

Note 1: *If no clips are selected, transient markers from all clips are eligible to become selected.*

Note 2: *To specify the size of the time window, click the **AudioSnap Options** button in the AudioSnap palette to open the **AudioSnap Options** dialog, then specify the desired **Pool Transient Window** value.*

To extend a multi-track marker selection

When editing multi-track instruments, you may want to simultaneously adjust a range of transients across multiple tracks. In order to do so, you need to select the tracks and time region you wish to edit.

1. Select the clips that you wish to edit.
2. Click the **Transient Tool** button in the **Track View** toolbar.
3. Double-click a transient marker in any selected clip.

   All transient markers near the same position (within a defined time window) in all selected clips are selected.
4. Hold down the CTRL key and double-click another transient marker in any selected clip.

   A range or transient markers are selected across all selected clips.

To select all similar transient markers in a clip

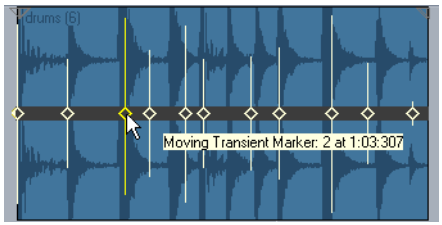
1. Click the **Select Tool** button in the **Track view** toolbar.
2. Right-click the desired clip and choose from the following options from the pop-up menu:
   - **AudioSnap > Select > Moved**
   - **AudioSnap > Select > Stretched**
   - **AudioSnap > Select > Disabled**
   - **AudioSnap > Select > Enabled**
   - **AudioSnap > Select > Promoted**
   - **AudioSnap > Select > User**

Selecting all markers of a certain type makes it easy to perform operations such as resetting only the stretched markers, or promoting only the disabled markers.

To move a transient marker (without stretching audio)

- Drag the marker handle (diamond).

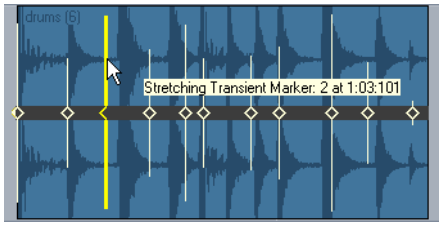
Figure 65. *To move a transient marker, drag the marker head (diamond)*



To drag a transient marker and stretch audio

- Drag the marker line.

Figure 66. *To stretch a transient, drag the marker line*



When you drag and drop the line of a marker, the marker moves to the place where you drop it, and the audio that is located between the dragged marker and the following marker stretches.

Note: *If you stretch a transient marker, AudioSnap is enabled on the clip.*

You can find additional marker editing commands on the transient marker context menu.

To stretch multiple transient markers in a clip

1. Select the desired transient markers.
2. Drag any of the selected transient markers.

To stretch multiple transient markers in a clip proportionally

1. Select the desired transient markers.
2. Hold down the CTRL key and drag any of the selected transient markers.

To reset a transient marker

- Right-click the marker you want to reset and select **Reset** from the pop-up menu.

To reset all selected transient markers

SONAR has a quick way to reset transient markers.

1. Select all clips you wish to reset.
2. Press CTRL+ALT and click the **Reset** button on the AudioSnap Palette. This brings up a dialog asking if you want to Clear All AudioSnap Markers. Clicking **Yes** will delete all the existing edits and restore clips to the analyzed transients.

Note: *This gesture is not undoable, so make sure you really want to reset the transient markers.*

An alternate solution is to turn off AudioSnap on the clips and then use **Edit > Bounce to Clip(s)**. However, this will also render any clips fades.

To disable a transient marker

- Right-click the marker you want to disable and select **Disable** from the pop-up menu.

To delete a transient marker

- Right-click the marker you want to reset and select **Delete Marker** from the pop-up menu.

Note: *You can only delete user-created transient markers.*

To insert a new transient marker

1. Click the **Transient Tool** button in the **Track View** toolbar.
2. Hold down the ALT key and click where you would like to insert a new transient marker.

   A new transient marker is inserted.

or

1. Disable the **Snap to Grid** button (or press the N key) if the place you need the marker is not on a convenient snap location.
2. Select the clip or clips that need the marker.
3. Move the Now Time to the place where you want the marker.
4. Press CTRL+ALT+I.

The marker appears in the selected clip(s) and displays a hollow square to show that it is a manually created marker:

Note: *You can also add markers at Pool lines with a single command. See “To add markers at Pool lines” on page 398.*

To copy transient markers from one track to another track

1. Click the **Transient Tool** button in the **Track View** toolbar.

   The AudioSnap palette appears and all audio clips show transient markers.
2. Select the target clip (the clip that you want to copy markers to) and drag the **Threshold** slider in the AudioSnap palette until all transient markers are disabled.
3. Select both the source clip (the clip you want to copy markers from) and the target clip.
4. Right-click either of the selected clips and select **Merge and Lock Markers** from the pop-up menu.

   The transient markers on the source clip are copied to the target clip.

To enable/disable transient markers

It’s sometimes necessary to disable some of the markers so you can extract a clearer groove, or snap or quantize data to only the more important markers. Disabling markers is a way to thin the data so that it creates a clearer time grid to work with. It also avoids stretching any transients that you don’t want to stretch as a result of quantizing audio. Disabled markers are not deleted, but are ignored by all AudioSnap functions. Only the head of a disabled marker remains visible.

There are several ways to disable/enable the transient markers in a selected clip:

- **The Resolution drop-down list in the AudioSnap palette.** The selected **Resolution** value lets you disable markers based on their time location. This clears out unwanted markers to make editing easier. Larger values create a bigger time window, based on musical time values, which

preserves markers that are closest to the displayed musical time value, and disables others.

Note: *The **Resolution** setting will only work reliably if the audio clip's internal tempo map is accurate. For details, see Editing a clip's tempo map.*

- **The Threshold slider in the AudioSnap palette.** This slider works by disabling markers based on their **volume**. Dragging the slider to the right creates a larger volume threshold, so that transients that fall below the current volume threshold that the slider defines are disabled.
- **The transient marker context menu.** You can right-click a marker, and choose **Disable** from the pop-up menu.
- Press CTRL+ALT+D to disable or re-enable all selected markers.

Tip: *If you want to protect a marker from being disabled by the **Sensitivity** slider or the **Threshold** slider, you can right-click the marker and enable the **Promote** option from the transient marker pop-up menu. You can also promote a disabled marker to ensure that it never becomes enabled by the **Sensitivity** slider.*

To navigate to the next/previous transient (TAB to transients)

- Do *one* of the following:
  - To move the Now Time to the next transient, press TAB.
  - To move the Now Time to the previous transient, press SHIFT+TAB.

Note: *TAB to transients is selection-based, which means tabbing will go to the next/previous transient amongst all selected clips. If there is no selection, tabbing operates on the current track.*

For more information, see TAB to transients.

Transient marker appearance

Each transient marker changes its appearance when it is selected, moved, new, disabled, or has certain other characteristics.

The following table lists the variations in appearance that a marker can display. For updated information about AudioSnap and marker colors, please see the ReadMe file.

Marker appearance	Description
Soft yellow hollow diamond shape	Standard active marker.
Solid diamond shape	User inserted marker or promoted marker. A promoted marker is never disabled by the **Resolution** or **Threshold** controls in the AudioSnap palette.

Table 72. *Transient marker shapes and colors*

Marker appearance	Description
Bright yellow	Selected marker.
Grey; only the head of the marker is visible	Disabled marker.
Arrow	Stretched marker. Any given transient can only be stretched or shrunk to 25-400% of original length. A small arrow indicates in which direction the audio has been stretched. **Note**: An important difference between quantizing MIDI and audio is that two or more audio transients can never collapse on top of each other like MIDI notes can.

Table 72. *Transient marker shapes and colors*

Transient marker context menu

The transient marker context menu appears when you right-click a transient marker. The command you choose from this menu acts on the marker that you right-click, and most commands also act on any markers that are selected. The following table describes each command.

Command	Description
Reset	Moves a marker back to its original position. Shortcut for selected markers is CTRL+ALT+R.
Disable	The marker is ignored. Shortcut for selected markers is CTRL+ALT+D.
Promote	By “promoting” a marker, you can set emphasis on certain beats and prevent the marker from becoming disabled when you adjust the **Resolution** or **Threshold** controls. Shortcut for selected markers is CTRL+ALT+P.
Delete marker	Only available for manually added markers; the command is greyed-out if you right-click an automatically generated marker. Shortcut for selected markers is CTRL+ALT+BACKSPACE.
Snap (stretch) to nearest transient	Moves marker to nearest Pool marker. **Note:** You can also snap transient markers to the time ruler and other transient markers. For details, see To add the Time Ruler to the Pool and Snapping edits to audio beats.
Snap (stretch) backward	Moves marker backward to nearest Pool marker.
Snap (stretch) forward	Moves marker forward to nearest Pool marker.

Table 73. *Transient marker context menu commands*

Command	Description
Stretch to	Moves the marker to the project time that you enter in the **To Time** field, and stretches the audio that is between the previous and next markers.
Move to	Moves the marker to the project time that you enter in the **To Time** field.
Audition Beat	Auditions the clip up to the next marker. Default shortcut is CTRL+SHIFT+SPACEBAR.
Split Beat	Splits the beat at the marker.
AudioSnap Palette	Opens the AudioSnap palette. Shortcut is SHIFT+A to show (but not hide) the palette.

Table 73. *Transient marker context menu commands*

See:

Using the Transient tool

Using the AudioSnap palette

Fixing timing problems in audio clips

Synchronizing audio and the project tempo

Extracting MIDI timing information from audio

General editing

Using the Pool

Algorithms and rendering

Keyboard shortcuts

Enabling/disabling AudioSnap

You can enable/disable AudioSnap processing on a clip-by-clip basis. Transient markers are always available to be edited, but AudioSnap is not active on a clip unless at least one transient marker has been stretched.

By disabling AudioSnap on a clip that has stretched transient markers, you can compare how the clip sounds with and without AudioSnap processing. Disabling AudioSnap can also temporarily free up CPU processing power.

To enable or disable AudioSnap

1. Select the audio clips you want to enable/disable AudioSnap on.
2. Do one of the following:
   - Click the **Bypass** button in the AudioSnap palette.
   - Right-click a clip and choose **AudioSnap > AudioSnap Enable** from the pop-up menu.

- Press F12.

AudioSnap is enabled/disabled on the selected audio clips, and transient markers are shown/hidden.

Note: *AudioSnap is automatically enabled on a clip if you stretch a transient marker on the clip.*

See:

Using the Transient tool

Using the AudioSnap palette

Fixing timing problems in audio clips

Synchronizing audio and the project tempo

Extracting MIDI timing information from audio

General editing

Using the Pool

Algorithms and rendering

Keyboard shortcuts

Using the AudioSnap palette

The AudioSnap palette provides easy access to time stretching and tempo-related tools.

Except for the AudioSnap enable/disable command, the AudioSnap palette's controls apply to the currently selected audio clip or clips.

To show the AudioSnap palette

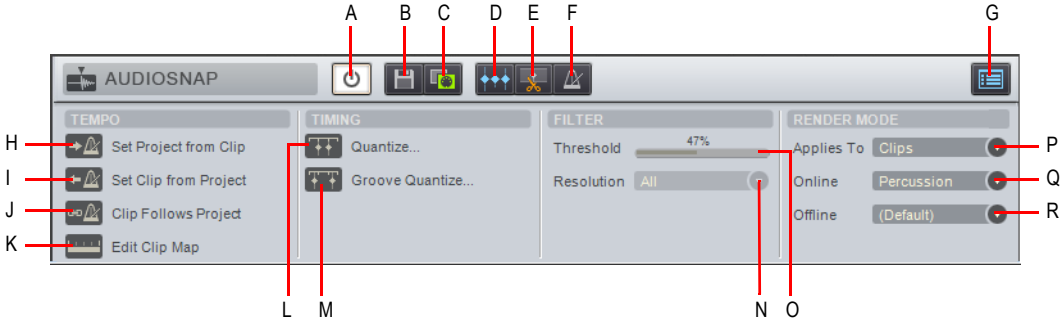
- Do *one* of the following:
  - On the **Process** menu, click **AudioSnap Palette**.
  - Press SHIFT+A.

or

1. Click the **Transient Tool** button in the **Track View** toolbar.
2. Click an audio clip that you want to edit.

The AudioSnap palette contains the following controls.

Figure 67. *AudioSnap palette controls*



A. *Bypass* ***B.*** *Save as groove* ***C.*** *Copy as MIDI* ***D.*** *Show transient markers* ***E.*** *Split into clips by transient markers* ***F.*** *Toggle sample/musical based clip start time* ***G.*** *AudioSnap properties* ***H.*** *Set project tempo from clip* ***I.*** *Set clip tempo from project* ***J.*** *Clip follows project tempo* ***K.*** *Edit clip tempo map* ***L.*** *Quantize* ***M.*** *Groove quantize* ***N.*** *Threshold* ***O.*** *Resolution* ***P.*** *Applies to* ***Q.*** *Online render mode* ***R.*** *Offline render mode*

Tool Bar section

- **Bypass** . This button enables or disables AudioSnap on selected audio clips.
- **Save as groove** . This button opens the **Define Groove** dialog, which lets you save the groove to a file. The groove can then be applied to other audio or MIDI clips.
- **Copy as MIDI** . This button saves the selected audio as a MIDI clip, which you can paste from the Clipboard into a MIDI track. You select the MIDI note that the transients in the audio clip will be converted to in the **AudioSnap Options** dialog, which opens when you click the **Options** button.
- **Show Transient markers** . This button shows or hides the transient markers on selected audio clips.
- **Split Beats into Clips** . This button splits a clip at each transient marker into multiple clips.
- **Clip Timebase (Absolute or Musical)** / . There are two timebase settings for a clip in SONAR:
  - **Musical (default)** . Musical Timebase means the clip start position will follow Musical Time (MIDI Tick).
  - **Absolute** . Absolute Timebase means that the clip start time will follow Absolute Time (SMPTE).
- **AudioSnap Options** . This button opens the **AudioSnap Options** button. This dialog has its own Help topic, which appears when you click its **Help** button.

Tempo section

- **Set Project Tempo From Clip** . This button copies the clip's tempo map to the project's global tempo map. This allows the project's measure boundaries to align with the audio clip.
- **Set Clip Tempo From Project** . This button copies the project's tempo map to the clip's tempo map. This allows the project's measure boundaries to align with the audio clip.
- **Clip Follows Project Tempo** . This button forces the clip to follow the project's global tempo map.

Note: *The **Clips follow project tempo** command only works on clips that are configured to use musical time (the **Time Base** property is set to **Musical (M:B:T)** in the **Clip Properties** dialog).*

- **Edit Clip Tempo Map** . Each audio clip has an internal tempo map. This button exposes controls that allow you to edit a clip's tempo map. For details, see Editing a clip's tempo map.

Timing section

- **Quantize** . This button opens the **Quantize** dialog, which has options to quantize **AudioSnap Beats** and **Audio Clip Start Times**, and also to set automatic crossfade options.
- **Groove Quantize** . This button opens the **Groove Quantize** dialog, which has an option to quantize **AudioSnap Beats**, and controls to set automatic crossfade options.

Filter section

- **Threshold.** This slider is available when a clip's transient markers are showing. The slider disables markers based on their volume. This clears out unwanted markers to make editing easier. Dragging the slider to the right creates a bigger volume threshold, which disables markers that are fall below that threshold. Works on selected clips.
- **Resolution.** This drop-down list is available when a clip's transient markers are showing. The selected **Resolution** value lets you disable markers based on their time location. This clears out unwanted markers to make editing easier. Larger values create a bigger time window, based on musical time values, which preserves markers that are closest to the displayed musical time value, and disables others. Works on selected clips.

Render mode section

- **Applies To.** This drop-down menu lets you choose whether any changes to the **Online** and **Offline** settings apply to clips, tracks, or the default settings. The choices in the drop-down menu are as follows:
  - **Clips.** When selected, the **Online** and **Offline** render mode settings apply to any selected clips. The **Online** and **Offline** lists display the current render modes for the selected clip. If you select multiple clips that have different render modes, the **Online** and **Offline** lists display **(Multi)**. If the selected clip has inherited render mode settings from the track or from the **Default Settings** settings, the **Online** and **Offline** lists display the inherited render mode in parenthesis.

- **Tracks.** When selected, the **Online** and **Offline** render mode settings apply to all current and future clips in the selected tracks.
- **Default Settings.** When selected, the **Online** and **Offline** render mode settings apply to the **Default (track/global)** render mode.

- **Online.** This choice determines what stretch algorithm is used during real-time playback. The **Percussion** options works better than the **Groove Clip** option on percussive material, especially if the stretching is by more than a few beats per minute. For more information about render modes, see Algorithms and rendering.

Note: *The **Online** render mode is for preview purposes only during playback. The final audio quality will be greatly improved after the **Offline** render mode is applied during mixdown/export.*

- **Offline.** This drop-down menu lets you choose the algorithm that is used when you export or freeze stretched audio. The choices in the drop-down menu are as follows:
  - **Groove clip.** This choice works faster, using less processing power.
  - **iZotope Radius Mix.** This is better for clips containing polyphonic, stereo data.
  - **iZotope Radius Mix Advanced.** This choice is similar to **iZotope Radius Mix**, but exposes a **Smoothing** slider that adjust how much detail to preserve.
  - **iZotope Radius Solo.** This is better for clips containing monophonic, solo instruments.
  - **Percussion.** This is the best choice for percussion sounds.

AudioSnap palette auto load

`AutoLoadAudioSnapPalette=<0 or 1>, default = 1`

By default, the AudioSnap palette appears automatically whenever you enable AudioSnap on a clip. If you prefer to never auto-show the AudioSnap palette, you can change this behavior by adding a variable to the `Cakewalk.ini` file.

This variable should be set in the `[WinCake]` section. For example:

```
[WinCake]
AutoLoadAudioSnapPalette=0
```

See:

Using the Transient tool

Editing transient markers

Fixing timing problems in audio clips

Synchronizing audio and the project tempo

Extracting MIDI timing information from audio

General editing

Using the Pool

Synchronizing audio and the project tempo

There are many reasons why you may want to synchronize audio clips with the project tempo. The following list presents a few common examples.

AudioSnap provides two ways to quickly synchronize audio and the project tempo map:

- **Applying an audio clip's internal tempo map to the project's global tempo map.** Use this method if you want the project tempo to match an audio clip's tempo and have audio beats aligned with the project's time ruler.

  This is useful in the following scenarios:

  - If you recorded an audio track without using the metronome, and you want the project's measure and beat boundaries to align with the audio. For example, you may have recorded an audio track that you would like to use as the tempo reference when recording additional tracks.
  - If you want both audio and MIDI edits to snap to audio beats.
  - If you want to use the **Quantize** and **Groove Quantize** commands on audio clips, and have audio beats quantized correctly.
  - If you want to remix an existing song that has been imported into SONAR (from an audio CD or MP3 file, etc.). In order to add new drum loops and MIDI instruments that play in time with the original song, you need to create a tempo map from the original song.

  For details, see To sync the project tempo to an audio clip.

- **Applying the project's tempo to a clip's tempo map.** Use this method if you want a clip to follow the project tempo.

  This is useful in the following scenarios:

  - If you want to synchronize new audio with existing audio.
  - If you want to tighten up a new audio track so it fits well with the timing and tempo of an existing track.
  - If you want to globally change the project's tempo after audio has been recorded.

  For details, see To sync an audio clip to the project tempo and To copy the project tempo to an audio clip's tempo map.

How does it work?

Each audio clip has an internal tempo map, which makes it possible to synchronize the audio clip with the project's global tempo map (see Editing a clip's tempo map).

SONAR automatically creates a tempo map for each audio clip. In some cases, SONAR can detect the wrong tempo. For example, SONAR might detect a tempo of 120 BPM when the actual tempo is 240 BPM, or a beat may be mapped to the wrong transient. You can easily remap the tempo map, if necessary.

You should make sure a clip's internal tempo map is correct before using any of the tempo-related commands in the AudioSnap palette. For details, see Editing a clip's tempo map.

To sync the project tempo to an audio clip

1. Select the audio clip(s) that has the desired tempo map.
2. Press SHIFT+A to open the AudioSnap palette.
3. Click the **Set Project Tempo From Clip** button on the AudioSnap palette.

   The clip tempo map is copied to the project tempo map so the tempo maps are identical.

Note: *If multiple audio clips have their **Clip Timebase** property set to **Musical**, changing the project tempo will affect the relative positions of the audio clips. When using the **Set Project Tempo from Clip** command, SONAR will offer to convert the timebase to **Absolute**.*

If you need to align the project tempo with freely played MIDI notes, see To sync the project tempo to freely played MIDI.

To sync an audio clip to the project tempo

1. Select the audio clip(s) that you want to follow the project tempo.
2. Press SHIFT+A to open the AudioSnap palette.
3. Click the **Clip Follows Project Tempo** button on the AudioSnap palette.

   The clip is synchronized to the project's tempo map.

Note: *If the audio clip does not play back at the expected tempo, the clip might not have an accurate internal tempo map. For details about editing a clip's tempo map, see Editing a clip's tempo map.*

To copy the project tempo to an audio clip's tempo map

1. Configure the project's tempo as desired (either specity the tempo manually, or extract the tempo from another audio clip by using the **Set Project Tempo from Clip** button on the AudioSnap palette).
1. Select the audio clip(s) that you want to follow the project tempo.
2. Press SHIFT+A to open the AudioSnap palette.
3. Click the **Set Clip Tempo From Project** button on the AudioSnap palette.

The global project tempo map is copied to the clip tempo map so the tempo maps are identical.

Note: *AudioSnap will always attempt to find the tempo of any clip recorded or imported into SONAR. While several possible tempos are normally generated, in some cases AudioSnap may be unable to detect the correct tempo or may not detect a tempo at all. This can occur if the source material is highly compressed or does not contain transient markers on all actual beats.*

If AudioSnap is unable to detect a tempo from the clip, new transient markers are inserted on each beat corresponding to the project's global tempo map.

If AudioSnap detects possible tempos for the clip, existing transient markers (that appear within a defined window of the project's beats) are reassigned to nearby beat markers on the clip's tempo map.

See:

Editing a clip's tempo map

Changing a project's tempo

Using the Transient tool

Editing transient markers

Using the AudioSnap palette

Fixing timing problems in audio clips

Extracting MIDI timing information from audio

General editing

Using the Pool

Algorithms and rendering

Keyboard shortcuts

Editing a clip's tempo map

Each audio clip has an internal tempo map, which makes it possible to synchronize the audio clip with the project's global tempo map (see Editing a clip's tempo map).

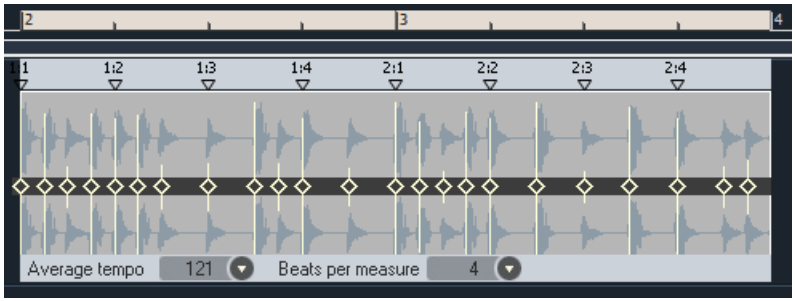
SONAR automatically creates a tempo map for each audio clip. In some cases, SONAR can detect the wrong tempo. For example, SONAR might detect a tempo of 120 BPM when the actual tempo is 240 BPM, or a beat may be mapped to the wrong transient. You can easily remap the tempo map, if necessary.

SONAR provides a convenient graphical interface for editing a clip's tempo map.

You should make sure a clip's internal tempo map is correct before using any of the tempo-related commands in the AudioSnap palette.

The following figure shows what a SONAR-generate clip tempo map might look like.

Figure 68. *You can edit the internal tempo map of each audio clip*



The following controls are available when editing a clip's tempo map:

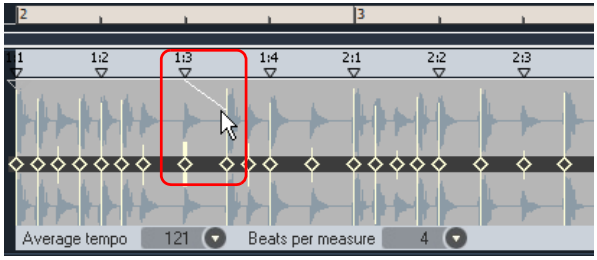
- **Beat markers.** Each detected beat has a corresponding beat marker. You can remap a beat marker by dragging the marker to any active transient marker.
- **Average Tempo.** This list shows the average tempo candidates: original, 0.5x and 2x. SONAR will do its best to detect the correct average tempo, but a clip can often have multiple potential tempos (60 BPM, 120 BPM, 240 BPM, etc.). If you change the **Average Tempo** setting, all clip tempo changes are adjusted to scale.
- **Beats per measure.** This list lets you specify the number of beats per measure. The value range is **2** to **14**, and the default value is **4**.

To edit a clip's tempo map

1. Select the clip or clips you want to edit.
2. Click the **Edit clip tempo map** button on the AudioSnap palette.

   A simple tempo map guide appears above the clip, indicating where SONAR has mapped the bars/beats of the clip.
3. If the **Average Tempo** list does not show the correct tempo, select the correct tempo.
4. If the **Beats per measure** box does not show the correct number of beats, specify the correct number of beats per measure.
5. Inspect the beat markers above the clip. If any beat marker is mapped to the wrong transient, drag the beat marker to the correct transient.

Figure 69. *Drag beat markers to edit the clip tempo map*



Note 1: *Beat markers can only be dragged to active transient markers. If you need to drag a beat marker to a position that doesn't have a corresponding transient marker, first insert a new transient marker at the desired position. For details, see To insert a new transient marker.*

*You can also use the **Merge and Lock Markers** command to merge transient markers from other tracks. This is useful, for example, if one track contains beats 1 and 3 and another track contains beats 2 and 4. For details, see To copy transient markers from one track to another track.*

Note 2: *If you hold down the CTRL key when you drag a beat marker to the left, the original beat marker and all subsequent beat markers will be renumbered accordingly.*

If you hold down the CTRL key when you drag a beat marker to the right, all subsequent beat markers will be moved by the same number of transient markers.

The clip's tempo map is recalculated.

If a beat marker is dragged to a transient marker that is already assigned to a later beat marker, SONAR will automatically re-number all subsequent beat markers accordingly.

A beat marker cannot be dragged to an earlier transient marker if that transient is already assigned to a beat marker.

6. To hide the tempo map guide, click the **Edit clip tempo map** button on the AudioSnap palette again.

Tip: *You can also enable/disable **Edit clip tempo map** from the Transient tool context menu.*

To audition an audio clip when editing the clip tempo map

When you are editing a clip's tempo map, you may frequently need to audition the audio to make sure you are positioning the beat markers at the correct transients.

1. Right-click the clip tempo map (above the clip) where you want to audition the clip, and keep the right mouse button pressed.

   SONAR creates a one-measure selection, starting from one measure before the position clicked. The selected time will gradually increase the longer you keep the mouse button pressed.

2. Release the right mouse button.

   SONAR auditions the selection.

See:

Using the Transient tool

Editing transient markers

Using the AudioSnap palette
Synchronizing audio and the project tempo
Fixing timing problems in audio clips
Extracting MIDI timing information from audio
General editing
Using the Pool
Algorithms and rendering
Keyboard shortcuts

Changing a project's tempo

Changing a whole project's tempo is simple with AudioSnap, if the tempo change is not drastic.

Before you change the global tempo of a project that contains audio, you must first make sure the audio clips are configured to follow tempo changes.

After you change the tempo, you may want to bounce some or all of the tracks to new tracks with the Radius algorithms to correct any unwanted change to each track's sound.

To change a project's tempo

1. Use the **File > Open** command to open the desired project.
2. Use the **Edit > Select All** command.
3. Press SHIFT+A to open the AudioSnap palette.
4. Zoom in (or press F) to get a better look at your clips.
5. With all clips still selected, enable the **Clip Follows Project Tempo** button in the AudioSnap palette.

   Note: *The **Clips follow project tempo** command only works on clips that are configured to use musical time (the **Time Base** property is set to **Musical (M:B:T)** in the **Clip Properties** dialog).*

   All the clips display the **Auto Stretch** icon, and will now conform to any new or future tempo changes.
6. In the **User1** toolbar, or the **Tempo** toolbar, click the **Tempo** value 105.00, type the desired tempo value, and press ENTER.

   All the tracks stretch to conform to the new tempo. Listen to the project as a whole, and also solo each track to hear how different the sound is after stretching.

See:

Using the Transient tool

Editing transient markers
Using the AudioSnap palette
Synchronizing audio and the project tempo
Fixing timing problems in audio clips
Extracting MIDI timing information from audio
General editing
Using the Pool
Algorithms and rendering
Keyboard shortcuts

Fixing timing problems in audio clips

AudioSnap provides several ways to fix timing errors in audio clips:

- You can drag individual beats or groups of beats to new positions. This gives you complete control over where each transient ends up.
- You can quantize to a particular note resolution. This can be a very quick way to fix a clip, if your markers are fairly close to where you want them to end up.
- You can quantize to another clip's beats, making the clips share the same groove.
- You can slip-stretch the clip, to make it fit a larger or smaller block of time. This is a very quick way to adjust a clip that has good timing, but whose tempo may be a little different from the project you want to use it in.
- You can combine techniques: slip-stretch a clip to fit a new tempo, then quantize or drag any markers that are out of sync.

The following is a list of common timing problems and solutions:

- If the audio contains various timing problems, but you want to fix them manually instead of letting AudioSnap fix them automatically, see Adjusting the timing of a solo performance. This gives you complete control over every aspect of your audio, and allows you to manually drag audio beats around to perfect the timing.
- If you need to fix a multi-track performance, such as a multi-mic drum kit or a full band, and you need to maintain phase relationships between tracks, see Adjusting the timing of a multi-track performance while maintaining phase relationships.
- If you want to synchronize the timing of clips on different tracks, you can fix this with AudioSnap if the sync errors aren't huge. For details, see Synchronizing the rhythms of out-of-sync tracks.
- If you want to quantize audio to the project's time ruler, see To quantize audio to the project's time ruler.
- If you want to quickly tighten up a performance in a project that already has a fixed tempo or varying tempo map, see Quantizing audio. This is useful if you like the performance, but the timing is off in a few places.

- If you want to extract the groove from one clip and apply it to another clip, see To Groove Quantize an audio clip. You can extract a groove from both audio and MIDI clips.
- If you need to synchronize audio with the projects tempo map, see Synchronizing audio and the project tempo.

See:

Adjusting the timing of a solo performance

Adjusting the timing of a multi-track performance while maintaining phase relationships

Synchronizing the rhythms of out-of-sync tracks

Making multiple clips/tracks groove together

Quantizing audio

To quantize audio to the project's time ruler

To Groove Quantize an audio clip

To quantize an audio clip to another audio clip (Quantize to Pool)

Adjusting the timing of a solo performance

When adjusting the timing of a solo performance (for example, a single instrument recorded with a single microphone, or a pre-recorded drum loop, etc.), you can freely drag beats around without worrying about potential phase problems.

By manually adjusting beats, you have complete control over the timing of your audio.

To manually adjust the timing of a solo performance

1. Click the **Transient Tool** button in the **Track View** toolbar.

   Audio clips display transient markers and the AudioSnap palette appears.
2. Drag the desired transient markers around to perfect the timing.

For more information about editing transient markers, see Editing transient markers.

See:

Adjusting the timing of a multi-track performance while maintaining phase relationships

Synchronizing the rhythms of out-of-sync tracks

Making multiple clips/tracks groove together

Quantizing audio

To quantize audio to the project's time ruler

To Groove Quantize an audio clip

To quantize an audio clip to another audio clip (Quantize to Pool)

Adjusting the timing of a multi-track performance while maintaining phase relationships

Editing a multi-track instrument, such as a multi-microphone drum kit or a full band, requires a little more care than editing a solo performance.

When stretching or quantizing multi-track audio, it is critical to maintain the phase relationships of the original recording. This can only be achieved if the tracks are stretched at the same exact points in time across all tracks.

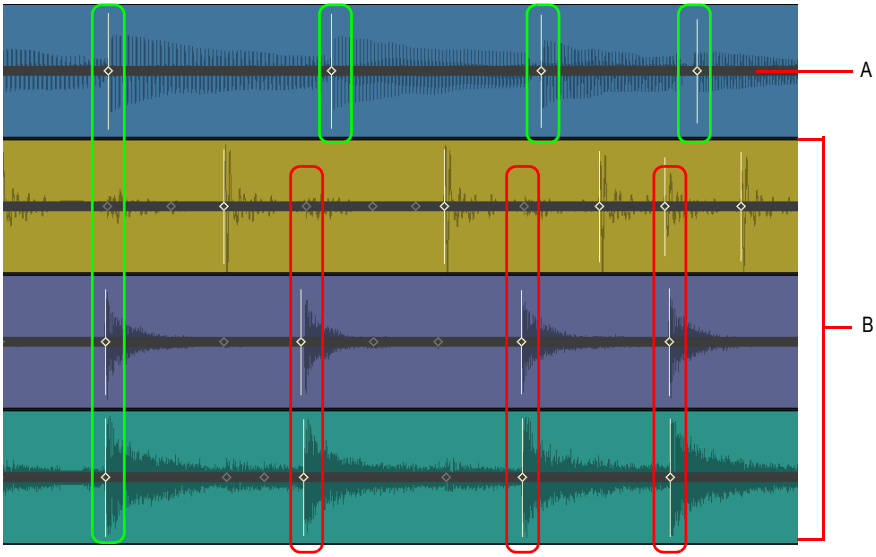
AudioSnap provides tools that make it easy to preserve the phase relationship across tracks when editing beats on individual tracks.

In the following example, you will learn how to use AudioSnap to edit a multi-track drum kit alongside a piano track. The drum kit was recorded with three microphones (kick, snare, and overhead), each routed to its own track.

To adjust the timing of a multi-track performance while maintaining phase relationships

The following figure shows the last three hits of a song. The top track is piano and the rest are drums: kick, snare and overhead.

Figure 70. *The drum hits are rushed and are not in sync with the Piano track*



A. *Piano track* ***B.*** *Drum tracks*

As you can see, the drummer has rushed and is not in time with the piano. At the beginning of the measure, the drummer is in time with the piano. Over the course of the measure, the drummer is performing a fill and on the next three beats is way ahead of the piano player. You can see how the

transient markers on the drum tracks are progressively earlier as the measure goes on (the drummer is rushing).

Our job is to align the drum hits with the piano hits so that the drum and piano tracks in time all the way through the measure.

1. Click the **Transient Tool** button in the **Track View** toolbar.

   Audio clips display transient markers and the AudioSnap palette appears.

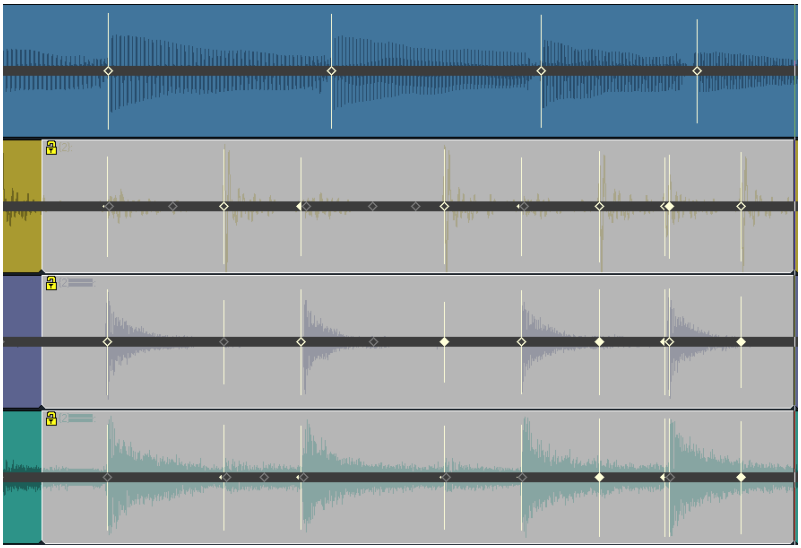
2. Select the three drum tracks and make splits right before and right after the area you want to edit. For details, see To Split Clips into Smaller Clips.
3. Select only the kick and snare clips.
4. On the AudioSnap palette, set **Resolution** to **1/16**.
5. Select only the drum overhead track.
6. On the AudioSnap palette, set **Threshold** to **100%** to ensure that there are no transients detected. This step is necessary because the overhead track contains audio from both the kick and the snare, and you want to make sure the kick, snare and overhead tracks are always synchronized when stretching beats.
7. Select all three drum tracks.
8. Right-click any selected clip and select **Merge and Lock Markers** on the pop-up menu.

   All three drum tracks now share the exact same transient markers, and each clip's position is locked.

Note: *When you fix timing errors in multi-tracked drum parts, you typically need to adjust all the drum parts in exactly the same way, because drum parts often contain "bleed"—the sound of other drums in the track of the drum that you are trying to record. For example, if your snare mic also picks up some of the hi-hat sound, you can't move hi-hat clips around without also moving the snare clips in exactly the same way, otherwise the sound of the hi-hat in the hi-hat track will conflict with the sound of the hi-hat in the snare track.*

Any time you have a track that contains "bleed" from other audio tracks, such as drum overhead tracks or room ambiance tracks, you want to make sure the track has the same identical transient markers as the individual close-mic tracks. The first step is to disable all transient markers in the overhead/room track, then use the ***Merge and Lock Markers*** *command to copy the transient markers from all individual close-mic tracks.*

Figure 71. *The **Merge and Lock Markers** command has copied the same transient markers to all three drum tracks.*



The drum tracks are now ready to be edited.

We want to keep the feel of the piano track, so our goal is align the drum tracks with the piano track, while preserving the phase relationship between the three drum tracks.

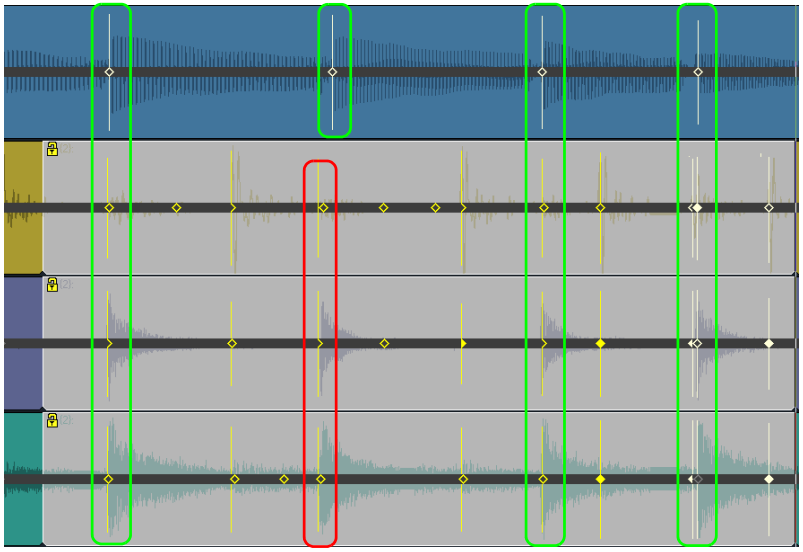
When editing multiple transients to adjust the timing of a performance, often times you need to speed up or slow down a section rather than just move an entire section later or earlier. In this example, the drummer was speeding up through the drum fill and then hits next downbeat too early. To fix this, you need to proportionally drag the drum transients so they are better aligned with the piano track.

9. Using the Transient tool, lasso select all transient markers from the first hit through the third hit, across all drum tracks.

10. Hold down the CTRL key and drag any selected drum transient marker until the third drum hit is aligned with the third piano hits.

The selected transients are stretched proportionally. The first and last drum and piano hits are now aligned. The effect of this edit is that the drummer no longer rushes through the fill and he lands on the downbeat much closer with the piano.

Figure 72. *The drum and piano hits are aligned*



The second drum and piano hits are close but not perfect, so we need to fix this single beat.

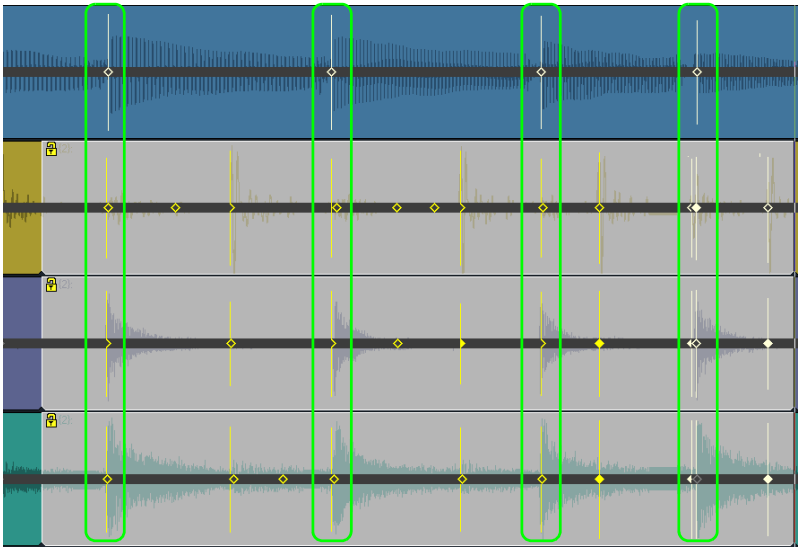
11. Hold down the CTRL key and double-click any drum transient marker on the second hit.

All drum transient markers for the second hit are selected

12. Drag any selected transient markers until it aligns with the second piano hit.

All three drum and piano hits are now aligned properly, and the phase relationships between all drum tracks have been preserved.

Figure 73. *All three drum and piano hits are perfectly aligned*



For information about maintaining phase relationships without stretching audio, see To quantize multi-tracked drums without stretching audio.

See:

Adjusting the timing of a solo performance

Synchronizing the rhythms of out-of-sync tracks

Making multiple clips/tracks groove together

Quantizing audio

To quantize audio to the project's time ruler

To Groove Quantize an audio clip

To quantize an audio clip to another audio clip (Quantize to Pool)

Synchronizing the rhythms of out-of-sync tracks

A common problem arises when two or more clips aren't quite in sync with each other. You can fix this with AudioSnap if the sync errors aren't huge. The AudioSnap command that is most helpful in this situation is the **Quantize to Pool** command. The way it works is you decide which clip has the correct rhythm, you add that clip's transient markers to the Pool, and then you quantize the other

clip's transient markers to the Pool. For details, see To quantize an audio clip to another audio clip (Quantize to Pool).

Tip: *You can also copy one clip's tempo to the project tempo, then configure other clips to follow the project tempo. For details, see To sync the project tempo to an audio clip and To sync an audio clip to the project tempo.*

See:

Adjusting the timing of a solo performance

Adjusting the timing of a multi-track performance while maintaining phase relationships

Making multiple clips/tracks groove together

Quantizing audio

To quantize audio to the project's time ruler

To Groove Quantize an audio clip

To quantize an audio clip to another audio clip (Quantize to Pool)

Making multiple clips/tracks groove together

You can extract the groove from one audio clip and apply it to another audio clip. You can also apply a pre-existing groove file to all selected audio clips.

For details, see To Groove Quantize an audio clip.

See:

Adjusting the timing of a solo performance

Adjusting the timing of a multi-track performance while maintaining phase relationships

Synchronizing the rhythms of out-of-sync tracks

Quantizing audio

To quantize audio to the project's time ruler

To Groove Quantize an audio clip

To quantize an audio clip to another audio clip (Quantize to Pool)

Using the Transient tool

Editing transient markers

Quantizing audio

Quantizing audio is a quick way to tighten up the feel of an audio track. AudioSnap provides several ways to quantize audio:

- You can quantize audio to the project's time ruler. This is useful for tightening up a performance in a project that already has a fixed tempo or varying tempo map. For details, see To quantize audio to the project's time ruler.
- You can copy the feel of one track and apply it to another track. There are two ways to accomplish this with AudioSnap:
  - Method 1: Extract MIDI timing from the source track, then use Groove Quantize on the target track. For details, see To extract MIDI timing from an audio clip and To Groove Quantize an audio clip.
  - Method 2: Add the source track to the Pool, then quantize the target track to the pool. For details, see To quantize an audio clip to another audio clip (Quantize to Pool) and Using the Pool.

To quantize audio to the project's time ruler

1. Select the audio clip you want to quantize.
2. Press SHIFT+A to open the AudioSnap palette.
3. Click the **Quantize** button in the AudioSnap palette.

   The **Quantize** dialog appear
4. Make sure the **AudioSnap Beats** check box is selected.
5. Configure the Quantize options as desired, then click **OK**.

   SONAR quantizes the selected clips.

Note: *You can only quantize to one rhythmic value at a time. If you don't want to quantize all beats in an audio clip (to ensure the **Quantize** command doesn't move them to a rhythmic placement where they don't belong), temporarily disable any transient markers you don't want to quantize. For details, see To disable a transient marker.*

To Groove Quantize an audio clip

The **Groove Quantize** command aligns transients with a groove that's on the Clipboard or a pre-existing groove file. If you want to copy the timing from another audio clip to the Clipboard, see To extract MIDI timing from an audio clip.

1. Select the audio clip you want to groove quantize.
2. Press SHIFT+A to open the AudioSnap palette.
3. Click the **Groove Quantize** button in the AudioSnap palette.

   The **Groove Quantize** dialog appear
4. In the **Groove File** field, select either **Clipboard** or the file that the groove pattern you want to use is saved in.
5. In the **Groove Pattern** field, select the groove pattern that you want to use.
6. Select the **Resolution** value that you want to quantize to.
7. Make sure the **AudioSnap Beats** check box is selected.

8. Click **OK**.

To quantize an audio clip to another audio clip (Quantize to Pool)

A common problem arises when two or more clips aren't quite in sync with each other. You can fix this with AudioSnap if the sync errors aren't huge. The AudioSnap command that is most helpful in this situation is the **Quantize to Pool** command. The way it works is you decide which clip has the correct rhythm, you add that clip's transient markers to the Pool, and then you quantize the other clip's transient markers to the Pool.

1. Click the **Transient Tool** button in the **Track View** toolbar.

   Audio clips show transient markers and the AudioSnap palette appears.
2. Select the audio clip that you want to use as the rhythm guide.
3. Disable any transient markers that you want to exclude from the Pool (see To disable a transient marker).
4. Do *one* of the following to add the selected clip to the Pool:
   - Press CTRL+F12.
   - Right-click the selected clip and select **Pool > Add clip to pool** on the pop-up menu.

   The selected clip is added to the Pool, and its transient markers turn purple.
5. Select the audio clip that you want to quantize.
6. Right-click the selected clip and select **Pool > Quantize to pool** on the pop-up menu.

   The **Quantize to AudioSnap Pool** dialog appears.
7. Configure the following settings as desired:
   - **Max Distance From Pool.** The value in this menu determines which notes are affected by the **Quantize to Pool** command. For example, if you choose **Quarter** in the menu, notes that are farther than a quarter note from a Pool line are not quantized.
   - **Quantize Window.** This slider fine tunes the value in the **Max Distance From Pool** menu. A window of **100 percent** includes all markers that lie within the **Max Distance From Pool** value.
   - **Quantize Strength.** This slider controls quantize strength, which determines how closely the selected notes move to the Pool markers.
8. Click **OK**.

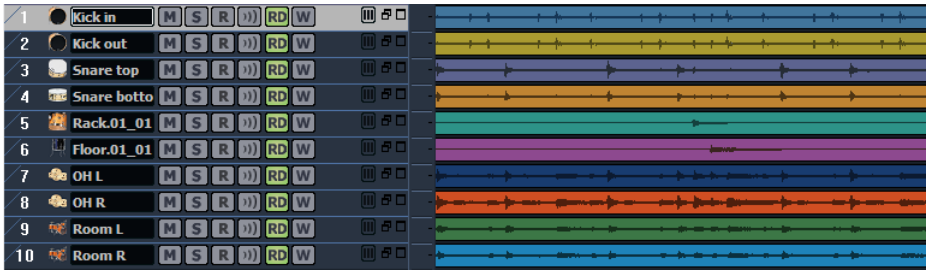
   The transients in the selected clips are quantized to the Pool.

To quantize multi-tracked drums without stretching audio

When you fix timing errors in multi-tracked drum parts, you will frequently need to adjust all the drum parts in exactly the same way, because drum parts often contain "bleed"—the sound of other drums in the track of the drum that you are trying to record. For example, if your snare mic also picks up some of the hi-hat sound, you can't move hi-hat clips around without also moving the snare clips in exactly the same way, because if you don't, the sound of the hi-hat in the hi-hat track will conflict with the sound of the hi-hat in the snare track.

AudioSnap's **Add Transients to Pool** command and **Split Beats into Clips** command allow you to slice your drum tracks at identical locations, so you can then drag or quantize whole clips without stretching any audio. This method of aligning clips does not change the phase relationships between the clips, as long as you move all the clips identically.

Let's take a look at some multi-tracked drum parts, and see how to quantize them all in exactly the same way. The following project uses 10 mics, including room mics and overhead mics:



1. Click the **Transient Tool** button in the **Track View** toolbar.

   Audio clips display transient markers and the AudioSnap palette appears.

2. If necessary, edit each drum track's transient markers so that there are no extraneous transients (use the **Threshold** slider, disable some transients, move others, etc.).
3. Disable all the transient markers in the overhead mic and room mic tracks.

Note: *The room mics and overhead mics are much farther from the drums than the close mics, so the transients in their tracks occur a little later than the close mic tracks. Because you will eventually split each beat into a separate clip, you only want to use the transient markers from the close mic tracks to avoid cutting off any transients.*

4. Select all the drum tracks.
5. Right-click any selected drum track and select **Merge and Lock Markers** on the pop-up menu.
6. All transient markers on all selected tracks are copied to each drum track, so all drum tracks share identical transient markers. The clip positions are also locked.
7. On the **Edit** menu, point to **Clip Lock** and click **Lock Position**.

   The clip positions are no longer locked.

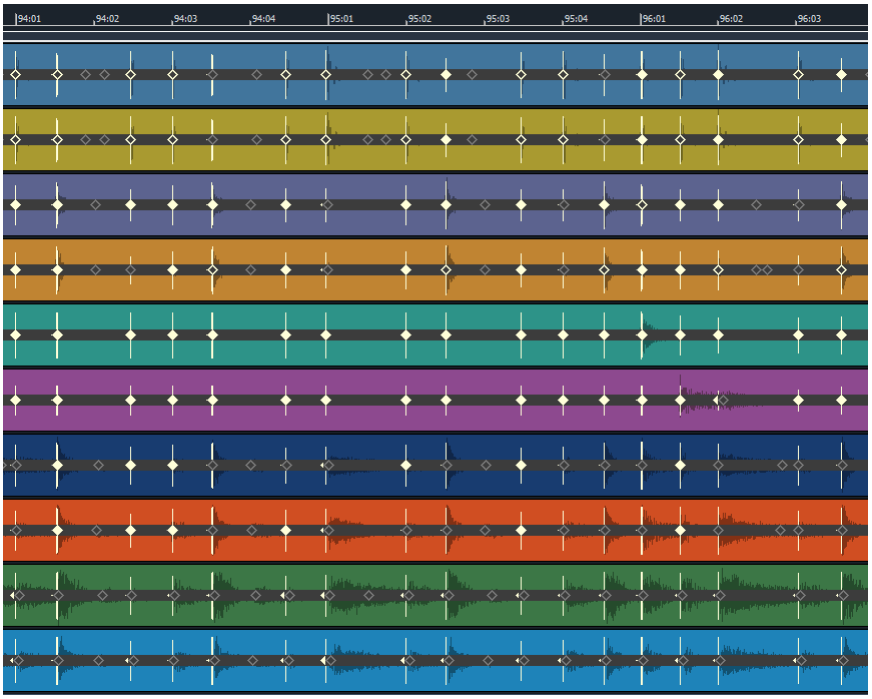
8. Select a drum track that has steady beats throughout the song.

Tip: *If there is not a single drum track that has steady beats throughout the song, you can create a temporary guide track by bouncing all the drum tracks to a single track (select all the tracks, use the* ***Edit > Bounce to Tracks*** *command, select* ***Main Outputs*** *in the* ***Source Category*** *field in the* ***Bounce to Tracks*** *dialog, and click* ***OK****).*

9. Click the **Set Project Tempo From Clip** button to align measure lines with drum track and establish a tempo map.

   The project's measure boundaries line up with the transients in the drum tracks.

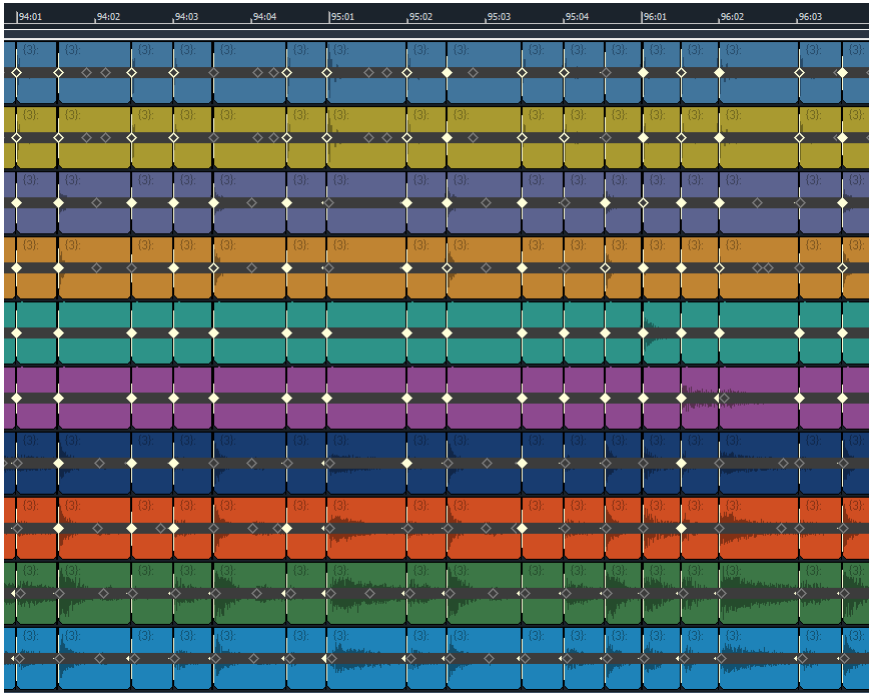
Note: *If the measure boundaries do not line up properly with the drum tracks, you may need to edit the guide track's tempo map. For details, see To edit a clip's tempo map.*



10. Select all the drum tracks.

11. Click the **Split Beats into Clips** button on the AudioSnap palette.

    Each beat is split into a separate clip.



Now we can quantize all the clips at the same time. Let's quantize this example to eighth notes:

12. Select all the clips that you want to quantize.

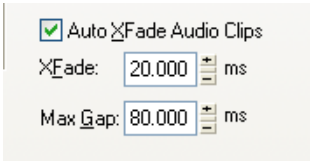
13. Use the **Process > Quantize** command to open the **Quantize** dialog.

14. In the **Duration** field, choose **Eighth** (for this example).

15. Configure the other settings as follows:

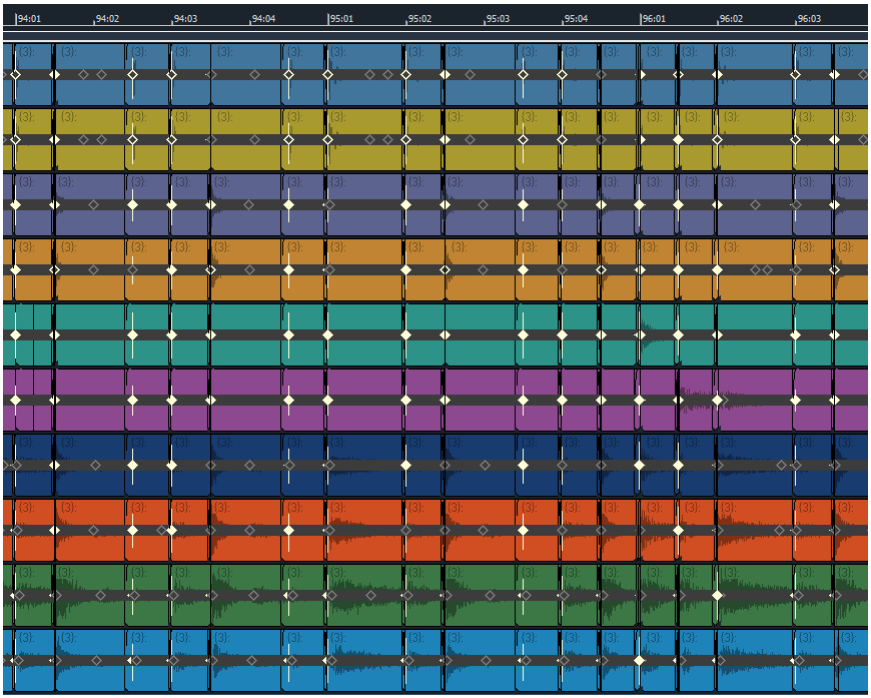
- Make sure the **AudioSnap Beats** check box is cleared.
- Make sure the **Audio Clip Start Times** is selected.

- Make sure the **Auto XFade Audio Clips** check box is selected, and the **XFade** and **Max Gap** values are set at their default values.

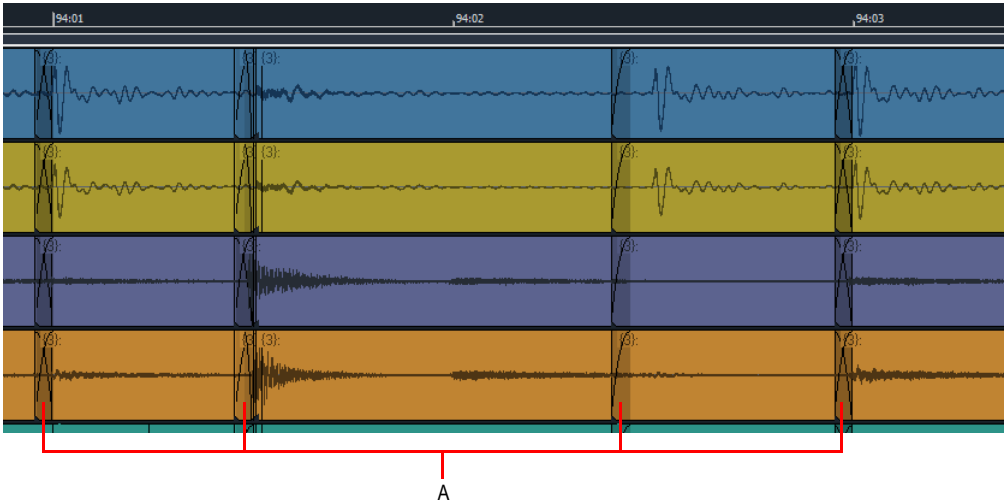


16. Click **OK** to close the **Quantize** dialog.

After some processing time, the clip start times move to the eighth note boundaries:



Some clips now overlap, and some clips have small gaps between them. Because the **Auto XFade Audio Clips** check box was enabled, and the **XFade** and **Max Gap** values were set at their default values, crossfades have been automatically added between clips, and any gaps that were smaller than the **Max Gap** value have been filled in. Let's zoom in to take a closer look:



A. *Crossfades*

Now the clips line up with eighth note boundaries, no audio has been stretched, and phase relationships have been maintained.

For information about maintaining phase relationships when stretching audio, see Adjusting the timing of a multi-track performance while maintaining phase relationships.

See:

Quantizing

To split a clip, quantize it, and fill in the gaps

Using the Transient tool

Editing transient markers

Using the AudioSnap palette

Synchronizing audio and the project tempo

Fixing timing problems in audio clips

Extracting MIDI timing information from audio

General editing

Using the Pool

Algorithms and rendering

Keyboard shortcuts

Extracting MIDI timing information from audio

Extracting MIDI timing information from audio allows you to:

- Double an audio rhythm with a MIDI instrument.
- Replace sounds in an audio clip (commonly used for drum replacement).
- Notate the rhythm of an audio clip.
- Align lyrics with an audio rhythm.

After you extract the timing information from an audio clip, the timing information is copied to the clipboard as MIDI note events. You can paste the MIDI notes to a new MIDI track or use the clipboard as a source for the **Groove Quantize** command.

To extract MIDI timing from an audio clip

1. Press SHIFT+A to open the AudioSnap palette.
2. Select the audio clip whose rhythm you want to extract.
3. Do any necessary quantizing, and disable any transient markers that you don't want to extract (see Quantizing audio and To disable a transient marker).
4. With the clip still selected, click the **AudioSnap Options** button in the AudioSnap palette to open the **AudioSnap Options** dialog.
5. In the **Convert to MIDI Note** box, choose **C3**. This is the note most drum synths use for the bass drum. If your favorite synth uses a different note, choose it now.
6. Choose a **Note Velocities** option: either accept the extrapolated velocities in the audio clip (the **Vary With Pulse Level** option), or set a constant velocity for the notes in the **Set All To Same Value** field.
7. Click **OK** to close the **AudioSnap Options** dialog.
8. Click the **Copy As MIDI** button .

   This adds the extracted groove to the Windows clipboard.

   SONAR copies the audio rhythm to the Clipboard as a MIDI clip, with the same pitch assigned to each note.

You can now paste the MIDI notes to a new MIDI track, use the clipboard as a source for the **Groove Quantize** command, or save the extracted groove as a Groove Quantize file.

To paste the extracted MIDI timing to a MIDI track

1. Click the track number of a MIDI track to select it.
2. Move the Now Time to the measure where you want the data (we'll use measure 1).

Tip: *If you want the MIDI notes to align perfectly with the audio data, press F7 to move the Now time to the beginning of the selected audio clip.*

3. Press CTRL+V to paste the data.

   A new MIDI clip is inserted in the track

Note: *All the new MIDI notes have the same pitch, and the tails of the preceding notes reach all the way to the following notes, so you can't see the actual rhythm. You can easily shorten the duration of each note event in order to clearly see each note event. To do so, click* ***Process > Length*** *to open the* ***Length*** *dialog. In the* ***Length*** *dialog, disable the* ***Start Times*** *check box, enable the* ***Duration*** *check box, and type* ***50*** *in the* ***Percent*** *field. Click* ***OK*** *to close the dialog. Then click the* ***PRV Mode*** *button in the MIDI track (you can see the rhythm if you enable the Inline Piano Roll view and zoom in).*

To save the extracted MIDI timing as a Groove Quantize file

1. Press SHIFT+A to open the AudioSnap palette.
2. Click the **Save as Groove** button .

   The **Define Groove** dialog appears.
3. In the **File** field, choose a file to save the pattern in, or type a name to create a new file.
4. In the **Pattern** field, type a name for the pattern, and click **OK**.

   The extracted MIDI groove is saved as a Groove Quantize file, and can be used at any time with the **Groove Quantize** command.

See:

Using the Transient tool

Editing transient markers

Using the AudioSnap palette

Synchronizing audio and the project tempo

Fixing timing problems in audio clips

Extracting MIDI timing information from audio

General editing

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Algorithms and rendering

Keyboard shortcuts

General editing

If you want to snap edits in the Clips pane to transient markers, see Snapping edits to audio beats.

If you want to split each beat into a separate clip, see Splitting beats into clips.

If you want to stretch the duration of an audio clip, see Slip-stretching audio.

If you want to automatically create envelope nodes that are aligned with transient markers, see Adding automation.

Snapping edits to audio beats

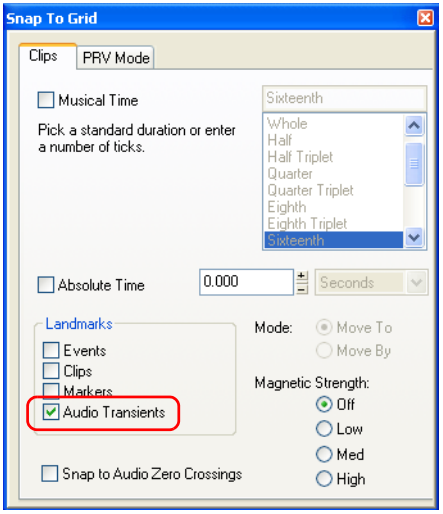
The **Snap to Grid** dialog has an **Audio Transients** check box on the **Clips** tab that allows you to snap edits in the Clips pane to transient markers in selected audio clips. You can toggle this check box on and off by pressing CTRL+ALT+N. The same check box is on the **PRV** tab of the **Snap to Grid** dialog, but the **Snap to Transients** button does not toggle that check box.

In the following example, you will learn how to snap MIDI notes to audio beats.

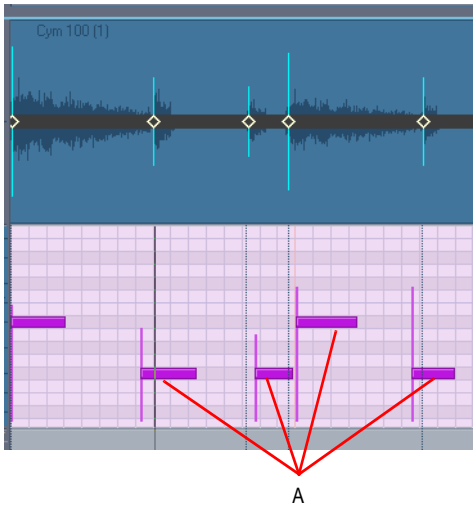
To snap to audio transients

1. Select the audio clips whose rhythm you want to snap to.
2. Open the **Snap to Grid** dialog (press SHIFT+N), and enable the **Audio Transients** check box on the **Clips** tab and/or the **PRV Mode** tab. Deselect **Musical Time** and all other options.

Figure 74. *The Snap to Grid window*

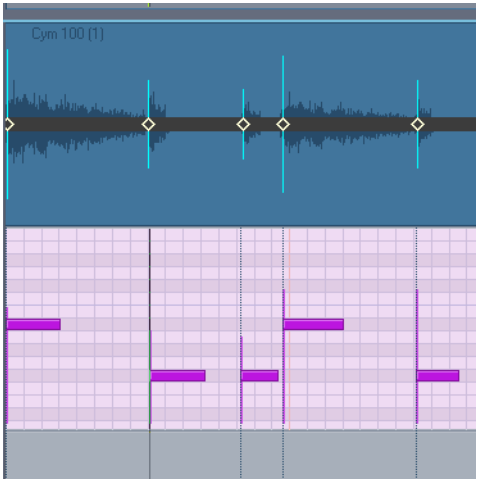


3. In this example, we're using the Inline Piano Roll view: to enable it, click a MIDI track's **PRV Mode** button . Zoom in enough to see where the edits need to be. Make sure that the **Audio Transients** check box on the **PRV Mode** tab of the **Snap to Grid** dialog is enabled.



A. *These notes don't line up with the audio beats*

4. Drag the misaligned MIDI notes so they line up with the audio beats. As you're dragging notes, they will automatically snap to the nearest audio beat.



Splitting beats into clips

Clicking the **Split Beats Into Clips** button on the AudioSnap palette splits a selected AudioSnap-enabled clip into new clips starting at every enabled transient marker. The main reason you might want to do this is to align a clip with a new tempo or quantize it, without stretching the audio. Once you split a clip at its transients, you can move the new clips by dragging or quantizing so that they are aligned the way you want them to be. The advantage is that moving clips instead of transient markers does not stretch any audio, so that the original sound quality is unchanged. The possible disadvantage is that you can create gaps between the new clips when you move them. However, the **Quantize**, **Groove Quantize**, and **Fade Selected Clips** dialogs all have an option to automatically fill in the gaps. This is the **Fill Gaps, XFade between Audio Clips** option in the **Fade Selected Clips** dialog, and is the **Auto XFade Audio Clips** option in the **Quantize** and **Groove Quantize** dialogs. Filling the gaps is accomplished automatically by "rolling out" the first clip's right edge and the second clip's left edge to create a crossfade. This option will often be used when quantizing drum parts, which results in smooth-sounding audio without introducing phase problems.

Note: *When you align clips on multiple tracks, it is necessary to split and/or quantize all clips at the exact same position in order to avoid phase problems. In order to do so, it is necessary to establish a common, or master, transient pool that all tracks can reference. The* ***Merge and Lock Markers*** *command will use the transient pool as a reference, and insert identical transient markers on all selected clips.You can then use the* ***Split Beats Into Clips*** *button to split clips at audio beats.*

To add markers at Pool lines

1. Make sure that the Pool contains markers from at least one clip, or from the Time Ruler.
2. Select the clips that you want to add markers to.
3. Right-click a selected clip, and choose **AudioSnap > Apply AudioSnap Pool Transient Markers** from the pop-up menu.

Markers appear on the selected clips at Pool lines.

Note: *If a selected clip is not AudioSnap-enabled, choosing the* ***Apply AudioSnap Pool Transient Markers*** *command will automatically enable AudioSnap for the clip.*

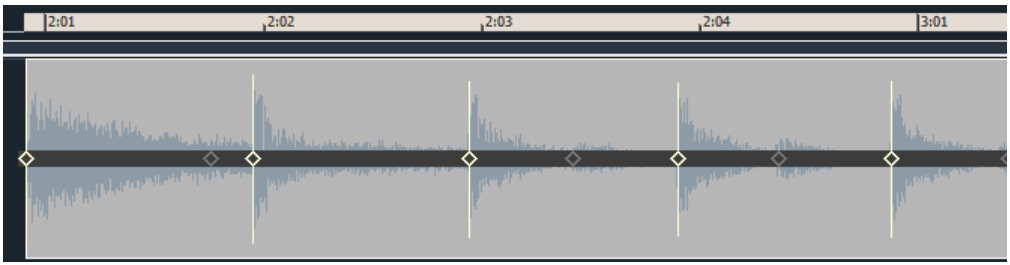
To split a clip at beats

1. Select the clip(s) that you want to split.
2. Press SHIFT+A to open the AudioSnap palette.
3. Click the **Split Beats into Clips** button .

   The clip's beats are split into separate clips.

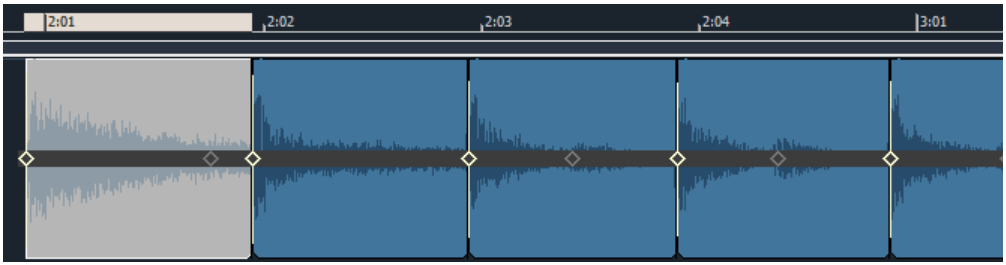
To split a clip, quantize it, and fill in the gaps

1. The following picture shows a clip whose transient markers don't line up with the measure lines:



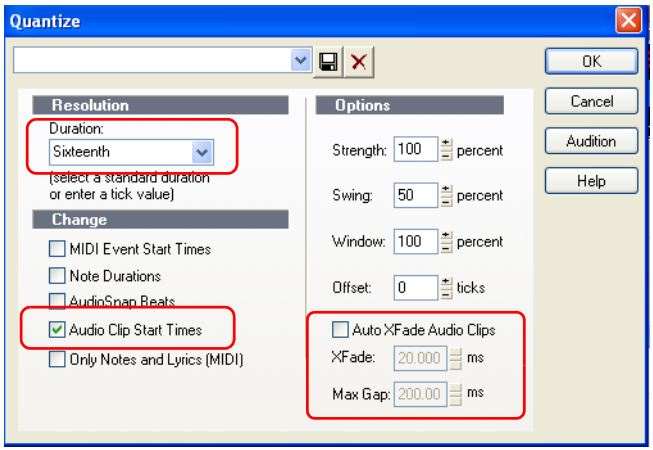
2. If we quantize it, the audio will stretch and we may or may not like the resulting sound. Let's try splitting it, and quantizing the clips instead of the transients: click the **Split Beats Into Clips** button on the AudioSnap palette.

   The clip splits at the transients, and only the first new clip is still selected:

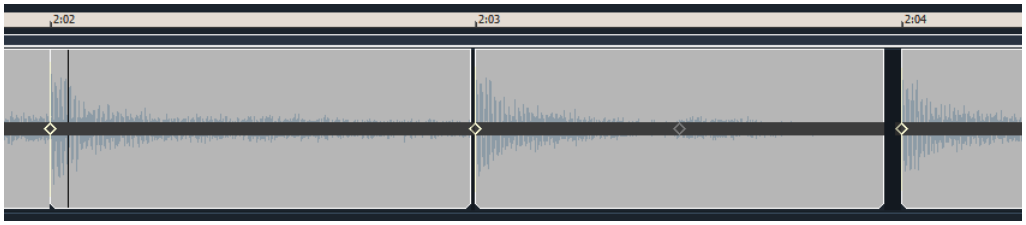


3. Let's quantize the clips: drag through the clips to select them.
4. Click the **Quantize** button in the AudioSnap palette.

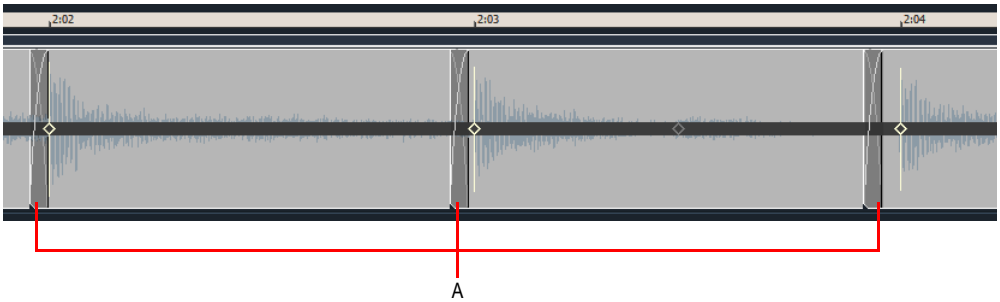
   The **Quantize** dialog appears:



5. Make sure that **Audio Clip Start Times** is selected, and that (for this example) **Sixteenth** is selected in the **Duration** field. Leave the **Auto XFade Audio Clips** option unchecked for now, and click **OK**. Let's zoom in and look at the quantized clips:



6. The start of each clip now lines up where we want it to, but there are gaps between some of the clips. Let's undo what we just did (press CTRL+Z), and quantize again. This time, however we will enable the **Auto XFade Audio Clips** option in the **Quantize** dialog, and click **OK**:



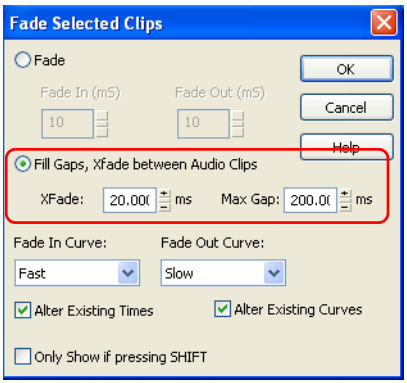
A. *Crossfades*

7. Where the gaps were between clips, we now see crossfades. The default length of the crossfade is 20 milliseconds, but you can change that by entering a number in the **XFade <number goes here> ms** field in the dialog.
8. If you don't want wide gaps to be filled in, you can enter a number of up to 200 milliseconds in the **Max Gap** field. Any gap that is wider than the number in this field will not be filled in.

If we wanted to drag the clips to new locations instead of quantizing them, we could fix any resulting gaps by selecting the clips that have gaps, and using the **Process > Fade Selected Clips** command.

The **Fade Selected Clips** dialog has the **Fill Gaps, XFade between Audio Clips** radio button, the **XFade <number goes here> ms** field, and the **Max Gap** field.

Figure 75. *The **Fade Selected Clips** dialog*



To fill in gaps with the Fade Selected Clips command

1. Select the clips that have gaps you want to fill.
2. Use the **Process > Fade Selected Clips** command to open the **Fade Selected Clips** dialog.

3. Enable the **XFade between Audio Clips** radio button, and set any options you want in the **XFade <number goes here> ms** field, and **Max Gap** field.
4. Click **OK**.

See:

Using the Transient tool

Editing transient markers

Using the AudioSnap palette

Synchronizing audio and the project tempo

Fixing timing problems in audio clips

Extracting MIDI timing information from audio

Using the Pool

Algorithms and rendering

Keyboard shortcuts

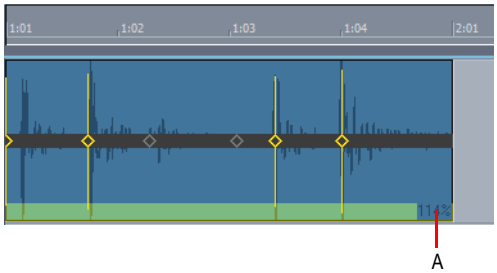
Slip-stretching audio

You can slip-stretch an audio clip in order to expand or compress its duration. Slip-stretching only works on regular audio clips, not Groove clips or REX loops.

To slip-stretch an audio clip

- Hold down the CTRL key, move the mouse pointer over the end of the clip until the cursor changes into the slip-stretch icon , then drag the end of the clip to the desired position.

  The clip is stretched and displays a yellow bar at the bottom of the clip along with the stretch amount (percentage of original duration).



A. *Stretch amount*

Alpha-blended bars on slip-stretched clips

`AlphaStretchIndicator=<0 or 1> (default=1)`

When an audio clip is slip-stretched, a yellow alpha-blended bar is displayed on the clip. This may affect performance on some systems if there are many slip-stretched clips. There is a new `Cakewalk.ini` variable to disable the alpha-blended bars, and instead only show the percent value in the lower right corner of the clip.

This variable should be set in the `[Wincake]` section. For example:

```
[Wincake]
AlphaStretchIndicator=0
```

See:

Using the Transient tool

Editing transient markers

Using the AudioSnap palette

Synchronizing audio and the project tempo

Fixing timing problems in audio clips

Extracting MIDI timing information from audio

Using the Pool

Algorithms and rendering

Keyboard shortcuts

Adding automation

If you have an automation envelope on a track, AudioSnap can automatically add nodes to the envelope that align with a selected clip's transient markers. This makes it easy to add special processing at transient locations.

To Add Nodes at Transients

1. Select the audio clip(s) that contain the transient markers you want to use as a guide.
2. Right-click an automation envelope on the clip, and choose **Add Nodes at Transient Markers** from the pop-up menu.

Now you can easily edit your envelope at transient locations.

See:

Using the Transient tool

Editing transient markers

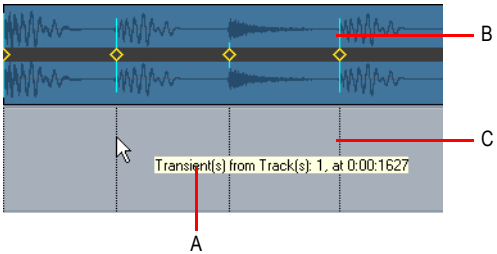
Using the AudioSnap palette

Synchronizing audio and the project tempo
Fixing timing problems in audio clips
Extracting MIDI timing information from audio
Using the Pool
Algorithms and rendering
Keyboard shortcuts

Using the Pool

The Pool is a collection of transient markers that can be extracted as a groove, and also function as snap locations. A transient marker that belongs to the pool is displayed in the Clips pane as a solid line within the parent track, and as a dotted line outside the parent track. Hovering the mouse over a dotted line will display a tooltip containing the parent track and position. You can show or hide the dotted pool lines by selecting **Pool > Show pool lines** on the Transient tool pop-up menu, or by pressing CTRL+ALT+F12.

Figure 76. *Pool lines*



A. *Tooltip* ***B.*** *Solid line* ***C.*** *Dotted line*

The Track view Time Ruler can be added to the Pool (see To add the Time Ruler to the Pool).

To add a clip's transients to the Pool

1. Select the an AudioSnap-enabled clip.
2. Do *one* of the following:
   - Right-click the clip and select **AudioSnap > AudioSnap Add Transients to Pool** from the pop-up menu.
   - Select the **Add Transients to Pool** check box in the **Clip Properties** dialog.
   - Press CTRL+F12.

To hide or show the Pool

1. Click the **Transient Tool** button in the **Track View** toolbar.

2. Right-click in the Clips pane and select **Pool > Show pool lines** on the pop-up menu.

To add the Time Ruler to the Pool

1. In the **Snap to Grid** dialog, set the **Musical Time** value to the resolution you would like to add to the Pool.
2. Click the **Transient Tool** button in the **Track View** toolbar.
3. Right-click in the Clips pane and select **Pool > Add MBT to pool** on the pop-up menu.

   The current Musical Time snap resolution to the pool, and also displays dotted pool lines in the Clips pane. This can be useful as either a basic visual guide, or for adding the Musical Time to an extracted groove, or to fill in any transients that may be “missing” in a syncopated or sparse section.

To add transient markers at Pool lines

1. Make sure that the Pool contains markers from at least one clip, or from the Time Ruler.
2. Select the clips that you want to add markers to.
3. Right-click a selected clip, and choose **AudioSnap > Apply AudioSnap Pool Transient Markers** from the pop-up menu.

Markers appear on the selected clips at Pool lines. When aligning clips on multiple tracks, it is necessary to split and/or quantize all clips at the exact same position in order to avoid phase problems when quantizing audio. In order to do so, it is necessary to establish a common, or “master”, transient reference pool which can be applied to all tracks. The **Apply AudioSnap Pool Transient Markers** command will use the transient pool as a reference, and insert identical transient markers on all selected clips.

Note 1: *If a selected clip is not AudioSnap-enabled, choosing the **Apply AudioSnap Pool Transient Markers** command will automatically enable AudioSnap for the clip.*

Note 2: *Adding markers at Pool lines can add a lot of markers to a clip. If you later decide that you want to work with the clip’s original markers, you can remove only the markers that you added by right-clicking the transient marker, and choosing **Reset** from the pop-up menu.*

Groove Quantize and Quantize to Pool

You can use two kinds of groove quantizing on audio clips: the **Groove Quantize** command aligns transients with a groove that’s on the Clipboard, and the **Quantize to pool** command aligns transients with the Pool.

When you use the **Groove Quantize** command, you can align a clip with a pre-existing groove, or you can extract a groove from another clip.

For information about extracting a groove, see To extract MIDI timing from an audio clip.

For information about groove quantizing an audio clip, see To Groove Quantize an audio clip.

For information about quantizing to the Pool, see To quantize an audio clip to another audio clip (Quantize to Pool).

See:

Using the Transient tool

Editing transient markers

Using the AudioSnap palette

Synchronizing audio and the project tempo

Fixing timing problems in audio clips

Extracting MIDI timing information from audio

General editing

Algorithms and rendering

Keyboard shortcuts

Algorithms and rendering

When you stretch an audio clip, AudioSnap uses a particular formula, or *algorithm*, to stretch the audio. The best algorithms take the most computing time and power to complete, so if AudioSnap always used the best available algorithms (the iZotope Radius algorithms), you would not be able to play back your clip in a reasonable amount of time to listen to the timing. That's why you can choose a quick algorithm for **"online"** rendering (real-time playback), and a different algorithm for **"offline"** or non-real-time rendering. Offline rendering in an AudioSnap context usually means bouncing to track, but it also refers to other offline processes such as freezing tracks and applying effects. When you do any of these mixdown operations such as bouncing, exporting, or freezing, audio clips use the offline rendering algorithm you have chosen for them.

Note: *The **Online** render mode is for preview purposes only during playback. The final audio quality will be greatly improved after the **Offline** render mode is applied during mixdown/export.*

Typical algorithm choices for an AudioSnap session work like this:

- Do your AudioSnap time stretching, error correction, etc., with a quick algorithm: choose either **Percussion** or **GrooveClip**.
- After your AudioSnap editing is finished, bounce to track with a better algorithm: choose one of

the Radius choices, or for drum tracks, **Percussion** is usually the best choice.

Note: *You should avoid rendering AudioSnap clips more than once. Applying stretch algorithms multiple time in succession can degrade the audio quality (similar to transcoding an MP3 file).*

Until your project is mixed and finalized, it is recommended that you use the Freeze function instead of **Bounce to Track(s)** or **Bounce to Clip(s)** if you need to temporarily off-load CPU processing power. For details, see To freeze an AudioSnap-enabled clip.

The following table describes the available algorithms:

Algorithm	Description
GrooveClip	Good all-around algorithm to use while stretching audio
Percussion	Gives a better sound on percussion clips while stretching audio
iZotope Radius Mix	Best all-around choice when bouncing to track with audio clips that contain a mix of different sounds
iZotope Radius Mix Advanced	This choice is similar to **iZotope Radius Mix**, but exposes a **Smoothness** parameter (pitch coherence). Pitch coherence preserves naturalness of timbre for pitched solo voices, such as human speech, saxophone or vocals. While traditional vocoders can smear these signals in time and randomize phase, the pitch coherence parameter of Radius preserves phase coherence for these signals. High values of pitch coherence will avoid phasiness in Radius's output at the expense of roughness (modulation) in processed polyphonic recordings. The **Smoothness** parameter can be adjusted in the **AudioSnap Options** dialog.
iZotope Radius Solo	Best choice when bouncing to track with audio clips of a solo instrument. Although a guitar is a “solo” instrument, if you play chords instead of single notes you may want to select “Radius Mix” instead. **Tip:** if a clip/track contains a mixture of polyphonic and monophonic parts, you may wish to split the parts into separate clips and experiment with different algorithms for each clip.
iZotope Radius Solo (Bass)	Best choice when bouncing to track with audio clips of a bass instrument
iZotope Radius Solo (Vocal)	Best choice when bouncing to track with audio clips of a solo voice

Table 74.

To choose default algorithms

1. Press SHIFT+A to open the AudioSnap palette.
2. In the **Applies To** list, select **Default Settings**.

3. Under **Render Mode**, select the desired **Online** and **Offline** render modes

Every AudioSnap-enabled clip that you stretch or bounce uses the settings you choose for default stretch algorithms, *except* clips that you choose individual settings for.

To choose render algorithms for an individual clip

1. Select the clip or clips you want to edit.
2. Press SHIFT+A to open the AudioSnap palette.

   The AudioSnap palette displays the current render mode of the selected clip. If you select multiple clips that have different render modes, the **Online** and **Offline** lists display **(Multi)**.
3. In the **Applies To** list, select **Clips**.
4. Under **Render Mode**, select the desired **Online** and **Offline** render modes.

To choose render algorithms for all current and future clips on a track

1. Select the track or tracks you want to edit.
2. Press SHIFT+A to open the AudioSnap palette.
3. In the **Applies To** list, select **Tracks**.
4. Under **Render Mode**, select the desired **Online** and **Offline** render modes.

   All current and future clips in the selected tracks will inherit the selected render modes.

To freeze an AudioSnap-enabled clip

1. Do one of the following to open the **Freeze Options** dialog:
   - In the Track view, right-click any track's **Freeze** button .
   - Right-click an audio track, and select **Freeze > Freeze Options** from the pop-up menu.
2. Make sure the **Track FX** check box is cleared.
3. Click **OK** to close the **Freeze Options** dialog.
4. Do one of the following:
   - In the Track view, click the desired track's **Freeze** button .
   - Right-click the track and select **Freeze > Freeze Track** from the pop-up menu.

   SONAR bounces the audio in the track to a new audio clip or clips.

To bounce an AudioSnap-enabled clip

1. Select the clip you want to bounce.
2. Use the **Edit > Bounce to Tracks** command to open the **Bounce to Track(s)** dialog.
3. In the **Destination** field, choose the track where you want your new audio clip to go.
4. In the **Source Category** field, choose **Tracks**.
5. Choose the **Channel Format** and **Dithering** options you want.
6. Enable all the options in the **Mix Enables** section.

7. Click **OK**.

See:

Freeze Tracks and Synths

To Bounce Multiple Audio Clips to a New Track

To Bounce to Clips

Using the Transient tool

Editing transient markers

Using the AudioSnap palette

Synchronizing audio and the project tempo

Fixing timing problems in audio clips

Extracting MIDI timing information from audio

General editing

Using the Pool

Keyboard shortcuts

Keyboard shortcuts

All the AudioSnap features become much more efficient if you use keyboard shortcuts. The following table describes each shortcut.

Command	Shortcut
AudioSnap Enable	F12
AudioSnap Add Transients To Pool	CTRL+F12
AudioSnap Show Transient Markers	SHIFT+F12
AudioSnap Go to Next Transient Marker	TAB
AudioSnap Go to Previous Transient Marker	SHIFT+TAB
Set Measure Beat at Now	CTRL+M
AudioSnap Auto Stretch (Follow Tempo)	ALT+F12
AudioSnap Insert Marker	CTRL+ALT+I
AudioSnap Reset Selected Transient Marker(s)	CTRL+ALT+R

Table 75. *AudioSnap keyboard shortcuts*

Command	Shortcut
AudioSnap Delete Inserted Marker	CTRL+ALT+BACKSPACE
AudioSnap Disable Marker	CTRL+ALT+D
AudioSnap Promote Marker	CTRL+ALT+P
AudioSnap Snap to Transients	CTRL+ALT+N
AudioSnap Audition Beat	CTRL+SHIFT+SPACEBAR
AudioSnap Show Palette	SHIFT+A
AudioSnap Show Transient Pool	CTRL+ALT+F12
AudioSnap Select All Markers	ALT+SHIFT+A
AudioSnap Clear Selection	ALT+SHIFT+C
AudioSnap Select Moved Markers	ALT+SHIFT+M
AudioSnap Select Stretched Markers	ALT+SHIFT+S
AudioSnap Select Disabled Markers	ALT+SHIFT+D
AudioSnap Select Enabled Markers	ALT+SHIFT+E
AudioSnap Select Promoted Markers	ALT+SHIFT+P

Table 75. *AudioSnap keyboard shortcuts*

AudioSnap shortcuts are also listed in the **Key Bindings** dialog (**Options > Key Bindings** command): select **Track View** in the **Bind Context** menu of the dialog to view or edit the default bindings.

See:

Using the Transient tool

Editing transient markers

Using the AudioSnap palette

Synchronizing audio and the project tempo

Fixing timing problems in audio clips

Extracting MIDI timing information from audio

General editing

Using the Pool

Algorithms and rendering

Working with Loops and Groove Clips

Loops are short digital audio clips which are often designed to be repeated over and over or "looped," although some loops, called one-shots, are intended to play just once. Groove clips, often used as loops, are digital audio clips that "know" their tempo and pitch information. Groove clips automatically respond to changes in a project's tempo and can have their root note pitch adjusted using pitch markers. In SONAR, you can import ACID™ loops, or digital audio clips and convert them to Groove clips. You can also record your own audio and create Groove clips. To download more Groove clips and loops, visit www.cakewalk.com.

Note: *Groove clips and ACIDized loops are loaded into RAM, and can take up a lot of memory. Copying them does not increase the amount of memory they take up, but loading the initial copy does.*

The Loop Construction View

The Media Browser View

Working with Loops

Working Groove Clip audio

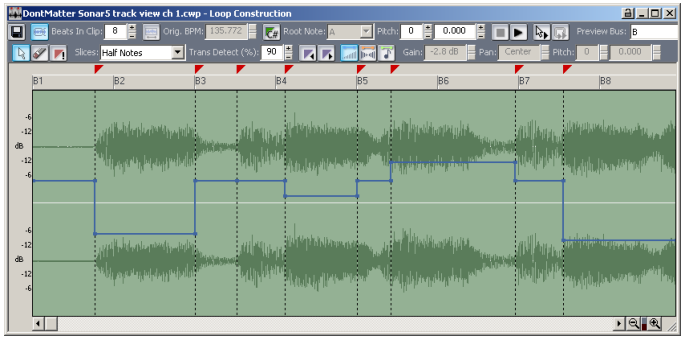
MIDI Groove Clips

Importing Project5 Patterns

The Loop Construction View

The Loop Construction view is where you create and edit Groove clips.

Figure 77. *The Loop Construction view*



The **Loop Construction view** toolbar has tools for editing slicing markers and controls for previewing loops.

See:

Loop Construction Controls

See also:

Working with Loops

Working Groove Clip audio

Loop Construction view

Loop Construction Controls

The following is a list of the tools and controls in the Loop Construction view, followed by a description:

Save Loop as WAV

This button opens the **Save As** dialog. The clip in the Loop Construction view is saved as a Groove Clip/Wave file that has tempo and pitch information stored in it, and can be opened in SONAR or ACID™. For more information, see “Saving Groove Clips as Wave Files/ACIDized Wave Files” on page 424.

Enable Looping

The **Enable Looping** button allows a clip to be looped by dragging in the Track view. Loop-enabled clips follow changes in the project tempo. Click the **Enable Looping** button to loop clips in the Track view by dragging the left or right side of a clip with your mouse. When you loop-enable a clip it automatically snaps to the nearest beat boundary (at 1, 2, 4, 8, 16 etc. beats). SONAR calculates the appropriate beat number. Change the number in the **Beats in Clip** field if you want to change the total number of beats in the clip.

Enable Stretching

The **Enable Stretching** button allows a clip to follow a project's tempo as it changes. It instructs SONAR to stretch or shrink the clip to fit the project's tempo. SONAR uses the Original BPM parameters to make the change.

Beats in Clip

The number of beats in the clip.

Original BPM

The tempo at which the clip was recorded.

Follow Project Pitch

The **Follow Project Pitch** option transposes the loop, if necessary, to the project pitch which you can set in the **Markers** toolbar. A loop recorded in the key of C, used in a project with a default project pitch of A, would be transposed down three semitones if the **Follow Project Pitch** check box was checked. You can also insert markers in the Time Ruler which change the project pitch. These markers, called pitch markers affect only Groove clips with **Follow Project Pitch** enabled.

Root Note

The **Root Note** represents the key in which the loop was originally recorded. The **Follow Project Pitch** feature uses this information, when checked, to transpose the loop to match the project's default project pitch and pitch markers.

Pitch (coarse)

You can set the transposition of a clip, independent from the project pitch, using the **Pitch (Coarse)** field. A positive number transposes the clip up by that number of semitones. A negative number transposes the clip down by that number of semitones. Remember that, if the **Follow Project Pitch** option is checked, the clip follows the project's pitch. Any transposition changes to the pitch with this option checked are changes to the project pitch, not the clip pitch.

An example: The project key is C. The clip key is D. If the **Follow Project Pitch** is enabled, the clip is transposed down by two semitones. A value entered into the **Pitch (coarse)** field adjusts the pitch from C. If you enter **-1**, the pitch would be transposed down by one additional semi tone to B.

Another example: The clip pitch is E. The desired clip pitch is D. If the **Follow Project Pitch** option is not enabled, and a value of **-2** is entered in the **Pitch (coarse)** field, the clip is transposed down two semitones to D from the original pitch of E.

Pitch (fine)

The **Pitch (fine)** field allows you to make tuning adjustments or to transpose the pitch of a clip up to 50 cents. There are 100 cents in one semi tone. A **Pitch (fine)** setting of **1** adjusts the pitch up one hundredth of a semi tone. The **Pitch (fine)** option can "fine tune" a slightly out of tune clip so that it is in pitch with the remaining clips in a project.

Slices Menu

The **Slices** menu sets the resolution for the creation of markers, or the “slicing” of the looped clip. This menu uses note lengths, so the settings are:

- Whole notes
- Half notes
- Quarter notes
- Eighth notes
- Sixteenth notes
- Thirty-second notes

The automatic markers appear at the note resolutions according to the slider setting. At the eighth note setting, there are eight markers per measure.

This control works well for slicing audio that has more subtle changes in volume with few dramatic transients.

The markers in a loop clip preserve the timing of the audio at that moment. Too few or too many markers can cause unwanted “artifacts” when a loop clip is stretched.

Trans Detect (%)

The Trans Detect control senses transients in your audio clip and assigns a marker at the beginning and end of each one it finds. As the you increase the sensitivity (by using larger numbers) smaller transients are detected and the number of markers increases.

Stop Preview

Stops loop preview playback.

Preview Loops

Plays the current loop repeatedly. Use the Stop Preview control to stop playback.

Enable Slice Auto-Preview

Plays a slice when you click on it.

Click Auto-Preview Loop

Repeatedly plays a selected slice.

Preview Bus

Select the output through which you want to listen to the clip.

Properties

The **Properties** button opens the **Clip Properties** dialog.

Select

Use the Select tool to move markers in the Markers bar.

Erase

Use the Erase tool to delete markers in the Markers bar.

Default All Markers

The Default All Markers tool restores all automatically generated markers to the original position and enables all those that were disabled. Manually created markers remain as is.

Previous Slice

Moves slice selection to the previous slice. Click on a slice to select it.

Next Slice

Moves slice selection to the next slice. Click on a slice to select it.

Show/Hide Gain Envelope

Clicking this button shows or hides the clip's gain envelope. Each slice of the clip has its own segment of the envelope, which you can adjust by dragging the segment up or down.

Show/Hide Pan Envelope

Clicking this button shows or hides the clip's pan envelope. Each slice of the clip has its own segment of the envelope, which you can adjust by dragging the segment up or down.

Show/Hide Pitch Envelope

Clicking this button shows or hides the clip's pitch envelope. Each slice of the clip has its own segment of the envelope, which you can adjust by dragging the segment up or down.

Slice Gain

Changes the selected slice's gain.

Slice Pan

Adjusts the selected slice's pan. Negative is left and positive is right.

Slice Pitch

Adjusts the selected slice's pitch. The first field is in half steps, the second field is in cents.

Slicing Markers

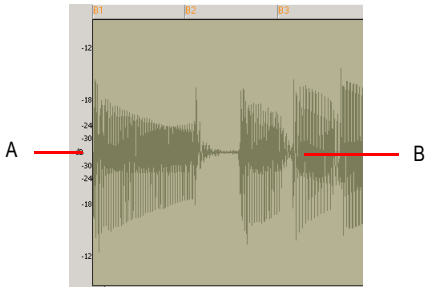
There are two types of slicing markers in the Loop Construction view: automatic and manual. Automatic markers appear in red and are automatically generated by SONAR when you loop enable a clip. The one exception to this is if you import an ACIDized wave file into SONAR. ACIDized files always appear with manual slicing markers. Manual markers appear in purple. If you add a marker or move an automatic marker, it turns purple to show you that it has been edited. For information on editing slicing markers, see "To Edit the Slicing Markers in a Groove Clip" on page 423.

Audio Scaling

Audio scaling is the increase or decrease in the size (scale) of the waveform in clip. Audio scaling allows you to make detailed edits by zooming in on the parts of the waveform closest to the zero crossing (silence) while preserving the track size. By showing just the quietest parts of a clip, you can make very precise edits.

The Audio Scale Ruler is located on the far left of the Loop Construction view.

Figure 78. *Audio scale ruler*



A. *Audio Scale Ruler* ***B.*** *Clip*

There are three right-click display options in the Audio Scale Ruler:

- **Percentage.** Shows audio scaling by percentage. For example, if the highest percentage in the Audio Scale Ruler reads 2.0%, then only the parts of the waveform which are within 2% of the zero crossing appear in the clip.
- **dB.** Shows audio scaling by dB. For example, if the highest dB in the Audio Scaling Ruler reads -36, then only the parts of the waveform which are 36 dB below 0 dB appear in the clip.
- **Zoom Factor.** Shows audio scaling by a factor. For example, if the Zoom Factor reads 10, then the waveform is zoomed in by a factor of 10.

The Media Browser View

The Media Browser view allows you to browse and preview your audio files (.wav, .mp3, .wma, etc.), MIDI loops (.mid), Project5 patterns (.ptn), step sequencer patterns (.ssp) and REX loops (.rex) before you drag them into your project. If you preview a Groove clip, it plays back at tempo and in the key of your current project.

You can open the Media Browser view in any of the following methods:

- Select **Views > Media Browser** from the menu.
- Click the **Media Browser** button on the **Views** toolbar.
- Press ALT+1

The **Media Browser view** toolbar has the following controls:

Tool	Name	What It Does
	Move Up	Opens the folder one level above the active folder.
	Refresh	Refreshes the active folder.
	Windows Explorer	Opens Windows Explorer at the same directory being viewed in the Media Browser view.
	Play	Plays the selected media file.
	Stop	Stops the playback of the selected file.
	Auto Preview	Automatically preview files when you click on them in the Media Browser view. If the selected file is a Groove clip, it plays back in the project tempo and key.
	Views	Allows you to change the way the files are viewed in the list view: • Large icons • Small icons • List • Details—displays the file size, date and when the file was created and last modified
Content Location: Sample content	Content Location	Allows you to save and recall presets to quickly access your favorite folders.
Preview Bus: SB Live! Audio [DF20] 1/2	Preview Bus	Select the output through which you want to listen to the loop.
	Insert soft synth	Inserts a new soft synth, which can be used to audition MIDI files.
	Delete soft synth	Deletes the selected soft synth.
	Properties	Opens the user interface for the selected soft synth.

Table 76.

Folders Pane

The Folders pane shows all of the available files and folders in the selected drive.

See also:

To Preview a Groove Clip

Contents List Pane

The Contents List pane displays the folders and files contained in the active folder.

To Preview a Groove Clip

1. Click the **Auto-preview** button in the **Media Browser** toolbar.
2. Click on a Wave file in the Content List pane.

   Each successive Wave file you select is previewed. You can also select multiple files and play them simultaneously.

   Or

1. Select a Wave file in the Content List pane.
2. Click the **Play** button in the **Media Browser** toolbar.
3. Click the **Stop** button to stop playing the selected Wave file.

When you preview a Groove clip in the Media Browser view, the clip plays in the project key and at the project tempo.

To Drag a Loop into a Project

1. Click and drag the Wave file from the Media Browser view to the Track view.
2. Drop the Wave file in the track and at the time in which you want it in your project. If you drop the file after the last track in your project, a new track is created for the file.

To Drag Multiple Loops into a Project

1. Select a Wave file and select additional by holding down the CTRL key and selecting them.
2. Drag the Wave files from the Media Browser view to the Track view.
3. Drop the Wave files into the Track view at the time in which you want them in your project.

The Wave files appear on consecutive tracks in the Track view at the time selected.

Working with Loops

You can make any audio clip into a loop by checking the Enable Looping check box in the **Clip Properties** dialog. Once looping is enabled, you can drag out loops to create multiple repetitions. There are several other ways to enable looping:

To Enable or Disable a Clip for Looping

1. Double-click on the clip you want to loop.

   The Loop Construction view appears.

2. In the Loop Construction view, click the **Enable Looping** button .

   Or

In the Track view, select a clip and press CTRL+L or select **Edit > Groove Clip Looping**.

To Create Repetitions of a Loop

1. Set the Snap value if you want the loop to repeat at precise time boundaries.
2. Move the cursor over the end of the loop-enabled clip until the cursor looks like this .
3. When the cursor changes, click the end or beginning of the clip and drag it to the right (if you are dragging out from the end) or left (if you are dragging from the beginning).

The clip repeats itself until you stop dragging.

To Create Partial Repetitions of a Loop

1. Move the cursor over the end of the loop-enabled clip until the cursor looks like this .
2. When the cursor changes, click the end or beginning of the clip and drag it to the right (if you are dragging out from the end) or left (if you are dragging from the beginning).

If the **Snap to Grid** button is on, you can create a partial loop as small as the **Snap to Grid** setting allows. For example, if your **Snap to Grid** setting is set to quarter notes, you can create partial repetitions as small as a quarter of a measure.

Working Groove Clip audio

Groove clips are .wav files that behave similarly to Sony Media Software's ACIDized loops (SONAR also has MIDI Groove clips—see "MIDI Groove Clips" on page 427). Groove clips contain information about the audio content, including the original tempo, original reference pitch, number of beats in the loop, and audio transient information.

See:

How Groove Clips Work in SONAR

Using Groove Clips

Creating and Editing Groove Clips

Using Pitch Markers in the Track View

"Working with REX files"

How Groove Clips Work in SONAR

Groove clips have information saved within them which allow them to adjust to changes in tempo and pitch. Groove clips can read a project's tempo and tempo changes, and can adjust their root note pitch when they read pitch markers. You can add pitch markers in the Track view's Time Ruler to transpose the Groove clip. As your project passes over a pitch marker, SONAR transposes your

Groove clips based on the clip's root note reference pitch. If you insert no pitch markers in your project, there are no pitch changes in your Groove clips. The default project pitch is C.

Note 1: *When working with Groove clips, it is important to know the difference between **key** and **pitch**. Your project's key signature has no effect on Groove clips. The pitch of your Follow Project Pitch-enabled Groove clips is dictated by pitch markers in the Time Ruler. If there are no pitch markers in your project, these Groove clips play at the pitch set in the **Markers** toolbar (the default is C).*

Note 2: *Groove clips must be at least one beat in length. If you try to loop-enable a clip of a shorter duration you may experience distortion or artifacts.*

See also:

Working Groove Clip audio

Using Groove Clips

Creating and Editing Groove Clips

Using Groove Clips

Groove clips are easy to use because they automatically adjust to your project's pitch markers and tempo. You can import existing loops or create your own, using the Loop Construction view.

To Import a Groove Clip into Your Project

1. Select a Track in the Track view.
2. Set the Now Time to the place you want the clip to begin.
3. Select **File > Import > Audio** from the menu.

   The **Open** dialog appears.
4. Navigate to a directory that contains Groove clips and select one.
5. Click **Open**.

   Or

1. Open the Media Browser view.
2. Navigate to a directory that contains Groove clips.
3. Drag and drop a clip into the Track view, or double-click it to insert it at the Now Time.
4. The clip appears on the track and at the time in your project where you drop it, so if you want the clip on a new track, drop it after the last track in your project.

By default, Groove clips are loop-enabled and transposed to match the project's pitch.

Setting the Default Project Pitch

1. If necessary display the **Markers** toolbar by selecting **Views > Toolbars** to open the **Toolbars** dialog. In the toolbar dialog click **Markers** and **OK**.
2. In the **Markers** toolbar, click the **Default Groove Clip Pitch** drop-down menu and select a pitch.

Your project now uses the root note of your clips to transpose to the project pitch. Use Pitch markers at different points in your project to change the pitch. For more information about Pitch markers, see "Using Pitch Markers in the Track View" on page 425.

Creating and Editing Groove Clips

Any audio clip can be converted to a Groove clip. Groove clips contain tempo, beat, and pitch information which SONAR uses to stretch and transpose the clips to match the project. Most Groove clips are loop-enabled, meaning that you can use the mouse to drag clip repetitions in the Track view. Groove clips can be either loop-enabled or not, although they usually are. When a Groove clip is loop-enabled, its edges appear beveled. It is sometimes desirable to create clips that follow the project's tempo and key, but are not intended to loop. The following is a list of the attributes contained in a Groove clip:

- **Beats in clip.** The number of quarter notes in a clip. A four measure clip in 4/4 time should have 16 beats. When you enable looping for a clip, SONAR calculates the number of beats in the clip using an algorithm. This calculation is very often accurate, but in some cases, for instance when the clip has a very slow or very fast tempo or if the clip has an unusual number of beats, then the number of beats in a clip may have to be edited manually in the **Beats in clip** field.
- **Original tempo.** The original tempo of the recording. SONAR uses the original tempo to adjust to your project's tempo. The original tempo must be specified for stretching clips.

Note: *When you loop-enable a clip, SONAR calculates the original tempo of the clip, and unless the clip's length is in exact beat or measure increments, the original tempo that SONAR calculates may vary from the recorded tempo. These fluctuations are usually quite small and do not affect the quality of the Groove clip you create.*

- **Reference note.** The original key of the recorded clip. SONAR uses the Reference note when it transposes Groove clips to match your project's pitch.

These attributes can be edited in the Loop Construction view. For more information about the Loop Construction view, see Loop Construction view.

To Set the Number of Beats in a Groove Clip

When you open a clip in the Loop Construction view, SONAR determines the number of beats in the clip. In some cases the beat value may not be correct. The beats in clip value can only be changed if the clip is loop enabled.

Do the following to change value in the **Beats in clip** field.

- Click the **Plus** or **Minus** button to the right of the **Beats in clip** field until the correct value is displayed.

To Change the Loop Construction View Time Ruler Display

You can display the Loop Construction view Time Ruler in measures or in samples. To toggle between the two modes, double click the Time Ruler.

To Set the Tempo of a Groove Clip

When creating a new Groove clip, SONAR sets the clip's tempo to the current project tempo. To ensure proper stretching behavior you must set the value in the **Original BPM** field to the tempo at which you recorded the clip. The tempo value of a clip can only be changed if the clip is stretch-enabled.

Do the following to change the value in the **Original BPM** field.

- Click the **Plus** or **Minus** button to the right of the **Original BPM** field until the correct value is displayed. For more precise tempos you can double-click in the **Original BPM** field and enter a tempo.

To Slice a Groove Clip

1. Double-click on a clip in the Clips pane.

   The clip appears in the Loop Construction view.

2. Slice the clip using one or all of the following methods:

To do this	Do this
Slice the clip on note divisions	Move the Basic Slicing slider to the note resolution you want. The Basic Slicing slider's settings range from whole notes to 64th notes. Selecting quarter notes, for example, would create four markers per measure.
Slice the clip at transient peaks	Enter a value into the **Transient Detection (Trans Detect %)** text field or use the **increment/decrement** buttons. The larger transients in the clip will be flanked by markers.
Slice the clip manually	Move your mouse to the space above the Time Ruler and double-click to add a marker. Click and drag the marker, if necessary, so it aligns with the beginning or end of a transient.

Table 77.

3. Play your project and adjust the slicing of your clip as necessary.

Note: *You can use any or all of these methods to slice a clip. If you adjust both the **Slices** and **Trans Detect** menus, two markers may be placed right next to each other. If these markers are too close, the markers will automatically merge. Manual markers will not automatically merge.*

To Transpose a Groove Clip to Match Your Project's Pitch

Follow this procedure to force the Groove clip to follow the project's default pitch.

1. Double-click the clip you want to transpose to the project's pitch.

The clip appears in the Loop Construction view.

2. Click the **Follow Project Pitch** button.

To Transpose a Groove Clip by Semitones

Follow this procedure to transpose a Groove clip by any number of semitones.

1. Double-click the clip you want to transpose to the project's pitch.

   The clip appears in the Loop Construction view.

2. If the **Follow Project Pitch** button is enabled, click it to disable it.
3. In the **Pitch (semitones)** field, enter the number of semitones you want to transpose the clip by. A negative number in the **Pitch (semitones)** field transposes a clip down. A positive number in the **Pitch (semitones)** field transposes the clip up.

To "Fine Tune" a Groove Clip

Follow this procedure to make slight pitch changes to a clip.

1. Double-click the clip you want to transpose to the project's pitch.

   The clip appears in the Loop Construction view.

2. In the **Fine Pitch (cents)** field, enter the number of cents you want to adjust the pitch. You can enter a number from -50 (transpose the pitch down by a quarter tone) to 50 (transpose the pitch up by a quarter tone).

To Edit the Slicing Markers in a Groove Clip

The table below describes how to create and edit the slicing markers in the Loop Construction view.

To do this	Do this
Add a slicing marker	Move the mouse cursor to the Markers bar, at the beginning of a transient and double-click.
Delete a slicing marker	Select the Eraser tool and click on a marker.
Move a slicing marker	Click and drag a marker
Reset slicing markers to original positions	Click the **Default All Markers** button .

Table 78.

For more information about slicing markers, see "Slicing Markers" on page 415.

Editing Slices

Each slice (space between the slicing markers) can be adjusted in the Loop Construction view. You can adjust the following slice attributes:

- Gain

- Pan
- Pitch

To Preview a Groove Clip Slice

1. Double-click on a clip to open the Loop Construction view.
2. Click the **Enable Slice Auto-preview** button.
3. Click a slice to hear it.

To Adjust a Groove Clip Slice Gain

1. In the Loop Construction view, select the slice on which you want to adjust the gain.
2. In the **Slice Gain** field, click the **Plus** or **Minus** buttons to change the gain value.

   Or

   Click between the plus and minus keys until the cursor becomes a double arrow and drag up to increase the value or down to decrease the value.

To Adjust a Groove Clip Slice Pan

1. In the Loop Construction view, select the slice on which you want to adjust the pan.
2. In the **Slice Pan** field, click the **Plus** or **Minus** buttons to change the pan value. Negative is Left pan and positive is right pan.

To Adjust a Groove Clip Slice Pitch (Half Steps)

1. In the Loop Construction view, select the slice on which you want to adjust the pitch.
2. In the first **Slice Pitch** field, click the **Plus** or **Minus** buttons to change the pitch value.

To Adjust a Groove Clip Slice Pitch (Cents)

1. In the Loop Construction view, select the slice on which you want to adjust the pitch.
2. In the second **Slice Pitch** field, click the **Plus** or **Minus** buttons to change the pitch value.

To Adjust Slice Gain, Pan and Pitch Using Slice Envelopes

You can change an envelope's gain, pan and/or pitch settings by dragging the envelope up or down in that slice.

Saving Groove Clips as Wave Files/ACIDized Wave Files

Once you have created a Groove clip in SONAR, you can save the clip as a Groove Clip/Wave file, compatible with ACIDized wave files.

To Save a Groove Clip as a Riff Wave File/ACIDized Wave File

1. If you have not already done so, create a Groove clip. See "Creating and Editing Groove Clips" on page 421.
2. In the Loop Construction view, click the **Save** icon.

The **Save As** dialog appears.

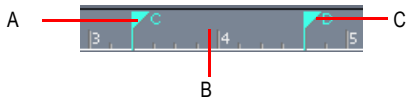
3. Use the toolbar in the **Save As** dialog to navigate to the location where you want to save the file.
4. In the **File name** field, enter a name for the file.
5. Click the **Save** button.

To Drag and Drop a Groove Clip Into Another Application

You can drag and drop clips from SONAR to another application or to a directory in Windows. When you drag a file from SONAR, the source file is copied and the copy is placed in the new directory or application.

Using Pitch Markers in the Track View

Pitch markers change the pitch at which Groove clips sound. All Groove clips in SONAR that have the **Follow Project Pitch** option enabled adjust their pitch as they encounter pitch markers in SONAR. If there are no pitch markers, all Groove clips play at the default project pitch, unless the **Follow Project Pitch** parameter is disabled.



A. *Pitch marker: Groove clips with Follow Project Pitch enabled play with the Root Note transposed to C* ***B.*** *Time Ruler* ***C.*** *Pitch marker: Groove clips with Follow Project Pitch enabled play with the Root Note transposed to D*

To Enable a Clip's Follow Project Pitch Option

1. Right-click the clip and choose **Clip Properties** from the pop-up menu.

   The **Clip Properties** dialog appears.
2. On the **Groove Clips** tab, check the **Follow Project Pitch** check box.
3. Make sure that the **Reference Note** field is correct. When your project reaches a pitch marker, SONAR transposes each groove clip that has the **Follow Project Pitch** option enabled by the difference between the clip's **Reference Note** and the current **Project Pitch**.
4. Click **OK** to close the dialog.

To Change Your Project's Default Pitch

1. Display the **Markers** toolbar, if it's not already displayed, by using the **Views > Toolbars > Markers** command.
2. In the **Default Groove-Clip Pitch** drop-down menu at the right end of the toolbar, choose your project's default pitch.

SONAR transposes each groove clip that has the **Follow Project Pitch** option enabled by the difference between the clip's **Reference Note** and the current **Project Pitch**. Your project's pitch

changes wherever you insert a pitch marker. If you don't insert any pitch markers, your project stays at its default pitch.

To Create a Pitch Marker

1. In the Track view, right-click in the Time Ruler.
2. Select **Create a Marker** from the menu that appears.
3. The **Marker** dialog appears.
4. In the **Groove Clip Pitch** drop-down, select a pitch.
5. Click **OK**.

To Move a Pitch Marker

- Click and drag a pitch marker to a new location on the Time Ruler.

See:

"Working with REX files"

Working with REX files

SONAR supports two types of Groove Clips:

- ACIDized Groove Clip
- REX-based Groove Clip

Like ACIDized WAVE files, REX files are audio files that are designed to be looped and follow the project's tempo. The time stretching technology that REX files use is well suited for percussive sounds, such as drums.

You can import REX files into a SONAR project. Once imported, you can work with REX files just as if they were regular Groove Clips (see Working Groove Clip audio).

Note: *REX-based Groove Clips can be edited in the Loop Construction view, but certain Loop Construction view tools only apply to ACIDized Groove Clips. The following Loop Construction view commands, settings and tools do not apply to REX files:*

- *Enable Looping*
- *Beats in Clip*
- *Enable Stretching*
- *Marker tools*
- *Slice Resolution*
- *Transient Detection*

To import a REX file

1. On the **File** menu, point to **Import** and click **Audio**.

   The **Import Audio** dialog appears.

2. In the **Files of type** list, select **All Audio** or **REX (*.rex, *.rx2, *.rcy)**.
3. Find and select the REX file you want to import.

   If you want to preview the selected file, click **Play**. The file will play at the current project tempo.
4. Click **Open**.

   The REX file is imported into SONAR as a Groove Clip.

You can also drag REX files into SONAR, paste from the Clipboard, or import from the Media Browser view.

To disable looping of a REX-based Groove Clip

Unlike ACIDized-based Groove Clips, looping can not be disabled for REX based Groove Clips. If you want to disable looping of REX based Groove Clips, use the **Edit > Bounce to Clip(s)** or **Tracks > Freeze > Freeze Tracks** commands to render the REX based Groove Clip to a standard audio clip.

For details, see Bouncing to Clips and Freeze Tracks and Synths.

To use pitch markers with REX-based Groove Clips

Unlike ACIDized audio loops, REX files do not store the original pitch (root note) value. If you want a pitched REX file to properly follow your project's pitch markers, you must manually specify the original root note for each REX clip. By default, SONAR assigns a root note value of G#.

Due to limitations of the REX file format, the root note value can not be saved back to the REX file, and must be manually specified each time you import a REX file into a SONAR project. If you want to permanently save the root note value with a REX loop, export the REX Groove clip as an ACIDized .wav file.

For details, see Root Note and Saving Groove Clips as Wave Files/ACIDized Wave Files.

See:

Creating and Editing Groove Clips

MIDI Groove Clips

MIDI Groove clips are MIDI clips that you can roll out like audio Groove clips, and you can also choose to have SONAR transpose MIDI Groove clips when your project reaches a pitch marker.

You can change any MIDI clip into a MIDI Groove clip (or back into a regular MIDI clip) by selecting the clip and using the **Edit > Groove Clip Looping** command. A MIDI clip that has its Groove clip feature activated appears with *beveled edges* in the Clips pane.

Here are some other features of MIDI Groove clips:

- You can roll out copies in either direction (just like audio Groove clips). The Snap-to-Grid setting determines what beat boundaries (if any) you can roll to.

- You can edit individual repetitions without altering any other copies (*unlike* audio Groove clips).

Note: *If you then roll the edge of your MIDI Groove clip back over the area you edited, you will lose your edits.*

- All new repetitions are based on the first clip (just like audio Groove clips). However, if you split a repetition from its original source clip, the repetition becomes independent: if you copy this clip, SONAR treats it as an original clip.
- You can import MIDI Groove clips from the **Import MIDI** dialog, the Media Browser view, and by dragging and dropping from the Windows Explorer.
- You can preview MIDI Groove clips in the **Import MIDI** dialog.
- You can edit MIDI Groove clips wherever you can edit regular MIDI clips.

For step-by-step information, see the following procedures, and also “Exporting, and Importing MIDI Groove Clips” on page 429.

To Enable or Disable a MIDI Clip’s Groove Clip Function

To Create Repetitions of a MIDI Groove Clip

To Transpose a MIDI Groove Clip

To Transpose a MIDI Groove Clip with Pitch Markers

To Enable or Disable a MIDI Clip’s Groove Clip Function

- Select the clip and press CTRL+L.

  Or
- Select the clip and use the **Edit > Groove Clip Looping** command.

  Or
- Right-click the clip and choose **Groove Clip Looping** from the pop-up menu.

A MIDI clip that has its Groove clip feature activated appears with *beveled edges* in the Clips pane.

To Create Repetitions of a MIDI Groove Clip

1. Set the Snap value if you want the clip to repeat at precise time boundaries.
2. Move the cursor over the end or beginning of the clip until the cursor looks like this .When the cursor changes, click the end or beginning of the clip and drag it to the right (if you are dragging out from the end) or left (if you are dragging from the beginning).

The clip repeats itself until you stop dragging.

To Transpose a MIDI Groove Clip

1. Select the MIDI Groove clip.
2. Hold down the ALT key, and press the + or - key on your computer keyboard to raise or lower the clip’s pitches a half-step at a time. You don’t have to stop playback.

   Or

1. Right-click the clip and choose **Clip Properties** from the pop-up menu.

   The **Clip Properties** dialog appears.

2. On the **Groove Clips** tab, in the **Pitch (semitones)** field, choose the number of half-steps you want to transpose the clip by: choose negative numbers to transpose down, or positive numbers to transpose up.

Either method transposes the original clip and all repetitions. The original clip displays a positive or negative number in parentheses showing any transposition value you've added to the clip.

If you use pitch markers to transpose a clip, any transposition value you add to the clip by the above two methods changes the final pitch by whatever transposition value you've added.

To Transpose a MIDI Groove Clip with Pitch Markers

Use the same method you use for audio Groove clips: see "Using Pitch Markers in the Track View" on page 425.

See also:

Exporting, and Importing MIDI Groove Clips

Exporting, and Importing MIDI Groove Clips

You can not export MIDI Groove clips by saving your project as a Standard MIDI File—Standard MIDI Files do not contain MIDI Groove clip data, such as transposition value, etc. When you import MIDI Groove clips, you can preview them in the **Import MIDI** dialog.

There are two methods for exporting MIDI Groove clips:

- Using the **File > Export > MIDI Groove Clip** command
- Dragging a MIDI Groove clip from SONAR to the Windows Explorer

There are three methods for importing MIDI Groove clips:

- Using the **File > Import > MIDI** command
- Using the Media Browser view
- Dragging a MIDI Groove clip from the Windows Explorer to a MIDI track in SONAR

For step-by-step information, see the following procedures:

To Export MIDI Groove Clips with the File Command

1. Highlight the MIDI Groove clip that you want to export.
2. Use the **File > Export > MIDI Groove Clip** command.

   The **Export MIDI** dialog appears.

3. to a folder where you store MIDI Groove clips.
4. Type a name for the clip in the **File Name** field.
5. Click the **Save** button.

SONAR exports the MIDI Groove clip, which contains the information displayed in the **Clip Properties** dialog, on the **Groove-Clips** tab, except for the **Pitch (semitones)** field, which does not get exported.

To Export a MIDI Groove Clip with Drag and Drop

- Drag the MIDI Groove clip that you want to export to the folder in the Windows Explorer where you want to keep it.

To Import MIDI Groove Clips with the File Command

1. Move the Now Time to the place where you want to import the clip.
2. Highlight the track you want to import the clip into.
3. Use the **File > Import > MIDI** command.

   The **Import MIDI** dialog appears,
4. to a folder where you store MIDI Groove clips. Make sure that the **Files of Type** field is set to **MIDI File**.
5. Highlight the file you want to import—the **File Info** field displays the file's MIDI Groove clip data, if any.
6. If you want to preview (listen to) the highlighted file, click the **Play** button in the **Import MIDI** dialog. When you decide to import the highlighted file, click the **Open** button.

To Import MIDI Groove Clips from the Media Browser View

1. Make sure that the Snap-to-Grid setting is appropriate for what you want to do.
2. If the Media Browser view is not open, use the **Views > Media Browser** command to display it.
3. to a folder where you store MIDI Groove clips.
4. Do either of the following:
   - Drag the file you want to the track and time where you want it.
   - Move the Now Time to the place where you want to import the file, highlight the track you want to import the file into, and double-click the file.

To Import a MIDI Groove Clip with Drag and Drop

1. Make sure that the Snap-to-Grid setting is appropriate for what you want to do.
2. In the Windows Explorer, navigate to a folder where you store MIDI Groove clips.
3. Drag the MIDI Groove clip to the track and time where you want it to go.

Importing Project5 Patterns

Project5 is Cakewalk's pattern-based soft synth work station that has its own library (pattern bin) full of MIDI and audio patterns, stored on disk. If you have Project5 MIDI patterns on your hard disk, you can import them directly into SONAR.

To Import a Project5 Pattern

1. Move the Now Time to the place where you want to import the pattern.
2. Highlight the track you want to import the pattern into.
3. Use the **File > Import > MIDI** command.

   The **Import MIDI** dialog appears,
4. Change the **Files of Type** field to **P5 Pattern**.
5. to a folder where you store Project5 MIDI patterns.
6. Highlight the file you want to import.
7. To import the highlighted file, click the **Open** button.

SONAR imports the pattern to the selected track at the Now Time.

Tip: *You can preview Project5 patterns in the Media Browser view. (new S8.5)*

Editing MIDI Events and Continuous Controllers (CC)

SONAR lets you edit the events in your projects in dozens of different ways. The Piano Roll view lets you add and edit notes, controllers, and automation data interactively, using a graphic display. SONAR's many editing commands can improve the quality of recorded performances, filter out certain types of events, and modify the tempos and dynamics of your projects. The Event List view lets you see and modify every detail of your project. Finally, you can apply a variety of effects and filters to enhance your MIDI data.

SONAR has many additional commands and features for working with audio. For more information, see "Editing Audio" on page 545.

See:

The Piano Roll View

The Inline Piano Roll View

Selecting and Editing Events

Changing the Timing of a Recording

Searching for Events

Controllers, RPNs, NRPNs, and Automation Data

The Event List View

MIDI Effects (MIDI Plug-ins)

To sync the project tempo to freely played MIDI

Event Inspector Toolbar

The **Event Inspector** toolbar is available from the **Views** menu by selecting **Views > Toolbars** and checking Event Inspector in the **Toolbars** dialog. The Event Inspector has the following:

- Time

- Pitch
- Velocity
- Duration
- Channel

To Display a Note's Properties in the Event Inspector Toolbar

- Select a note.

  If you select multiple notes, the **Event Inspector** toolbar displays the note value if all selected note values are the same. If the note values are different, the Event Inspector does not display anything.

To Change a Note's Properties Using the Event Inspector Toolbar

1. Select a note.
2. In the appropriate **Event Inspector** toolbar field, change the value. See the table below for a description of valid value entries for each field in the **Event Inspector** toolbar.

Event Inspector Field	Valid Values
Time	Any valid M:B:T time value. Separate values with a colon or a space. For example, measure 2, Beat 3, Tick 720 would be written as 2:3:720.
Pitch	Note names (C0 through G10) and note numbers (0 through 127) are valid in this field. Also, you can use a modifier to raise or lower the value by a number of half-steps. To raise the pitch by 2 half-steps, type +2 and press enter. To lower the pitch by 2 half-steps, type -2 and press enter.
Velocity	A velocity value or modifier value are valid in this field. Valid velocity values are 0 through 127. Valid modifier values are +/- 0 through 127.
Duration	A PPQ value.
Channel	1 through 16.

Table 79.

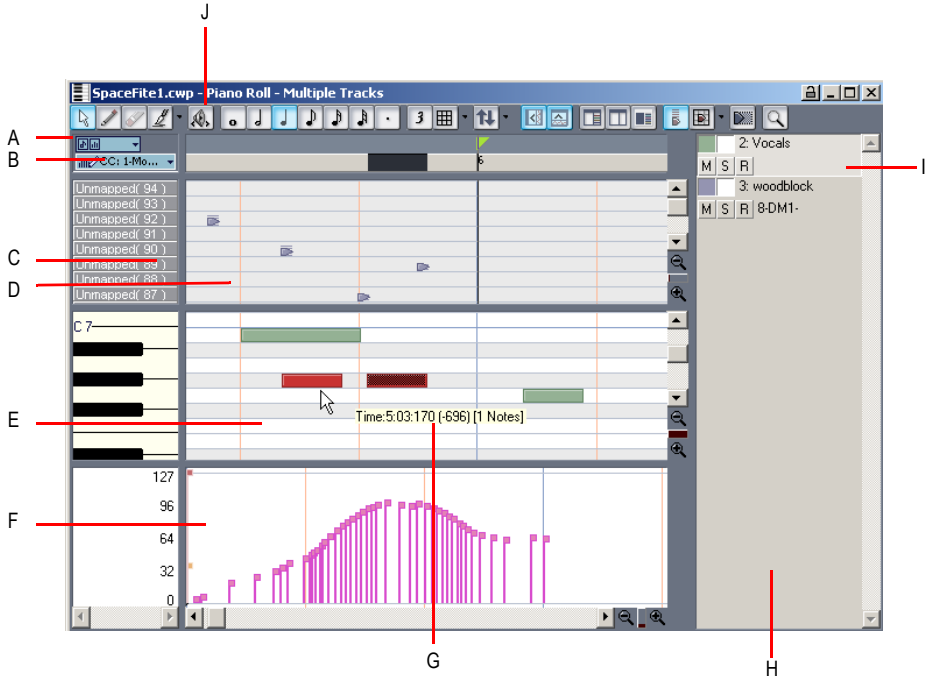
The Piano Roll View

The Piano Roll view displays all notes and other events from one or more MIDI tracks in a grid format that looks much like a player piano roll. Notes are displayed as horizontal bars, and drum notes as diamonds. Pitch runs from bottom to top, with the left vertical margin indicating the pitches as piano keys or note names. Time is displayed running left to right with vertical measure and beat boundaries. The Piano Roll view makes it easy to add, edit, and delete notes from a track.

A single-track version of the Piano Roll view is available in each track in the Track view. This view is called the Inline Piano Roll view, and replaces the Clips pane in any track that you choose to display in Inline Piano Roll mode.

The Piano Roll view consists of the Note Map pane, the Drum Grid pane, the Notes pane, the Controller pane, the **Piano Roll view** toolbar, and the Track List pane.

Figure 79. *The Piano Roll view*



A. *Show/Hide MIDI Events menu* ***B.*** *Edit MIDI Event Type menu* ***C.*** *Note Map pane* ***D.*** *Drum Grid pane*
E. *Notes pane* ***F.*** *Controller pane* ***G.*** *Tooltip shows cursor position and editing data while you edit an event*
H. *Track List pane* ***I.*** *Selected track* ***J.*** *Toolbar*

See:

Opening the View

Displaying Notes and Controllers (Piano Roll View Only)

Adding and Editing Notes in the Piano Roll

Adding and Editing Controllers in the Piano Roll

Note Map Pane

Drum Grid Pane

Notes Pane

Controller Pane

Note Names

Track List Pane

Working with Multiple Tracks in the Piano Roll View

Note Map Pane

This pane displays your drum map settings. You can mute or solo individual pitches, and preview individual pitch sounds. For more information about the Note Map Pane, see “The Note Map Pane” on page 537.

See also:

Drum Maps and the Drum Grid Pane

Drum Grid Pane

In the Drum Grid pane you can add, delete, and edit notes and note properties in any MIDI track(s) assigned to a drum map. You can also edit controllers in this pane if you choose to hide the Controller pane.

For more information, see “The Drum Grid Pane” on page 539, and “Adding and Editing Controllers in the Piano Roll” on page 466.

See also:

Drum Maps and the Drum Grid Pane

Notes Pane

In this pane you can add, edit, and delete notes in any MIDI track(s) not assigned to a drum map. You can also edit controllers in this pane if you choose to hide the Controller pane.

See also:

Adding and Editing Notes in the Piano Roll

Controller Pane

This pane displays controller events, which you can edit. You can show or hide this pane by clicking the **Use Controller Pane** button that is in the **Piano Roll view** toolbar, or by pressing C. When the Controller pane is hidden, all controller events appear in the Notes pane.

See also:

Adding and Editing Controllers in the Piano Roll

Track List Pane

The Track List pane is home to a list of all tracks currently displayed in the Piano Roll view. In this pane you can enable and disable editing of a track's data; mute, solo and arm a track; and show or hide the track's data in the Notes pane or Drum Grid pane. Track numbers, names and output ports appear in the Track List pane. You can show or hide the Track List pane by clicking the **Show/Hide Track Pane** button in the **Piano Roll view** toolbar.

If you see an error message saying that you have masked the active track, it means that the active track is not visible at the moment. To unmask the track click the track's **Show/Hide Track** button in the Track List pane so that the button appears in color.

See also:

Working with Multiple Tracks in the Piano Roll View

Opening the View

There are several ways to open the Piano Roll view:

- In the Track view, select the track you want to see, then choose **Views > Piano Roll** or press ALT+5
- In the Track view, right-click on a track and choose **Views > Piano Roll** from the pop-up menu
- Double-click on a MIDI clip in the Clips pane

Each selected track is displayed. You can always switch to a different track or tracks—simply click the button (or press T) and choose the track you want.

The Piano Roll view lets you edit notes and controllers during playback or recording, in real time. This means you can loop over a portion of your project and hear any change you make on the next loop. The Piano Roll view also shows notes on-screen as you record them.

Like the Track view, the Piano Roll view includes zoom tools that let you change the vertical and horizontal scale of the view. The Piano Roll view also has a **Snap to Grid** button. For more information about this feature, see "Defining and Using the Snap Grid" on page 316.

See:

Working with Multiple Tracks in the Piano Roll View

Displaying Notes and Controllers (Piano Roll View Only)

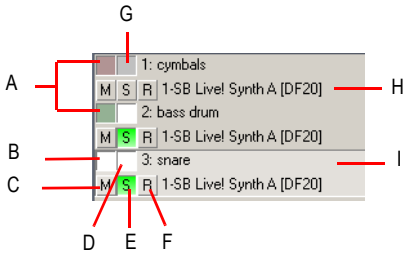
Adding and Editing Notes in the Piano Roll

Adding and Editing Controllers in the Piano Roll

Working with Multiple Tracks in the Piano Roll View

You can view as many tracks as you want in the Piano Roll view. When you display several tracks at the same time in the Piano Roll view, you control which track(s) you can see and/or edit by using the buttons in the Track List pane. You can show or hide the Track List pane by clicking the **Show/Hide Track Pane** button in the **Piano Roll view** toolbar.

If you want to edit the data in a track, you must make the track you want to edit the current track. The name of the current track appears highlighted in the Track List pane. To display the Track List pane in the Piano Roll view, click the **Show/Hide Track List Pane** button. The following shows three tracks in the Track List pane:



***A.** Track's data shown in Notes pane **B.** Track's data hidden in Notes pane **C.** Mute **D.** Track enabled for track editing **E.** Solo **F.** Arm **G.** Track disabled for track editing **H.** Output **I.** Current track*

To make a track the current track in the Track List pane, click on the track. When a thin dotted line surrounds the track, it is the current track.

Tip: *Clicking a note will make the note's parent track the current track.*

The following is a list of ways to optimize the multiple track functionality in the Piano Roll view.

Selecting Tracks to View

Use the **Pick Tracks** combo button to assign tracks to the Track List pane. Click on the left side of the **Pick Tracks** combo button to open the **Pick Tracks** dialog box. Click on a track name to select it. Hold down the CTRL key and click more track names to select additional tracks. Click on the right side of the **Pick Tracks** combo button to show the **Show Previous/Next Tracks** pop-up menu. Selecting **Show Previous Track(s)** moves the track or range of tracks down by one track number. Selecting **Show Next Track(s)** moves the track or range of tracks up by one track number. For example, if you have tracks 2, 3 and 7 displayed in the Track List pane and you select **Show Previous Track(s)**, the Track List pane displays tracks 1, 2, and 6.

Display

If the notes of two tracks overlap, the notes of the topmost track in the Track List pane appear over the notes of the other track. You can move a track up or down by in the Track List pane by clicking and holding on the track and moving the track to the desired position.

All tracks ending in the same digit (2, 12, 22, etc.) share the same color. The default colors can be changed using **Options > Colors**.

The Enable/Disable Track Editing Button

The **Enable/Disable Track Editing** button 1: sets whether or not you can edit the notes of a track in the Piano Roll view. When the button appears white, editing is enabled and the track appears in color. When the button appears gray, editing is disabled and the track appears in gray.

Note: *The **Enable/Disable Track Editing** button only disables the Piano Roll view tools; other editing commands are still operational.*

The Show/Hide Track Button

The **Show/Hide Track** button controls whether or not a track appears in the Notes pane. The button appears in color when toggled on, white when off.

The Invert Tracks Button

If you use the **Show/Hide Track** button to hide any tracks in the Track List pane, you can show all these tracks and hide the ones that are currently displayed by clicking the **Invert Tracks** button.

See:

Note Names

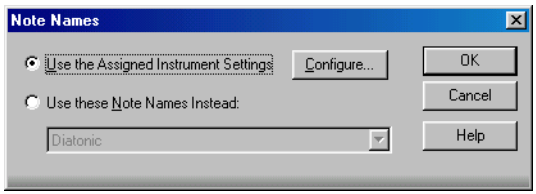
Note Names

You can change the instrument definition for the active track in the Piano Roll view. Right-click the piano keys in the Notes pane to open the **Note Names** dialog where you can use note names that are defined as part of any instrument definition. For more information about instrument definitions, see Instrument Definitions.

To Change the Active Track's Instrument Definition

1. Right-click the left side of the Notes pane (where the piano keys or note names are displayed) to display the **Note Names** dialog box.

Figure 80. *The **Note Names** dialog*



2. To use the note names from the assigned instrument (the default), click **Use the Assigned Instrument Settings**. Click **Configure** to change the instrument definitions.

3. To override the default setting, click **Use These Settings Instead**, and choose the note names and mode you want to work with.
4. Click **OK** when you are done

The Piano Roll view is updated with the settings you request.

Displaying Notes and Controllers (Piano Roll View Only)

The **Show/Hide MIDI Events** button in the Piano Roll view lets you quickly hide or show any combination of the data in a MIDI track or in multiple MIDI tracks. This button is independent of the **Show/Hide MIDI Events** button in a track's Inline Piano Roll view (see also "Displaying Notes and Controllers in the Inline Piano Roll View" on page 480)).

The **Show/Hide MIDI Events** button is located in the upper left corner of the Piano Roll view.

To Hide or Show Data in the Piano Roll View

1. If you want to display the data from multiple MIDI tracks, first choose and configure the tracks from which you want to display data (see "Working with Multiple Tracks in the Piano Roll View" on page 437).
2. Click the drop-down arrow on the **Show/Hide MIDI Events** button to display the menu of MIDI data in the current track (the track that is highlighted in the Track List pane, or in the Track view).
3. Choose from the following menu options:
   - To hide or show notes for all displayed tracks, click **Show Notes**.
   - To hide or show the outline(s) of the clip(s) you're looking at, choose **Show Clip Outlines**.
   - To hide or show a controller type for all displayed tracks, click the name of the controller.
   - To hide or show the edit handles on controllers, click **Show Controller Handles**.
   - To hide or show the velocity columns on all tracks except the active track, click **Show Velocity on Active Track Only**.
   - To show all controllers in all displayed tracks, click **Display All Continuous Events**, or just click the left side of the **Show/Hide MIDI Events** button. The button turns white when all controllers are hidden, and blue when all controllers are showing.
4. After you choose an option, the menu closes. You can repeat steps 2 and 3 to choose more options.

See:

Adding and Editing Notes in the Piano Roll

Adding and Editing Controllers in the Piano Roll

Adding and Editing Notes in the Piano Roll

You add notes in the Piano Roll view or Inline Piano Roll view by first choosing a note duration in the **Piano Roll** toolbar (or in the current track's **Note Duration** menu if you're using the Inline Piano Roll view), and then clicking in the view with the Draw tool at the pitch location and time location where you want the note to go. The pitch locations are marked by grey rows for the sharps or flats, and white rows for naturals. Octaves are labeled on the keyboard display on the left side of the Piano Roll view, and by the MIDI Scale in the Inline Piano Roll view. You can display different octaves by dragging the vertical scroll bar that's on the right side of the Piano Roll view, or by dragging the MIDI Scale in the Inline Piano Roll view. The time locations are marked by the measure numbers in the horizontal time ruler that's at the top of the view, and by the vertical grid lines that mark the beats in the measure. The **Snap to Grid** menu determines how precisely you can place your notes in time.

You can edit notes by a variety of methods:

- Select notes, and then use editing commands from the **Edit** menu, the **Process** menu, or the **Event Inspector** toolbar
- Move single or groups of selected notes with the Select tool
- Edit the pitch, location, duration, start time, and velocity of individual or groups of selected notes with the Draw tool
- Delete notes with the Erase tool, or by holding the ALT key down while you use the Draw tool

For step-by-step procedures, see the following topics:

Selecting Notes

Editing Notes with the Draw Tool and the Select Tool

Flexible Piano Roll tools

Selecting Notes

There are several ways to select notes in the Piano Roll view and Inline Piano Roll view:

- Click and drag in the Piano Roll view's Time Ruler to select notes (and other MIDI events) that start playing within the time range that you select.
- In the Inline Piano Roll view, click and drag in the Track view's Time Ruler to select notes (and other MIDI events) that start playing within the time range that you select. This selects data in the current track, or all selected tracks.
- Click notes or drag around them with the Select tool .
- In the Piano Roll view only (not the Inline Piano Roll view): click or drag the piano keys to the left of the Notes pane or the drum map rows in Note Map pane to select all notes of the desired pitch(es).
- In the Inline Piano Roll view: SHIFT-click or SHIFT-drag the piano keys on the MIDI Scale to select all notes of the desired pitch(es).

To Select Notes with the Select Tool

1. Activate the Select tool by clicking it in either the **Piano Roll view** toolbar or the **Inline Piano Roll** toolbar (depending on which view you're working in).
2. Select notes as shown in the table:

To do this	Do this
Select a single note	Click on the note
Select several notes at once	Drag a rectangle around the notes you want to select
Add to the selection	Hold the SHIFT key while selecting notes
Toggle the selection	Hold the CTRL key while selecting notes
Select notes in a certain time range.	Set the desired Snap to Grid value in either the Piano Roll view or the Inline Piano Roll view (depending on which view you're working in), and drag in the Time Ruler of the appropriate view.

Table 80.

Selected notes are highlighted (50% gray mask).

To Select All Notes of Certain Pitches (Piano Roll View Only)

Click the piano keys on the left side of the Notes pane or the drum map rows in the Note Map pane as shown in the table:

To do this	Do this
Select all notes of a single pitch	Click on the piano key or drum map row
Select all notes of several pitches	Drag across the keys or drum map rows
Add to the selection	Hold the SHIFT key while clicking on a piano key or drum map row
Toggle the selection	Hold the CTRL key while clicking on a piano key or drum map row

Table 81.

To Select All Notes of Certain Pitches (Inline Piano Roll View Only)

1. Zoom the MIDI Scale in far enough to see the keys clearly (left-click and drag on the MIDI Scale).
2. SHIFT-click a piano key to select all the notes of that pitch, or SHIFT-drag through multiple notes to select them.

CTRL-clicking to select multiple non-adjacent notes is not possible in the MIDI Scale.

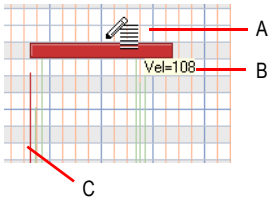
See:

Editing Notes with the Draw Tool and the Select Tool

Editing Notes with the Draw Tool and the Select Tool

You can edit notes in the Piano Roll view and the Inline Piano Roll view with the same methods. The Draw tool and the Select tool are useful for quick note editing. You can do the same edits with commands in the **Process** menu (**Length**, **Slide**, **Transpose**). If you want to edit multiple notes at the same time, first select them with the Select tool.

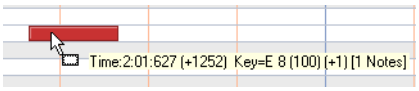
MIDI notes display their velocity value as a wide or narrow column. You can drag the column up or down to edit the note's velocity. Holding the Draw tool over the middle of the note in the upper third of the note displays a small velocity column on the Draw tool to show that the tool is in the target zone.



A. Draw tool in velocity-edit mode **B.** Tooltip showing cursor position **C.** Velocity column

Tooltips give you a constant readout of the cursor position, how much you've edited the selection, and how many notes you're editing.

In the picture below, the tooltip lists the current location of the cursor, how far the selection has moved from its original location (1252 ticks to the right), the current pitch level and MIDI note number of the cursor (E8 100), how far from the note's original pitch the cursor has moved (1 half-step higher), and how many notes are in the selection.



When you drag multiple notes, if you enable **Polyphonic Note Audition** in the **Edit MIDI Event Type** drop-down menu, the Piano Roll view "auditions" them, so you can hear all of them as they pass through different pitch levels.

To Edit Notes with the Draw Tool

1. If you want to edit multiple notes at the same time, select them with the Select tool (see "Selecting Notes" on page 441). Editing any of the notes in the selection edits all the selected notes in the same way.

2. Click to select the Draw tool. If the **Draw tool** button is in Auto-Erase mode, it looks like this: . If the Draw tool is in Auto-Erase mode, use the drop-down menu that's next to it to disable Auto-Erase mode, unless you want to delete notes.
3. Set the Snap to Grid to the desired value (if you're editing in the Inline Piano Roll view, make sure you use the **PRV** tab of the **Snap to Grid** dialog).
4. Edit notes as described in the table:

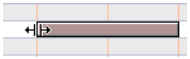
To do this	Do this
Change the start time, but not the duration	Drag the left edge of the note in either direction.  The start time of the note is moved to the new location.
Change the pitch	Drag the middle of the note up or down.
Move the note horizontally	Move the cursor just inside the left edge of the note until it looks like this: Then drag left or right.
Change the duration	Drag the right edge of the note in either direction.
Copy and paste notes	Hold the CTRL key down, and drag notes so as to either move them horizontally or change the pitch (see above), and release the mouse at the desired location.
Add a note	See "To Draw Notes" on page 444.
Edit velocity	See "To Edit Velocity" on page 445.
Delete notes	Enable the Draw tool's Auto-Erase mode (in the drop-down menu next to it), and click notes. When the Draw tool's Auto-Erase mode is enabled, a small eraser icon appears at the bottom of the Draw tool when the Draw tool approaches notes from below. Alternatively, click the Erase tool to enable it, and click each note that you want to delete, or drag through multiple notes. **Tip**: Hold the ALT key down to toggle the Draw tool's Auto-Erase mode, or to temporarily turn the Erase tool into the Draw tool.

Table 82.

To Draw Notes

1. In the **Edit MIDI Event Type** menu in the Piano Roll view, or the Inline Piano Roll view (depending on which view you're working in), select **Notes/Velocity**.

2. Enable the Draw tool in the **Piano Roll** toolbar, or the **Inline Piano Roll** toolbar.
3. Choose a duration for the note by clicking a note-head button in the **Piano Roll** toolbar, or the **Note Duration** menu in the track controls if you're using the Inline Piano Roll view.
4. Set the Snap to Grid to the desired value (if you're editing in the Inline Piano Roll view, make sure you use the **PRV** tab of the **Snap to Grid** dialog).
5. Click in the Notes pane at the pitch and location where you want the note; pitch locations are marked by grey rows for the sharps or flats, and white rows for naturals. Octaves are labeled on the keyboard display on the left side of the view (this is called the MIDI Scale in the Inline Piano Roll view). You can display different octaves by dragging the vertical scroll bar that's on the right side of the Piano Roll view, or by dragging the MIDI Scale in the Inline Piano Roll view. The time locations are marked by the measure numbers in the horizontal time ruler that's at the top of each view. You can display vertical grid lines that mark the beats in the measure by clicking the **Show/Hide Grid** button in the Piano Roll view, or by right-clicking the Clips pane (not the Inline Piano Roll view), choosing **View Options** from the pop-up menu, and checking the **Display Vertical Rules** check box.

To Use the Erase Tool

1. Enable the Erase tool (make it turn blue) by clicking it, or by pressing E when the Piano Roll view has focus.
2. Click or drag through the notes or controllers you want to delete.
3. To turn the Erase tool into the Draw tool temporarily, hold the ALT key down.

To Edit Velocity

1. If you want to edit multiple notes at the same time, select them with the Select tool (see "Selecting Notes" on page 441 for help). Editing any of the notes in the selection edits all the selected notes in the same way.
2. Make sure **Velocity** has a checkmark next to it in the **Show/Hide MIDI Events** menu.
3. Enable the Draw tool.
4. Move the cursor over the upper third of the middle of the note. When you reach the target area, the Draw tool displays a small velocity column to show that you have enabled velocity editing (this only happens if you've hidden the Controller pane).
5. Drag up or down to edit velocity. The tooltip shows you the velocity value that the cursor is passing through, the difference from the original value, and how many notes you're editing. If you want to hear the changes in velocity as you make them, enable **Velocity Audition** in the **Edit MIDI Event Type** drop-down menu.

Note 1: *Instead of moving the cursor over the upper third of the note to activate velocity editing, you can hold down the CTRL key instead. This allows you to drag the Draw tool horizontally to draw the desired velocity level(s).*

Note 2: *If you prefer to edit velocity in the Controller pane, display the Controller pane (press C), and use the Draw tool to drag horizontally through the vertical lines in the Controller pane that represent the velocity of each note. You can also use the Draw tool or the Select tool to drag the tip of a vertical line up or down. While you drag, a tooltip displays velocity and location data.*

MIDI note velocity colorization

`PRVColorizeVelocity=<0 or 1>, default = 1`

MIDI note colors are tinted depending on their velocities. Notes will appear darker for higher velocities and lighter for lower velocities.

This feature may be enabled (1) or disabled (0) in the `[WinCake]` section of the `Cakewalk.ini` file. For example:

```
[WinCake]
PRVColorizeVelocity=0
```

Note event colors based on velocity

By default, note events in the Piano Roll are colorized based on velocity. Darker shades of the basic track color indicate higher velocities. Lighter shades of the basic track color indicate lower velocities.

This behavior can be bypassed by adding the following INI variable to the WinCake section of `Cakewalk.ini` (see Cakewalk.ini):

```
PRVColorizeVelocity=0
```

To Edit Notes with the Select Tool

1. If you want to edit multiple notes at the same time, select them with the Select tool. Editing any of the notes in the selection edits all the selected notes in the same way.
2. Set the Snap to Grid to the desired value (if you're editing in the Inline Piano Roll view, make sure you use the **PRV** tab of the **Snap to Grid** dialog).
3. Edit notes as described in the table:

To do this	Do this
Change the start time, but not the duration	Drag the note left or right
Change the pitch	Drag the note up or down.
Move selected notes, or a single note only vertically, or only horizontally	Hold the SHIFT key down, and move the Select tool over a note so that the cursor displays a horizontal double-ended arrow (if you want to drag horizontally) or a vertical double-ended arrow (if you want to drag vertically), and then move the note(s).

Table 83.

To do this	Do this
Copy and paste notes	Hold the CTRL key down, and drag notes horizontally and/or vertically, and release the mouse at the desired location.
Delete notes	Press the DELETE key.

Table 83.

To Change Note Properties

1. Right-click a single note to display the **Note Properties** dialog box.
2. Edit the desired start time, pitch, duration, velocity, or channel.
3. Click **OK** when you are done.

SONAR updates the note event accordingly. Note that you can also edit note velocity in the Notes pane and the **Event Inspector** toolbar. For information on changing note velocities in the Drum Grid Editor, see “Editing Note Velocities” on page 536. For more information, see “Velocity, Pitch Wheel, and Aftertouch” on page 512.

To Scrub (Audition) Tracks in the Piano Roll View

1. Click or press B to select the Scrub tool.
2. Press and hold the left mouse button in the Piano Roll view. SONAR displays a vertical line and plays any notes that are underneath the line.
3. Drag the line to the left or right, at any desired speed.

Note that the **Mute**, **Solo** and **Arm** buttons do not affect Scrub. If the track is hidden, however, you do not hear notes in that track.

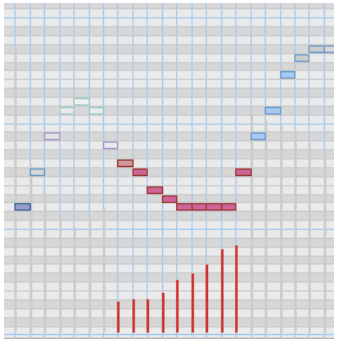
To Audition Notes

- To audition multiple notes, select them, make sure that **Polyphonic Note Audition** is selected in the **Edit MIDI Event Type** drop-down menu, and move the notes with either the Select tool or the Draw tool. You can also click one of the selected notes with the Draw tool, if you first move the Draw tool to the center of a selected note so that the Draw tool cursor becomes a double-ended vertical arrow.

Show velocity on selected notes (optional)

SONAR has an option to show velocities for selected Note events. This option makes it easier to see and edit velocities when many Note events are present. It also makes it easier to change the velocity for individual Note events that are stacked (such as chords).

If there is no selection, velocities are shown for all Note events.



To only show velocity for selected note events

1. In the Piano Roll view or inline Piano Roll, click the small drop-down arrow in the **Show/Hide MIDI Events** button .
2. Choose **Show Velocity on Selected Notes** from the pop-up menu.

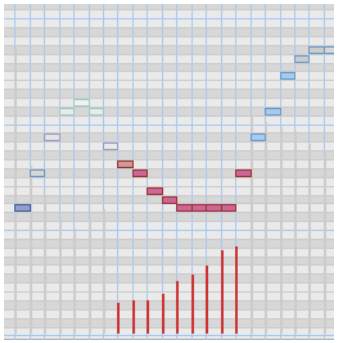
The state of the **Show Velocity on Selected Notes** option is saved with the project, and the setting is separate for the Piano Roll view and inline Piano Roll.

See:

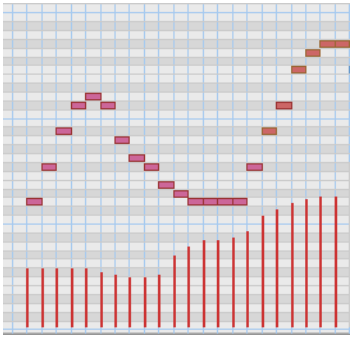
Editing Notes with the Draw Tool and the Select Tool

Selection sensitive velocity drawing

If *any* Note events are selected, velocity painting will only affect those selected Note events. If no Note events are selected, then velocity painting will affect all Note events.



Example 1. *Painting velocity when some Note events are selected. Only those Note events are changed.*



Example 2. *Painting velocity when no Note events are selected. All Note events are changed.*

See:

Editing Notes with the Draw Tool and the Select Tool

Note/controller painting (freehand)

Paint Notes/Controllers Free is one of the programmable mouse **Actions**, which can be assigned to any mouse button and key combination. For more information, see “Flexible Piano Roll tools” on page 457.

When you use the **Paint Notes/Controllers Free** action, events are painted from the mouse click position to the current mouse position. The start time and duration of events are determined by the Snap to Grid resolution if snap is enabled or by the current default note duration if Snap to Grid is disabled.

See:

To configure a Mouse Action

Note/controller painting (linear)

Paint Notes/Controllers Linear is one of the programmable mouse **Actions**, which can be assigned to any mouse button and key combination. For more information, see “Flexible Piano Roll tools” on page 457.

When you use the **Paint Notes/Controllers Linear** action, events are painted in a straight line from the mouse click position to the current mouse position. The start time and duration of events are determined by the Snap to Grid resolution if snap is enabled or by the current default note duration if Snap to Grid is disabled.

See:

To configure a Mouse Action

Controller/velocity painting (freehand)

Paint Controllers/Velocities Free is one of the programmable mouse **Actions**, which can be assigned to any mouse button and key combination. For more information, see “Flexible Piano Roll tools” on page 457.

When you use the **Paint Controllers/Velocities Free** action, Controller events of the current edit type are painted from the mouse click position to the current mouse position. Controller events are painted at the snap positions if Snap to Grid is enabled. If Snap to Grid is disabled, Controller events will be placed anywhere in time. Regardless of the Snap to Grid state, Controller events are only inserted where there is a change in value.

When painting velocities in the Notes pane, existing velocities are updated as the mouse passes through Note events. When painting velocities in the Controllers pane, the behavior is the same as the **Paint Notes/Controllers Free** action.

See:

To configure a Mouse Action

Controller/velocity painting (linear)

Paint Controllers/Velocities Linear is one of the programmable mouse **Actions**, which can be assigned to any mouse button and key combination. For more information, see “Flexible Piano Roll tools” on page 457.

When you use the **Paint Controllers/Velocities Linear** action, Controller events of the current edit type are painted linearly from the mouse click position to the current mouse position. Controller events are painted at the snap positions if Snap to Grid is enabled. If Snap to Grid is disabled, Controller events will be placed anywhere in time. Regardless of the Snap to Grid state, Controller evetns are only inserted where there is a change in value.

When painting velocities in the Notes pane, velocities are updated as the mouse passes through Note events. When painting velocities in the Controllers pane, the behavior is the same as the **Paint Notes/Controllers Linear** action.

See:

To configure a Mouse Action

Note split

SONAR now allows you to click on a Note event to split it into two separate Note events. The split occurs at the mouse position where the Note event is clicked.

Note Split is one of the programmable mouse **Actions**, which can be assigned to any mouse button and key combination. By default, **Note Split** is assigned to the middle mouse button when using the Select tool. For more information, see “Flexible Piano Roll tools” on page 457.

Note: *The Note Split action only works on one note at a time.*

To split a note

1. In the Piano Roll view or inline Piano Roll, click the **Select** button to enable the Select tool.
2. Click the middle mouse button at the exact position you wish to split a Note event.

   The Note event is split into two separate Note events at the mouse position.

Note: *These instructions apply to the default mouse assignments and will not apply if you have re-assigned the Note Split mouse action to different settings (see “Flexible Piano Roll tools” on page 457). If your mouse does not have a middle button, you may want to reassign Note Split to another button.*

Note glue

SONAR now allows you to glue multiple Note events together so they form a single Note event.

The Note events you glue together don't have to be consecutive—you can skip some Note events if you like, but only Note events of the same pitch can be glued together.

Note Glue is one of the programmable mouse **Actions**, which can be assigned to any mouse button and key combination. By default, **Note Glue** is assigned to ALT+middle-click when using the Select tool. For more information, see “Flexible Piano Roll tools” on page 457.

To glue notes together

1. In the Piano Roll view or inline Piano Roll, click the **Select** button to enable the Select tool.
2. Hold down the ALT key and click with the middle mouse button on an empty area or on the first Note event you wish to glue.
3. While still holding down the ALT key and middle mouse button, drag across the Note events you wish to glue together.

   The first Note event encountered will become the anchor pitch. Any other Note events encountered on that same pitch will be glued together when the mouse button is released, forming a single note event.

   The Note events that will be glued together turn red when the mouse crosses them.

Note: *These instructions apply to the default mouse assignments and will not apply if you have re-assigned the **Note Glue** mouse action to different settings (see “Flexible Piano Roll tools” on page 457). If your mouse does not have a middle button, you may want to reassign **Note Glue** to another button.*

Drag-quantize

SONAR makes it very easy to quantize individual Note events (or other MIDI events) without having to use the **Process > Quantize** command.

Drag Quantize works by clicking on an event (or one of many selected events), and moving the mouse up and down. The up direction moves the events *toward* the quantize target times; downward motion moves them *away* from the quantize target times. You immediately see the data being moved towards the target in real-time as you adjust the mouse position.

Drag Quantize is one of the programmable mouse "**Actions**", which can be assigned to any mouse button and key combination. By default, **Drag Quantize** is assigned to CTRL+middle-click when using the Select tool. For more information, see "Flexible Piano Roll tools" on page 457.

Drag quantize strength

The quantize strength is continuously variable based on mouse dragging and the results are visible in real-time. It is even possible to have "negative" strength, which allows you to un-quantize events (move them away from the target quantize time).

As you drag the mouse up or down, a dynamic tooltip shows the current quantize strength (-100% to +100%). A "deadband" around 0% allows the Drag Quantize tool to easily position the selected MIDI events at their original position.

Drag quantize resolution

The quantize resolution is determined by the current Snap to Grid resolution if snapping is enabled (see "Defining and Using the Snap Grid" on page 316). If Snap to Grid is disabled, SONAR will analyze the selected events and automatically determine a suitable resolution.

To drag-quantize MIDI events

1. Select the MIDI events you wish to quantize (see "Selecting Notes" on page 441 and "Selecting Controllers" on page 472).
2. In the Piano Roll view or inline Piano Roll, click the **Select** button to enable the Select tool.
3. Hold down the CTRL key and click the middle mouse button on any of the selected events and do *one* of the following:
   - Move the mouse upward to move the selected events *toward* the quantize target times.
   - Move the mouse downward to move the selected events *away* from the quantize target times.

   As you drag the mouse up or down, a dynamic tooltip shows the current quantize strength (-100% to +100%).

Note: *These instructions apply to the default mouse assignments and will not apply if you have re-assigned the Drag Quantize mouse action to different settings (see "Flexible Piano Roll tools" on page 457). If your mouse does not have a middle button, you may want to reassign Drag Quantize to another button.*

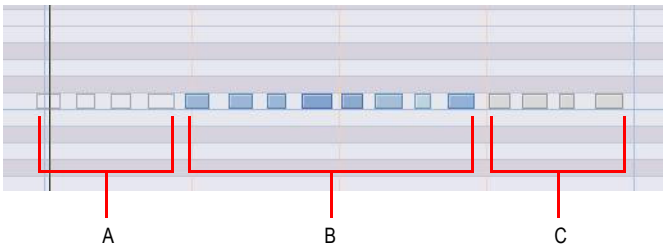
MIDI event mute

SONAR allows you to mute individual Note events directly in the Piano Roll view or inline Piano Roll.

Muted events are excluded from rendering during playback and MIDI meters do not light up for muted events.

Event Mute is one of the programmable mouse **Actions**, which can be assigned to any mouse button and key combination. By default, **Event Mute** is assigned to SHIFT+middle-click when using the Select tool. For more information, see “Flexible Piano Roll tools” on page 457.

Muted events are shown using a variation of the **Clip Mute** color but only the outline of the events are shown. In the following example, the first four Note events are Event-Muted. The last four Note events are muted using the Mute tool on the clip. The Note events in the middle are not muted at all.



A. *Event-Muted (hollow; the note outline uses the Clip Mute color)* ***B.*** *Unmuted events (track color)* ***C.*** *Muted using the Mute tool on the clip (Clip Mute color)*

To mute/unmute Note/Controller events

1. In the Piano Roll view or inline Piano Roll, click the **Select** button to enable the Select tool.
2. Hold down the SHIFT key and do *one* of the following:
   - **To mute/unmute only a single Note or Controller event.** Click the middle mouse button on the Note/Controller event you want to mute/unmute and release the mouse button.
   - **To mute/unmute multiple Note or Controller events.** Click the middle mouse button on any Note/Controller event you want to mute/unmute and drag the mouse over all other events you also want to mute/unmute, then release the mouse button.

   When dragging over multiple events, the events are temporarily drawn in a different color. All touched events will automatically inherit the *opposite* mute state of the first event you click, regardless of their current mute state. That is, *all* touched events are set to the opposite mute state of the first event.

   You can choose to abort the mute/unmute operation by pressing **Esc** before you release the mouse button.

Note: *These instructions apply to the default mouse assignments and will not apply if you have re-assigned the Event Mute mouse action to different settings (see “Flexible Piano Roll tools” on page 457). If your mouse does not have a middle button, you may want to reassign Event Mute to another button.*

See:

Clip Muting and Isolating (Clip Soloing)

Silencing tracks

Flexible Piano Roll tools

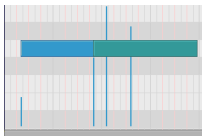
Erase tool behavior

The Erase tool *marks* events for deletion instead of automatically deleting them. When you touch events with the Erase tool, the events are not actually deleted until you release the mouse button.

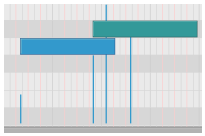
Events that are marked for deletion are temporarily drawn in a different color. You can choose to abort the delete operation by pressing **Esc** before you release the mouse button.

Note hit testing improvements

Note events are painted in chronological order. Note events that are later in time will be at a higher z-order (toward the top) than earlier Note events. As a result, the end time of a Note event may be obscured by a later Note event.

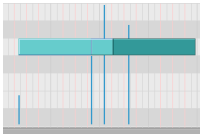


Example 1. *Two overlapping Note events. It is not clear where the first Note event ends.*



Example 2. *The same two overlapping Note events shown as different pitches.*

When multiple Note events exist at the mouse location, SONAR will prioritize the best candidate Note event by comparing the mouse location's proximity to the left and right edges of each Note event. When the best candidate is found among the overlapping Note events, SONAR will temporarily show the full duration of that candidate Note event while the mouse is hovering over it. This allows you to alter the right edge of the earlier Note event without having to temporarily move the later Note event out of the way.



Example 3. *In SONAR, the full duration of the earlier Note event is shown when hovering the mouse near the end of the Note event.*

Velocity Audition options

The **Velocity Audition** and **Polyphonic Velocity Audition** options have been moved to a more convenient location in the **PRV Tool Configuration** dialog.

These two options were previously available in the **Edit MIDI Event Type** drop-down menu in the Piano Roll view and inline Piano Roll.

See:

To Edit Velocity

PRV Tool Configuration dialog

Hiding events in muted clips

By default, events in muted MIDI clips are shown in the Piano Roll view. SONAR provides an option to exclude muted clips from displaying in the Piano Roll view.

To show/hide events in muted clips

1. In the Piano Roll view or inline Piano Roll, click the small drop-down arrow in the **Show/Hide MIDI Events** button .
2. Choose **Hide Muted Clips** from the pop-up menu.

The state of the **Hide Muted Clips** option is saved with the project, and the settings are separate for the Piano Roll view and the inline Piano Roll.

See:

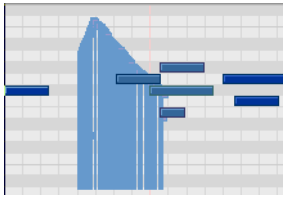
Clip Muting and Isolating (Clip Soloing)

Adjust velocity without changing the Display Type

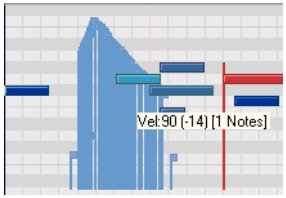
In previous versions of SONAR, clicking on the **Velocity** section of a note event would automatically switch the current **Edit Type** to **Velocity** and also make velocity tails visible. This is normally not desirable since you may frequently want to adjust velocities while primarily working with a different edit type (Controllers, etc.).

Because Velocity is really an attribute of another event type (Note), SONAR treats Velocity differently than other controller events. This allows you to configure the visibility of continuous controllers (CCs, xRPNs, etc.) and still perform an occasional velocity edit without the need to revert back to the previous display and edit settings.

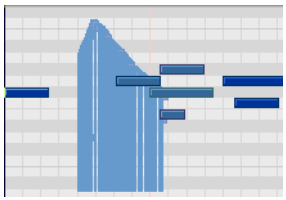
Example:



1. *CC7 is the current Edit Type and note velocity tails are hidden.*



2. *When clicking the Velocity section of a note event, the Edit Type remains CC7 and only the dragged velocity is temporarily shown.*



3. *When the mouse button is released, the Edit Type remains CC7 and velocity tails remain hidden.*

See:

Adding and Editing Controllers in the Piano Roll

Flexible Piano Roll tools

SONAR has three different Piano Roll mouse tools. Each tool can be customized to perform any available mouse action. There can be as much or as little overlap in functionality as you want between the tools.

Don't care for some of SONAR's default Piano Roll tool behaviors? No problem, simply re-assign the tools to suit your preferred editing style.

There are approximately 20 different mouse actions that the Piano Roll tools can perform, such as selecting, drawing, erasing, slip-editing, transposing, etc. It's difficult to make a single tool that can perform all of these actions, so SONAR allows you to customize the Piano Roll tools to suit your own editing requirements.

There are three mouse buttons (left, middle and right) and three modifier keys (CTRL, SHIFT and ALT) that can be used in any combination. Your custom Piano Roll tool assignments can be saved as presets and apply to both the Piano Roll view and the inline Piano Roll.

See:

The PRV Tool Configuration dialog

To configure a Mouse Action

Mouse Location

Tool Action

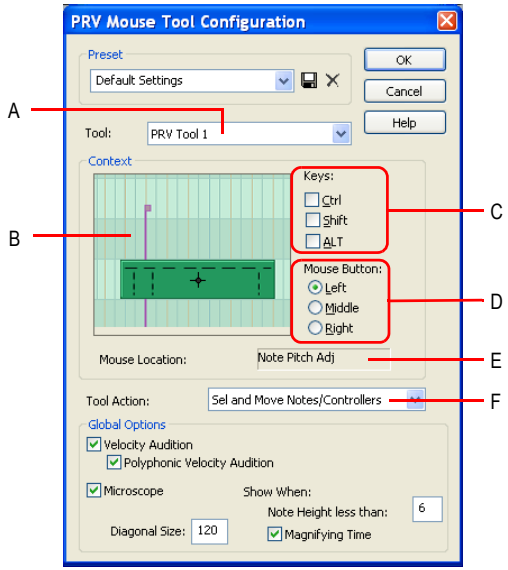
Default PRV tool assignments

The PRV Tool Configuration dialog

You use the **PRV Tool Configuration** dialog to configure the Piano Roll tools. In order to assign a specific action to a Piano Roll tool, you must specify the following:

- **Piano Roll tool.** Specify **PRV Tool 1** ( ), **PRV Tool 2** ( ) or **PRV Tool 3** ( ).
- **Mouse button.** Specify the left, middle or right mouse button.
- **Keyboard modifier key(s) (optional).** Specify the CTRL, SHIFT or ALT key, or any combination of the three.
- **Mouse location (context).** Specify one of the seven clickable mouse locations (see "Mouse Location" on page 459).
- **Tool action.** Specify one of the many available mouse actions (see "Tool Action" on page 460).

The objective is to map each of the contexts (mouse locations) to a tool action.



***A.** Tool **B.** Context **C.** Keys **D.** Mouse Button **E.** Mouse Location **F.** Tool Action*

See:

Tool

Mouse Button

Keys

Mouse Location

Tool Action

To configure a Mouse Action

Default PRV tool assignments

Tool

The Tool combobox lists the three Piano Roll tools:

- **PRV Tool 1.** This tool corresponds to the Select tool ( ) in the **Piano Roll** toolbar.
- **PRV Tool 2.** This tool corresponds to the Draw tool ( ) in the **Piano Roll** toolbar.
- **PRV Tool 3.** This tool corresponds to the Erase tool ( ) in the **Piano Roll** toolbar.

See:

To Edit Notes with the Draw Tool

To Edit Notes with the Select Tool

To Use the Erase Tool

Mouse Button

SONAR allows you to assign the following mouse buttons:

- Left
- Middle (if available)
- Right

Keys

In addition to a mouse button, you can optionally configure a mouse action to also use any combination of the following keys:

- CTRL
- SHIFT
- ALT

Note: *Because Windows has a long-established standard of using CTRL-drag for copy operations, there is a potential conflict when using the CTRL key to program actions that involve moving events. Therefore, the CTRL key requires some special attention:*

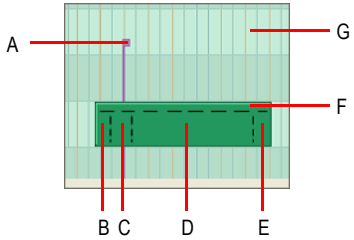
If the CTRL key is part of a context for a move action, copying will be disabled if the CTRL key is pressed.

Mouse Location

Each Piano Roll tool can perform various actions depending on where you click. The following is a list of the seven clickable mouse locations with regard to events:

- **Controller.** Click the handle (top part) of a Controller event.
- **Note Slip Start** (left edge). Click the left edge of a Note event.
- **Note Time Adjust.** Click near left edge of a Note event, slightly to the right of the Note Slip Start zone.
- **Note Pitch Adjust.** Click the center part of a Note event.
- **Note Slip End** (right edge). Click the right edge of a Note event.
- **Note Velocity Adjust.** Click the top part of a Note event.
- **Nowhere.** Click anywhere outside a Note event or Controller event.

A diagram displays the possible mouse locations in regards to Note events and Controller events:



A. *Controller* ***B.*** *Note Slip Start* ***C.*** *Note Time Adjust* ***D.*** *Note Pitch Adjust* ***E.*** *Note Slip End* ***F.*** *Note Velocity Adjust* ***G.*** *Nowhere*

The Note event in the previous diagram has dotted lines that outline the various hit zones on Note events as possible context locations. It also shows a single value (controller) event as another context location. Clicking outside the Note event and value event is referred to as the “Nowhere” context location.

Tool Action

Below is a list of all possible Piano Roll mouse tool actions. Depending on the mouse location (context), only a subset of these actions may be available.

Note: *As described in the “Mouse Move” column in the following table, a tool action may behave differently depending on where it is used in the Piano Roll view. The Piano Roll view has three different environments:*

- ***Note-only grid.*** *This refers to the Notes pane when the Controllers pane is shown (see “Notes Pane” on page 436).*
- ***Value-only grid****. This refers to the Controllers pane (see “Controller Pane” on page 436).*
- ***Mixed grid****. This refers to the Notes pane when both Note events and Controller events are displayed together (the Controllers pane is hidden).*

Action	Mouse Down	Mouse Move	Mouse Up
No Action	n/a	n/a	n/a
Insert/Move Note/ Controller	Add Note/Controller to edit buffer	Move inserted Note/ Controller horizontally and vertically	Commit edit buffer.

Table 84.

Action	Mouse Down	Mouse Move	Mouse Up
Paint Notes/Controllers See Note/controller painting (freehand)	Add Note/Controller to edit buffer	Insert additional events at mouse position. For notes, use snap as interval between and duration of notes. For Controllers, use snap as interval between.	Commit edit buffer.
Paint Notes/Controllers Linear See Note/controller painting (linear)	Add Note/Controller to edit buffer	Insert additional events at mouse position in straight line from where mouse was originally clicked.	Commit edit buffer.
Paint Controllers/ Velocities See Controller/velocity painting (freehand)	Add Controller to edit buffer	In note grid, paint existing velocities as mouse passes through notes. In value grid, do same as Paint Notes/Controllers	Commit edit buffer.
Paint Controllers/ Velocities Linear See Controller/velocity painting (linear)	Add Controller to edit buffer	In note grid, paint existing velocities linearly from original mouse click point. In value grid, do same as Paint Notes/Controllers Linear.	Commit edit buffer.
Lasso Selection	Begin lasso drag	Continue lasso rectangle	Select all events within lasso rectangle. Obey CTRL/SHIFT as standard modifiers.
Erase Sweep See Erase tool behavior	Mark any hit event as deleted	Mark notes that are hit in both pitch and time for deletion. Mark Controllers that are crossed in time for deletion	Commit edit buffer.
Move Notes/Controllers	n/a	Move selected notes/ Controllers horizontally (in time) and vertically	Commit edit buffer
Move Notes/Controllers (Vert)	n/a	Move selected notes/ Controllers vertically only	Commit edit buffer
Move Notes/Controllers (Time)	n/a	Move selected notes/ Controllers in time only (horizontally)	Commit edit buffer

Table 84.

Action	Mouse Down	Mouse Move	Mouse Up
Sel and Move Notes/ Controllers	Select any hit event. Obey SHIFT/CTRL as standard modifiers	Move selected notes/ Controllers horizontally (in time) and vertically	Commit edit buffer
Sel and Move Notes/ Controllers (Vert)	Select any hit event. Obey SHIFT/CTRL as standard modifiers	Move selected notes/ Controllers vertically only	Commit edit buffer
Sel and Move Notes/ Controllers (Time)	Select any hit event. Obey SHIFT/CTRL as standard modifiers	Move selected notes/ Controllers in time only (horizontally)	Commit edit buffer
Note Slip Start Adjust	n/a	Adjust start time and duration of selected notes. Obey snap settings	Commit edit buffer
Note Slip End Adjust	n/a	Adjust duration of selected notes. Obey snap settings	Commit edit buffer
Note Velocity Adjust	n/a	Adjust velocity of selected notes	Commit edit buffer
Note Split See Note split	Split hit note in to two notes at mouse time. Obey snap settings	n/a	Commit edit buffer.
Note Glue See Note glue	Add any hit note to the edit buffer	Add any notes hit to edit buffer if same pitch as clicked note	Make one long note out of notes in edit buffer. Commit edit buffer.
Drag Quantize See Drag-quantize	Add Note/Controller to edit buffer	Move mouse upward to move selected events toward quantize target times. Move mouse downward to move selected events away from quantize target times.	Commit edit buffer.
Event Mute See MIDI event mute	Add Note/Controller to edit buffer	Mute any hit event.	Commit edit buffer
Context Menu	n/a	n/a	Show context menu

Table 84.

To configure a Mouse Action

1. Select **Options > PRV Tool Configuration** to open the **PRV Tool Configuration** dialog.

The **PRV Tool Configuration** dialog appears.

2. In the **Tools** combobox, choose the Piano Roll tool you wish to assign (PRV Tool 1, PRV Tool 2 or PRV Tool 3).
3. Do *one* of the following:
   - Hold down the key(s) you wish to use (if any) and click with the desired mouse button directly on a context (mouse location) in the diagram. The appropriate **Key** and **Mouse Button** check boxes and radio buttons will be automatically checked.
   - In the diagram, click on one of the seven contexts (mouse locations) you wish to assign, then select the **Mouse Button** and **Key** settings you wish to use.

   The clicked mouse location is indicated in the diagram and the **Mouse Location** box shows the name of the clicked mouse location.
4. In the **Tool Action** combobox, select the desired action (for a description of each action, see "Tool Action" on page 460).

Note: *The possible actions will vary depending on the clicked mouse location.*

5. Click **OK** to close the **PRV Tool Configuration** dialog.

See:

The PRV Tool Configuration dialog

Default PRV tool assignments

When using the default tool assignments, the ALT modifier key generally swaps the behavior of the Draw and Select tools, allowing you to perform most common edit operations without having to actually switch tools.

Note: *Some of the new tool actions, such as Note Split and Event Mute, are assigned by default to the middle mouse button. If your mouse does not have a middle button, you may want to reassign these actions to another button (see "To configure a Mouse Action" on page 462).*

Below is a list of each tool's default assignments.

PRV Tool 1 (Select) default settings

Location	Mouse Button	Key(s)	Action
Nowhere	Left		Lasso Selection
Note (all zones)	Left		Select and Move Notes
Controller	Left		Select and Move Controllers
Controller	Left	ALT	Move Notes/Controllers
Nowhere	Left	ALT	Insert/Move Note/Controller
Note (Slip Start)	Left	ALT	Note Slip Start Adjust
Note (Time Adjust)	Left	ALT	Move Notes (Time)
Note (Pich Adjust)	Left	ALT	Move Notes (Vertically)
Note (Slip End)	Left	ALT	Note Slip End Adjust
Note (Velocity Adjust)	Left	ALT	Note Velocity Adjust
Note (all zones)	Middle	CTRL	Drag-Quantize
Controller	Middle	CTRL	Drag-Quantize
Note (all zones)	Middle	SHIFT	Event Mute
Controller	Middle	SHIFT	Event Mute
Note (all zones)	Middle		Note Split
Note	Middle	ALT	Note Glue

Table 85.

PRV Tool 2 (Draw) default settings

Location	Mouse Button	Key(s)	Action
Nowhere	Left		Insert/Move Note/Controller
Note (Slip Start)	Left		Note Slip Start Adjust
Note (Time Adjust)	Left		Move Notes (Time)
Note (Pich Adjust)	Left		Move Notes (Vertically)
Note (Slip End)	Left		Note Slip End Adjust
Note (Velocity Adjust)	Left		Note Velocity Adjust
Controller	Left		Move Controllers
Nowhere	Left	CTRL	Paint Notes/Controllers Free
Nowhere	Left	CTRL+SHIFT	Paint Notes/Controllers Linear
Nowhere	Left	ALT	Lasso Selection
Note	Left	ALT	Select and Move Notes
Controller	Left	ALT	Select and Move Controllers
Nowhere	Middle		Erase Sweep
Note	Middle		Erase Sweep
Controller	Middle		Erase Sweep

Table 86.

PRV Tool 3 (Erase) default settings

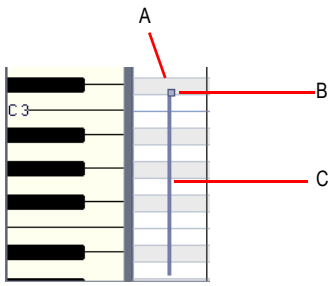
Location	Mouse Button	Key(s)	Action
Nowhere	Left		Erase Sweep
Note	Left		Erase Sweep
Controller	Left		Erase Sweep

Table 87.

Adding and Editing Controllers in the Piano Roll

Controller events (MIDI continuous controllers, pitch wheel, NRPN's, and RPN's) appear in either the Notes Pane or the Controller pane, depending on whether you choose to display the Controller pane or not. Each controller event has an edit handle at the top, which you can drag to edit, and a tail under the edit handle, which graphically demonstrates the controller event's current value. The tail changes colors to show whether you can edit a particular type of controller, and also turns dark to show that the controller event is selected. Controller events appear in different colors so you can differentiate them when you're displaying multiple controller events, possibly in multiple tracks.

Note: *Only the current track and current events appear in a solid color. All other tracks and events appear in de-saturated colors.*



A. *A single controller event* ***B.*** *Edit handle (also called Controller handle* ***C.*** *Controller tail*

To show which events belong to which track, and which ones are the "current" events (the ones you can edit), and which events are selected, controller events use the following color patterns:

- **Controller tail.** Uses the same color as the edit handle when the controller can be edited (in other words, when the controller is selected in the **Edit MIDI Event Type** menu). You can automatically enable a controller type for editing by clicking its edit handle with the Draw tool.
- **Selected.** If a controller event is selected, both the edit handle and the tail darken in shade the way that selected notes do.

See:

Adding Controllers

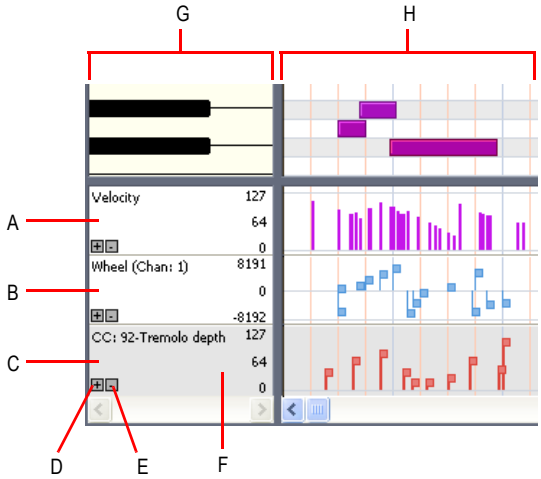
Selecting Controllers

Editing Controllers

Multiple automation controller lanes

The Controller pane in the multi-track Piano Roll view (not the inline Piano Roll) is split up into multiple lanes—one lane for each unique event type in the track.

You can freely create new lanes to display and edit MIDI data such as velocity, modulation, pitch bend and CCs (Continuous Controllers) and events can be moved and copied between lanes.



***A.** Velocity lane **B.** Wheel lane **C.** CC92 lane **D.** Add new lane **E.** Remove lane **F.** "Active" lane (darker shade) **G.** Scale pane **H.** Controller pane*

See:

Working with MIDI data lanes.

To create a new lane.

To delete a lane.

To assign an Event Type to a lane.

To copy events between lanes.

To move events between lanes.

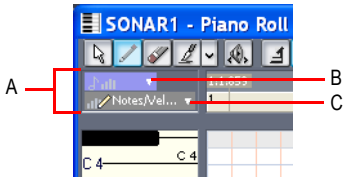
Working with MIDI data lanes

The Controller pane allows you to display and edit non-note MIDI data, such as velocity, modulation, pitch bend and continuous controllers (CCs), in multiple lanes at the bottom of the Piano Roll view.

When you open the Piano Roll view, SONAR will automatically create a separate MIDI data lane for each unique data type that is present in the selected track(s).

When you click on a lane—either in the controller pane or in the scale pane—that lane becomes *"active"* and turns a slightly darker shade. The significance is that the active lane is the one that becomes controlled by the Event Type pickers in the top left corner of the Piano Roll view.

Each lane can be configured to show one or more event types.



A. *The Event Type pickers apply to the active lane* ***B.*** *Show/Hide MIDI Events picker* ***C.*** *MIDI Event Type picker*

See:

To assign an Event Type to a lane.

To create a new lane

1. In the multi-track Piano Roll view, make sure the Controllers pane is shown at the bottom. If it is not displayed, do *one* of the following:
   - Click the **Use Controller Pane** button in the **Piano Roll view** toolbar.
   - Press C.
2. Do *one* of the following:
   - Click the **Plus** button in the bottom left corner of any existing lane.
   - Press SHIFT+L.

   A new lane is inserted below the lane that was clicked (or below the active lane if you pressed SHIFT+L). SONAR will try to automatically assign the lane to any event type that exists in the track, provided the event type is not already assigned to another lane.

To delete a lane

To delete an existing lane, click the **Minus** button in the bottom left corner of the lane.

If there is only one lane that is opened, this command will close the Controller Pane.

Note: *Deleting a lane does not delete any MIDI events from the track.*

To assign an Event Type to a lane

Use the **MIDI Event Type** drop-down lists in the Piano Roll to select which MIDI data type you want to display and edit in the active lane.

1. Click the lane you wish to assign to a specific event type.

   The lane appears darker than other lanes to indicate that it is the active lane.

2. Click the **MIDI Event Type** picker Notes/Velocity.

   The **MIDI Event Type** pop-up menu appears.

3. Do *one* of the following:

   - To specify a new event type that doesn't already exist in the track, choose **New Value Type** and select the desired event type in the **MIDI Event Type** dialog.
   - To specify an event type that already exists in the track, select the event type from the **MIDI Event Type** pop-up menu.

   The name of the current edit type is displayed in the lane.

See:

Displaying Notes and Controllers (Piano Roll View Only)

To show/hide multiple Event Types in a lane

1. Click the lane in which you wish to display multiple event types.

   The lane appears darker than other lanes to indicate that it is the active lane.

2. Click the small drop-down arrow in **Show/Hide MIDI Event Type** picker.

   The **Show/Hide MIDI Event** pop-up menu appears.

3. Select the event type you wish to show/hide in the lane.

   Visible event types appear checked and hidden event types appear unchecked.

Note: *The event types you wish to display must already exist in the track before you can choose them from the* ***Show/Hide MIDI Events*** *picker.*

4. Repeat steps 2-3 for any additional event types you wish to show/hide in the active lane.

See:

Displaying Notes and Controllers (Piano Roll View Only)

To copy events between lanes

When you copy events from one lane to another lane, the MIDI data is transformed to match the edit type in the target lane.

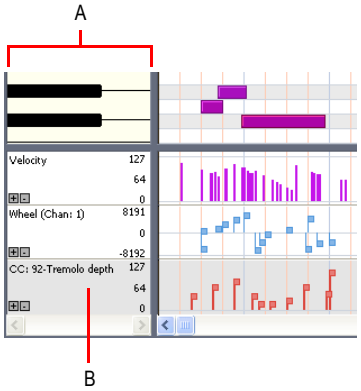
1. Select the event types you wish to copy to another lane. See "Selecting Controllers" on page 472 for more information.
2. In the Scale pane, right-click the lane you wish to copy the selected events to.

   The lane context menu appears.

3. Click **Copy selected events to this lane**.

The selected events are copied to the destination track.

Note: *It is impossible to copy selected events to a lane that has an edit type of Velocity; the type of event to transform to would be Note and the pitch could not be specified in this case. In this case, the* ***Copy selected events to this lane*** *menu command will be disabled and appear grayed out.*



A. *Scale pane* ***B.*** *Right-click the lane in the scale pane*

To move events between lanes

When you move events from one lane to another lane, the MIDI data is transformed to match the edit type in the target lane.

1. Select the event types you wish to move to another lane. See “Selecting Controllers” on page 472 for more information.
2. In the Scale pane, right-click the lane you wish to move the selected events to.

   The lane context menu appears.
3. Click **Move selected events to this lane**.

   The selected events are moved to the destination track.

Note: *It is impossible to move selected events to a lane that has an edit type of Velocity; the type of event to transform to would be Note and the pitch could not be specified in this case. In this case, the* ***Move selected events to this lane*** *menu command will be disabled and appear grayed out.*

Adding Controllers

When you add a new controller type to a track, the controller type is automatically chosen in the **Show/Hide MIDI Events** menu, so that you can see it. For help showing and hiding all the other MIDI data you may have in your track or tracks, see “Displaying Notes and Controllers in the Inline Piano Roll View” on page 480, “Displaying Notes and Controllers (Piano Roll View Only)” on page 440, and “Working with Multiple Tracks in the Piano Roll View” on page 437.

To Add Controller Data with the Draw Tool

1. Click the **Edit MIDI Event Type** menu Notes/Velocity, and choose **New Value Type** from the pop-up menu.

   The **MIDI Event Type** dialog appears.

2. Choose options from the following fields:
   - **Type.** Choose the type of controller you want to add (for example, choose Control if you want to edit volume).
   - **Value.** This field is greyed-out if you choose **Wheel** or **ChanAft** in the **Type** field. If you choose **Control**, **RPN**, or **NRPN** in the **Type** field, choose which Control, RPN, or NRPN you want to add. For example, to edit volume, choose **7-Volume** in this field if you chose **Control** in the **Type** field.
   - **Channel.** Choose a MIDI channel for the controller if you want. If your track has a MIDI channel listed in the **Ch** field, all MIDI data in your track uses the listed MIDI channel.
3. Click **OK** to close the dialog.
4. Activate the Draw tool in either the **Piano Roll view** toolbar or the **Inline Piano Roll** toolbar (depending on which view you’re working in), and add your controller values by using one of the following methods:
   - Depress the mouse at the point where you want your controller messages to start, and drag the Draw tool to draw the kind of curve you want your controller messages to follow. A tooltip appears when you depress the mouse, and constantly reports the controller name, channel, value, and location of the controller value that you are entering. Release the mouse where you want your curve to end.

   Tip: *To draw a straight line, hold the SHIFT key down while you draw.*

   - To add one controller event at a time, click each place that you want to add a controller value. A tooltip appears when you click, and reports the controller name, channel, value, and location of the controller value that you are entering.

The controller events you added appear as vertical lines, each with an edit handle at the top that you can drag. Each different type of controller event appears with a different color (see “Adding and Editing Controllers in the Piano Roll” on page 466 for more information).

When you use the Draw tool, the speed with which you drag the mouse determines the density of controller events. To insert a larger number of controller events with relatively small changes in value, move the mouse slowly. To insert a smaller number of controller events with relatively large changes in value, drag the mouse quickly.

To Insert a Series of Controllers

1. Choose **Insert > Controllers** to display the **Insert Series of Controllers** dialog box.
2. Choose the controller type from the **Insert** list.
3. Choose the controller number or type from the **Number** list.
4. Use the spinners or enter the desired MIDI channel.
5. Enter a starting and ending value in the **Begin** and **End** boxes.
6. Enter a starting and ending time in the **From** and **Thru** boxes.
7. Click **OK** when you are done.

SONAR inserts a series of controller events with values that change smoothly over time from the starting to the ending value indicated in the dialog box. This command never inserts more than one event on the same clock tick. If any controllers of the type you have selected already exist in the time region, SONAR deletes these before inserting the new ones.

See:

Selecting Controllers

Editing Controllers

Selecting Controllers

To perform many editing procedures on controllers, you first need to select the controller events you want to edit. A selected controller event turns dark when it is selected. You can select a single controller event, multiple controller events of the same type, or all controller events.

To Select Controller Events of the Same Type

1. Click the **Edit MIDI Event Type** menu Notes/Velocity, choose the type of event you want to select from the pop-up menu.
2. Activate the Select tool in the **Piano Roll** toolbar or the **Inline Piano Roll** toolbar (depending on which view you're working in), and select one or more controller events by using the following techniques:
   - Drag a rectangle around the edit handles of the controller events that you want to select.
   - SHIFT-click or SHIFT-drag to add other controllers to the selection.
   - CTRL-click to or CTRL-drag toggle the selection state of a controller.
   - Click and drag in the Time Ruler.

Select controllers within note duration

When editing MIDI data it is often necessary to align the timing of Controller events with that of Note events. For example, Sustain Pedal (CC64) events need to move along with the notes they are

supposed to sustain, and Pitch Wheel events need to move along with the notes whose pitch they are supposed to modify.

When the *Select Controllers within Note Duration* mode is enabled, selecting a Note event or a range of Note events will also automatically select any Controller events that exist within the time range of the Note event(s).

Note events can be selected by clicking the notes or by lasso-selecting the notes. For more information, see “Selecting Notes” on page 441.

The following rules apply when multiple Note / Controller event types are selected:

- Dragging a Note event vertically will not affect the selected Controller event(s).
- Dragging a Note event in time (horizontally) will also drag the Controller event(s) along with it in time.
- Dragging Controller events vertically will not affect the selected Note event(s).
- Dragging Controller events in time will also drag Note events along with them in time.
- If multiple Controller types are selected, only the type you click on can be dragged vertically. The rest will only move in time (horizontally).

To enable/disable ‘Select Controllers within Note Duration’

Click the **Select Controllers within Note Duration** button in either the **Piano Roll view** toolbar or the **Inline Piano Roll** toolbar in the Track view.

The toolbar button lights up when enabled.

Note: *The state of the Select Controllers within Note Duration mode is global and applies to both the Piano Roll view and inline Piano Roll.*

Editing Controllers

Each controller value appears with a handle at the top of it, which you can drag vertically with the Select tool or the Draw tool, or horizontally (Select tool only).

Activate the Select tool or the Draw tool by clicking their respective icons in either the **Piano Roll view** toolbar, or the **Inline Piano Roll** toolbar, depending on which view you’re working in.

Tip: *You can assign the Inline Piano Roll view tools to key bindings.*

To Edit or Delete Controller Events with the Select Tool

1. Select the type of controller events you want to edit by clicking the **Edit MIDI Event Type** menu Notes/Velocity, and choosing the controller type from the pop-up menu.

   The controller events you chose change shade to show that you can edit them.

2. Drag the edit handle of each controller event that you want to edit vertically and/or horizontally. A tooltip appears when you depress the mouse, and constantly reports the controller name, channel, value, and location of the controller value that you are editing. Release the mouse where you want your controller value to be.
3. To delete controller events, select them, and press the DELETE key.

To Edit or Delete Controller Events with the Draw Tool

1. Select the type of controller events you want to edit by clicking the **Edit MIDI Event Type** menu, and choosing the controller type from the pop-up menu.

   Or

1. Click an edit handle on the type of controller events you want to edit. This automatically chooses the controller in the **Edit MIDI Event Type** menu.

   The tails of the controller events you choose change to the same color as their edit handles to show that you can edit them.
2. Edit the controller by using any of the following methods:
   - To edit a single event, drag an edit handle vertically.
   - Redraw a series of controller events by dragging a new curve through the events.
   - Delete a single controller event by activating the **Erase** button, and clicking a controller's edit handle. You can override the **Erase** button (temporarily reverse its current state) by holding down the ALT key while you click.

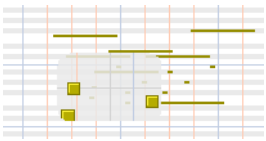
See:

Working with Multiple Tracks in the Piano Roll View

Piano Roll Microscope mode

The Piano Roll Microscope mode makes it much easier to edit MIDI data without constantly needing to change zoom settings. This is especially useful in the inline Piano Roll where track heights are typically sized such that MIDI notes become very small.

When Microscope mode is enabled, a transparent rounded square centered on the mouse cursor shows a zoomed in region of the Piano Roll data underneath it:

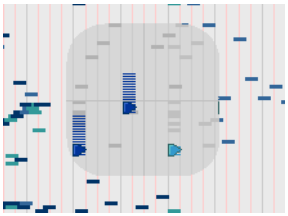


Only the work area under the mouse is zoomed in while the rest of the data retains its normal size.

Here is an example of dense MIDI data that is difficult to edit at the current zoom level:

With Microscope mode turned on, the area under the mouse looks like this:

Microscope mode also works with Drum Maps:



To enable/disable Microscope mode

To enable/disable Microscope mode, do *one* of the following:

- Click the **Microscope Enable** button in either the **Piano Roll view** toolbar or the **Inline Piano Roll** toolbar in the Track view.
- Choose **Options > PRV Tool Configuration** and toggle the Microscope check box.

How Microscope mode works

Position. The Microscope is always centered on the mouse position.

Size. The size of the Microscope is configurable. The default diameter is 100 pixels. See "Configuring Microscope mode options" on page 476 for more information.

Transparency. The Microscope maintains a certain level of transparency so that the real-sized data can always be seen.

Zoom Factor (vertical). The amount of vertical zoom varies with the existing zoom level of the data. Generally, the note height under the microscope has a minimum height of 8 pixels and scales up from there depending on the existing zoom of the data. The microscope data will always be bigger than the original regardless of how far it is zoomed in.

Zoom Factor (horizontal/time). The microscope will provide some horizontal magnification when the view zoom is such that notes become very narrow.

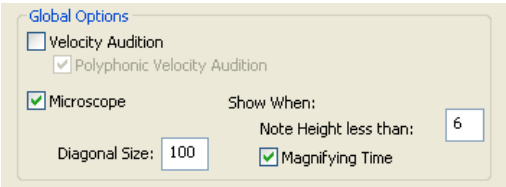
Tip: *Use Fast Zoom in combination with Microscope mode if you wish to quickly zoom around the current mouse position. See "To Zoom Using the Mouse Wheel (Fast Zoom)" on page 301 for more details.*

Configuring Microscope mode options

There are several settings that let you configure the size and zoom level of the microscope.

To Configure Microscope Mode Options

To configure the Microscope mode settings, choose **Options > PRV Tool Configuration** to open the **PRV Tool Configuration** dialog.



The following options are available:

Microscope. Use this check box to enable/disable Microscope mode (enabled by default).

Diagonal Size. Use this numeric entry box to specify the diameter size in pixels of the microscope. The valid range is 20-250 and the default value is 100.

Show When Note Height Less Than. Microscope mode will only be enabled if the note heights (in pixels) are equal or less than this number. The valid range is 2-20 and the default value is 6.

Magnifying Time. Use this check box to enable/disable horizontal magnification when the Piano Roll view zoom is such that notes become very narrow.

In addition to these options, there are some other parameters that can be configured by adding the following INI variables to the WinCake section of `Cakewalk.ini` (see Cakewalk.ini):

Variable	Type	Default value	What it does
MicroscopeHZoomThreshold=<1..20>	Integer	8	By default, the Microscope mode begins horizontal magnification when a 32nd note is narrower than 8 pixels. This line lets you specify the horizontal zoom threshold (1-20 pixels).
MicroscopeHZoomMax=<2.0 - 8.0>	Integer	3.0	This line specifies the highest horizontal magnification that will result when using Microscope mode.

Table 88.

The Inline Piano Roll View

The Inline Piano Roll view lets you edit note and continuous controller events for a single track directly in the Track view. Clicking the **PRV Mode** button in a track changes the Clips pane for that track into a single-track Piano Roll view which displays all the track's MIDI data, including data from all track layers. If a track uses a Drum Map, the Inline Piano Roll view for that track displays the Drum Map's note names on the track's MIDI Scale (see "The MIDI Scale" on page 479 for more information).

In this view, you can:

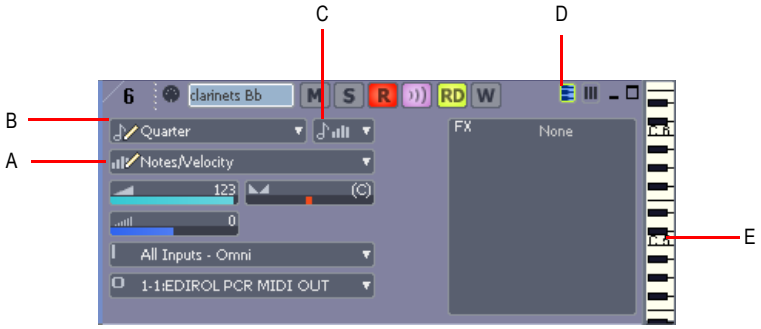
- Edit notes and controller events
- Edit multiple notes or events
- Display multiple controller types simultaneously
- Choose which MIDI events you want to display
- Use separate Snap to Grid settings in the Clips pane mode and Inline Piano Roll mode

You control the Inline Piano Roll view with controls in the Inline **Piano Roll** toolbar, the MIDI Scale, and four buttons found in the Track strip controls of each track: the **PRV Mode** button, the **Show/Hide MIDI Events** button, the **Edit MIDI Event Type** button, and the **Note Duration** button. These three buttons appear when you enable the **PRV Mode** button.

The **Inline Piano Roll** toolbar is part of the Track view toolbar.

See the following two figures:

Figure 81. *Track strip in PRV mode*



A. *Edit MIDI Event Type menu* ***B.*** *Note Duration menu* ***C.*** *Show/Hide MIDI Events button* ***D.*** *PRV Mode button* ***E.*** *MIDI Scale*

Figure 82. *Inline Piano Roll toolbar*

A. *PRV Select tool* ***B.*** *Draw tool* ***C.*** *Draw tool Auto Erase menu* ***D.*** *Erase tool* ***E.*** *Show/Hide Notes* ***F.*** *Show/Hide Controllers* ***G.*** *Show/hide velocity tails (on drum-mapped tacks)* ***H.*** *Fit Content* ***I.*** *PRV Mode*

See also:

Displaying the Inline Piano Roll View

The MIDI Scale

Displaying Notes and Controllers in the Inline Piano Roll View

Drawing and editing notes and controllers in the Inline Piano Roll view is the same in the Piano Roll view, with a few exceptions (noted in the appropriate topics). The major difference is that you can display and edit multiple tracks in the Piano Roll view.

To draw and edit notes and controllers in the Inline Piano Roll view, see “Adding and Editing Notes in the Piano Roll” on page 441, and “Adding and Editing Controllers in the Piano Roll” on page 466.

Displaying the Inline Piano Roll View

Use the following methods to hide or show the Inline Piano Roll view.

To Hide or Show an Individual Track’s Inline Piano Roll View

- In the Track pane, click the **PRV Mode** button of the track that you want to display in Inline Piano Roll view mode.

Or

- Double-click a MIDI clip in the Clips pane, if Inline Piano Roll Mode is selected in the **MIDI Clips** field of the **Clip Pane Options** dialog. To open the **Clips Pane Options** dialog, right-click in the Clips pane, and select **View Options** from the pop-up menu.

To Hide or Show All Tracks' Inline Piano Roll Views

- In the Inline Piano Roll toolbar, click the **PRV Mode** button. The Inline Piano Roll toolbar is part of the Track view toolbar.

  Or

- Use the **Tracks > In-line PRV > PRV Mode** command.

See also:

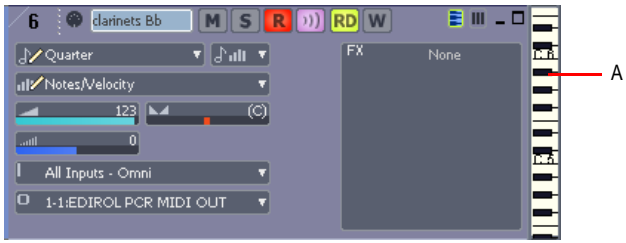
The MIDI Scale

Displaying Notes and Controllers in the Inline Piano Roll View

The MIDI Scale

MIDI tracks have a control called the MIDI Scale. This control displays a vertical ruler labeled with MIDI values (in 7bit Values mode) or MIDI notes (in Notes mode), giving you a visual guide for editing notes and controllers. The MIDI Scale is also a vertical zoom control. If a track uses a Drum Map, the MIDI Scale for that track displays the Drum Map's note names on the track's MIDI Scale (in Notes mode).

Figure 83. *MIDI Scale in Notes mode*



A. *MIDI Scale*

To Zoom Vertically with the MIDI Scale

1. Put the MIDI Scale into notes mode by right-clicking the MIDI Scale and choosing **Notes** from the pop-up menu.
2. Hold the mouse over the MIDI Scale so that the cursor changes to a small vertical keyboard, and drag upward to zoom in. The Inline Piano Roll view zooms in.

Note: *In Notes mode, if the track is zoomed-out too far, there is not enough room in the MIDI Scale to display the keyboard. To see the keyboard, you need to zoom in far enough to display the keyboard.*

3. To zoom out, drag downward on the keyboard display.

You can also zoom by using the Track view zoom controls.

To Scroll Vertically with the MIDI Scale

- Right-click the MIDI Scale and drag up or down to scroll.

To Fit a Single Track's Content into its Inline Piano Roll View

- Right-click the MIDI Scale and choose **Fit Content** from the pop-up menu.

  Or

- CTRL-double-click the MIDI Scale.

To Audition and Select Notes

- To audition and select a note, SHIFT-click the note's pitch in the MIDI Scale.
- To audition and select all notes within a certain range, SHIFT-drag through the notes' range of pitches in the MIDI Scale.

To Fit All Tracks' Contents into their Inline Piano Roll Views

1. If you only want to use this command on certain tracks, select the tracks first. If no MIDI tracks are selected, or if all MIDI tracks are selected, the command works on all MIDI tracks.
2. Do one of the following:

   Use the **Tracks > In-line PRV > Fit Content** command.

   Or

   Click the **Fit Content** button on the **Inline Piano Roll** toolbar. The **Inline Piano Roll** toolbar is part of the **Track view** toolbar.

To Change the MIDI Scale's Display Mode

- Right-click the MIDI Scale to display the pop-up menu, and choose either **7bit Values** (this displays MIDI values), or **Notes** (this displays the keyboard).

See also:

Displaying the Inline Piano Roll View

Displaying Notes and Controllers in the Inline Piano Roll View

Displaying Notes and Controllers in the Inline Piano Roll View

Every MIDI track in the Track pane displays a **Show/Hide MIDI Events** button when the track is in Inline Piano Roll mode. These buttons work independently in each track, and are also independent from the **Show/Hide MIDI Events** button in the Piano Roll view.

To Hide or Show Data in Individual Tracks

1. Click the drop-down arrow on the **Show/Hide MIDI Events** button to display the menu of MIDI data in the track.
2. Choose from the following menu options:
   - To hide or show notes, click **Show Notes**.
   - To hide or show a controller, click the name of the controller (for example, click **CC: 1-Modulation (Chan: 2)**).
   - To show all controllers in the current track, click **Display All Continuous Events**, or use step 4 below.
   - To show or hide all the outlines of any clips in the track, click **Show Clip Outlines**.
3. After you choose an option, the menu closes. You can repeat steps 1 and 2 to choose more options.
4. **To hide or show all controllers**, click the left side of the **Show/Hide MIDI Events** button. The button turns white when all controllers are hidden, and blue when all controllers are showing.

To Hide or Show Notes in All Tracks

- Click the **Show/Hide Notes** button in the **Inline Piano Roll** toolbar.

  or
- Use the **Tracks > Show/Hide Notes** command.

Both of these commands override the **Show/Hide MIDI Events** buttons in individual tracks.

To Hide or Show Controllers in All Tracks

- Click the **Show/Hide Continuous** button in the **Inline Piano Roll** toolbar.

  or
- Use the **Tracks > In-line PRV > Show/Hide Continuous Events** command.

Both of these commands override the **Show/Hide MIDI Events** buttons in individual tracks.

You can zoom in to or out of individual MIDI Tracks by dragging the MIDI Scale up or down. See The MIDI Scale for more information.

See also:

Selecting Notes

Adding and Editing Controllers in the Piano Roll

Adding and Editing Notes in the Piano Roll

Adding Controllers

Selecting Controllers

Editing Controllers

Selecting and Editing Events

SONAR has many editing commands that you can use to modify the events that make up your project. Here are some of the things you can do:

- Transpose events, clips, tracks, or an entire project to a different key
- Shift events to an earlier or later time
- Stretch or shrink material to a different length
- Reverse the notes in a clip to create new arrangements
- Modify the note velocities

The following sections describe these editing commands and how to use them. SONAR also has some special commands you can use to modify or clean up a performance or to search for or select events that meet certain criteria.

See:

Transposing

Shifting Events in Time

Stretching and Shrinking Events

Reversing Notes in a Clip

Adding Crescendos and Decrescendos

Copying and Pasting MIDI Data

You can copy and paste both notes and controller data in SONAR.

To Copy and Paste MIDI Data with the Copy/Paste Commands

1. Select the data you want to copy.
2. Use the **Edit > Copy** command, or press CTRL+C.
3. Use the **Edit > Paste** command, or press CTRL+V.

   The **Paste** dialog appears.
4. Fill in options, and click **OK**. Click the **Help** button in the dialog for an explanation of each option.

SONAR pastes the copied data to the desired location.

Transposing

The **Process > Transpose** command transposes the pitches of selected note events up or down by a fixed number of steps. It does so by changing the MIDI key numbers of note events. Simply enter the number of half-steps—a negative number to transpose down, a positive number to transpose up.

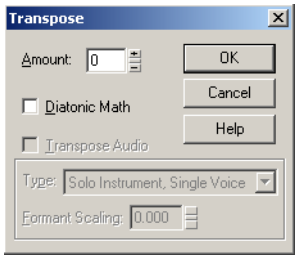
SONAR can also perform diatonic transposition, which shifts all the notes up and down the major scale of the current signature by the designated number of steps. For instance, if you specify an amount of **+1** and the key signature is **C-major**, a C becomes a D (up a whole step), an E becomes an F (up a half step), and so on. Diatonic transposition assures you that the transposed notes fit with the original key signature.

As an option, you can choose to transpose selected audio clips along with any selected MIDI clips. SONAR uses pitch-shifting (a plug in for changing audio pitch) to perform the transposition. You can transpose audio only a single octave in either direction (-12 to +12), and you cannot transpose audio when you are using diatonic transposition.

To Transpose Selected Events

1. Select the tracks, clips, or events you want to transpose.
2. Choose **Process > Transpose** to display the **Transpose** dialog box

Figure 84. *The **Transpose** dialog.*



3. Use the spinners or enter the number of semi-tones to transpose.

   Or

   Use the + and - keys on your keypad to go up or down by one or [and] to go up or down by octaves.
4. Check Diatonic Math if you want to transpose along the major scale of the current key.
5. Choose **Transpose Audio** if you want to pitch-shift selected audio clips. If you check this check box. SONAR transposes any selected audio data up or down, but only by half-steps, not diatonically. When this check box is enabled, the following two options become available:
   - **Type.** Choose the type of audio data you're transposing. Choose options based on the source material: single voice or instrument versus a group of instruments (ensemble or polyphonic), and how long you want to wait for processing to finish: better quality can take a long time if you're processing several tracks.
   - **Formant scaling.** Possible values range from -2.000 to 2.000 octaves. Formants give a voice its characteristic sound. You can use the Formant Scaling value to offset the pitch transposition you're applying. For example, if you're transposing the pitch down, you can raise the formant to try and maintain the characteristics of the sound.
6. Click **OK** when you are done.

SONAR transposes the selected events.

Shifting Events in Time

The Track view lets you move entire clips forward or backward in time by using drag and drop editing or by changing the start time of selected clips. The **Process > Slide** command is slightly more flexible—you can use it to shift individual events and markers (or selected events and markers) either forward or backward in time. This has an effect that is similar to the Time+ parameter in the Track view. However, the **Process > Slide** command modifies the time stored with each event, while the Time+ parameter simply applies a temporary change during playback.

You can also use the **Process > Slide** command to move markers located within the selection. If you have selected any locked markers, SONAR will ask whether they should slide, too.

To Shift Events in Time

1. Select the events and/or markers you want to shift.
2. Choose **Process > Slide** to display the **Slide** dialog box.
3. Check the types of event you want to slide (events and/or markers).
4. Enter the number of measures, ticks, seconds, frames or samples to slide. Enter a negative number to shift material earlier. Note that you cannot slide any event earlier than 1:01:000. For example, if the current selection starts at 2:01:000, you cannot slide events earlier by more than one measure.
5. Click **OK** when you are done.

SONAR shifts the selected events and/or markers. You can also use the **Process > Nudge** command to move events. See “Nudge” on page 312 for more information.

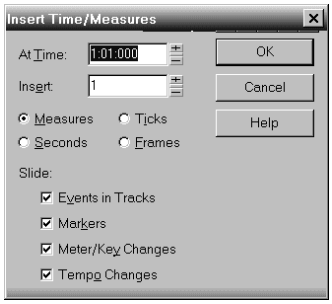
Inserting Time or Measures into a Project

The **Insert > Time/Measures** command lets you insert any number of blank measures, ticks, seconds, or frames into a project. You can insert the blank measures (or other period of time) into all tracks or into one or more selected tracks. If you insert the blank time into the entire project, all events in each track—markers, meter and key settings, and tempo changes—are shifted automatically by default. If you insert the blank time into one or more selected tracks, only the events in those tracks are shifted by default. You can always choose which types of events should be shifted.

To Insert a Single Blank Measure into a Project

1. Press CTRL+SHIFT+A or select **Edit > Select > None** to make sure that no track or time range is selected.
2. Set the Now time to the place where you want to insert the measure.
3. Choose **Insert > Time/Measures** to display the **Insert Time/Measures** dialog box.

Figure 85. *The **Insert Time/Measures** dialog*



4. Verify that the settings are correct and click **OK**.

SONAR inserts a blank measure at the Now time.

To Insert Blank Time or Measures into a Project

1. Select **Edit > Select > None** to make sure that no track or time range is selected.

2. Select the range of time you want to insert by dragging in the Time Ruler.

3. Choose **Insert > Time/Measures** to display the **Insert Time/Measures** dialog box.

4. If necessary, adjust the time at which blank space will be inserted.

5. If necessary, change the length of time to insert by entering a number and choosing the units you want from the list.

6. Choose the types of events that should be shifted automatically from the **Slide** list.

7. Click **OK** when you are done.

SONAR inserts the desired amount of blank time into the project.

To Insert Blank Time or Measures into Selected Tracks

1. Select the range of time you want to insert by dragging in the Time Ruler.

2. Select one or more tracks by CTRL-clicking on the track numbers.

3. Choose **Insert > Time/Measures** to display the **Insert Time/Measures** dialog box.

4. If necessary, adjust the time at which blank space will be inserted.

5. If necessary, change the length of time to insert by entering a number and choosing the units you want from the list.

6. Choose the types of events that should be shifted automatically from the Slide list.

7. Click **OK** when you are done.

SONAR inserts the desired amount of blank time into the project.

Deleting Measures or Time from One or More Tracks

There are two methods for deleting time or measures:

- If there is any audio or MIDI data in the area you want to delete, you can use the **Edit > Delete**

command to delete the area that you select. Portions of MIDI clips may have no data in them: they have boundaries but no dark lines inside—if that's the case, use the following method.

- If there is no data in the area you want to delete, you can simply drag any clips that come after the empty area to their proper destinations. You can also use this method if there is data in the area you want to delete—you just have to choose whether you want to replace the data in the deleted area, blend it with the data you're moving, or slide it over to make room.

To delete time when there **is** audio or MIDI data in the area you want to delete:

1. In the Track view, select the track(s) you want to delete measures or time from by doing one of the following:
   - Select a single track by clicking the track number.
   - Select multiple tracks by CTRL-clicking the track numbers.
2. Set the Snap to Grid value to the unit of time you want to delete. For example, if you want to delete whole measures, set the Snap to Grid value to a whole measure.
3. In the Clips pane, select the measures or time you want to delete by dragging in the Time Ruler located just above the first track.
4. Select **Edit > Delete**.

   The **Delete** dialog box appears.
5. Click the following check boxes:
   - **Events in Tracks**
   - **Delete Hole.** If you want the data that comes after the hole to retain its same placement in a measure, check the **Shift by Whole Measures** option.
6. Click any of the other options you want to delete.
7. Click **OK**.

SONAR deletes the time or measures you selected.

To delete time when there **is no** audio or MIDI data in the area you want to delete (or if there is data, but you like to drag and drop):

1. Set the **Snap to Grid** value to the unit of time you want to delete. For example, if you want to delete whole measures, set the **Snap to Grid** value to a whole measure.
2. In the Track view, select the clips you want to move.
3. Drag one of the selected clips to its proper destination—the **Drag and Drop Options** dialog box appears.
4. Choose options and click **OK**.

All the selected clips move by the amount that you dragged the mouse.

Stretching and Shrinking Events

The **Process > Length** and **Process > Fit to Time** commands can be used to stretch or shrink a portion of a project. **Process > Length** lets you stretch or shrink the selection by a fixed percentage

and makes the adjustment by altering the individual events. A value of 200 percent, for example, stretches the selection to twice its original length, while a value of 50 percent shrinks the selection to half its original length.

Process > Fit to Time stretches or shrinks the selection so that it ends at a specific time, expressed in either measure:beat:tick (MBT) or hours:minutes:seconds:frames (SMPTE) format. This command gives you a choice of modifying the events or modifying the underlying tempo. This is useful when you want a portion of a project to have an exact length. The start time of the selection does not change, but the end time is altered as necessary to fit the required time interval.

Both of these commands offer the option to stretch audio clips along with the MIDI information. Sometimes you don't want to adjust the speed of your audio.

Here are some examples:

- If your project contains background music and a voice-over, you might want to change the tempo of the background music without altering the voice-over
- If you're trying to modify the speed of some MIDI tracks to match a sampled drum groove, you want to leave the audio unchanged
- If your audio consists solely of sound effects, you most likely do not want to adjust them

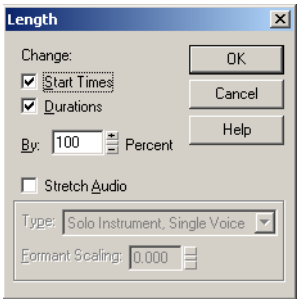
Audio can be stretched or condensed up to a factor of 4 (e.g., it can be shrunk to as little as 25 percent of its original length, or expanded to as much as 400 percent of its original length).

You can also use the **Process > Length** command to alter only the start times or the durations of notes. For example, changing the durations of notes to 50 percent of their original length can create a staccato effect.

To Stretch or Shrink Using Percentages

1. Select the events you want to change.
2. Choose **Process > Length** to display the **Length** dialog box.

Figure 86. *The **Length** dialog*



3. Choose to change the **Start Times** and/or **Durations** of selected notes by checking the boxes.
4. If you want to stretch selected audio clips, check the **Stretch Audio** box. When this check box is enabled, the following two options become available:
   - **Type.** Choose the type of audio data you're stretching. Choose options based on the source material: single voice or instrument versus a group of instruments (ensemble or polyphonic),

and how long you want to wait for processing to finish: better quality can take a long time if you're processing several tracks.

- **Formant scaling.** Possible values range from -2.000 to 2.000 octaves. Formants give a voice its characteristic sound. If you find that changing the length of your audio changes the timbre too much, you can raise or lower the formant to try and maintain the characteristics of the sound

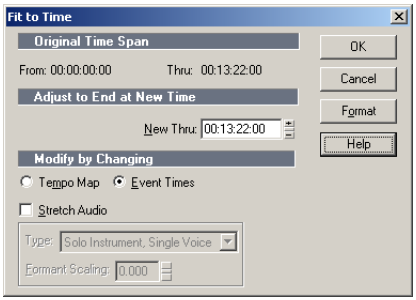
5. Use the spinners or type in the desired percent change in length.
6. Click **OK** when you are done.

SONAR modifies the length of selected events.

To Stretch or Shrink to a Specific Length

1. Select the events you want to change.
2. Choose **Process > Fit to Time** to display the **Fit to Time** dialog box.

Figure 87. *The **Fit to Time** dialog*



3. Enter the desired end time in the **New Thru** box. Click **Format** to switch between MBT and SMPTE format.
4. Choose one of the following:
   - **Tempo Map.** Choose this option if you want the tempo to change but not the duration of notes and events. For example, if your clip contains quarter notes, and you want those notes to stay quarter notes even though the elapsed time of the clip changes, choose **Tempo Map**. SONAR alters the tempo but not the events in the track.
   - **Event Times.** Choose this option if you want the tempo(s) to remain unchanged while note durations and event start times change.

Note: *This option is unavailable if your selected data includes any Groove clips.*

5. If you want to stretch selected audio clips, check the **Stretch Audio** box. The following options become available:
   - **Type** (disabled unless **Stretch Audio** is checked). Choose options based on the source material: single voice or instrument versus a group of instruments (ensemble or polyphonic),

and how long you want to wait for processing to finish: better quality can take a long time if you're processing several tracks.

- **Formant Scaling** (disabled unless **Stretch Audio** is checked). The possible values range from -2.000 to 2.000 octaves. Formants give a voice its characteristic sound. If you find that changing the length of your audio changes the timbre too much, you can raise or lower the formant to try and maintain the characteristics of the sound

6. Click **OK** when you are done.

SONAR modifies the length of selected events or changes the tempo map, as you requested.

High-resolution audio boosted by 6 dB when stretched using MPEX

When using a sample rate of 88.2 kHz or higher and performing any operation that uses MPEX time/pitch stretching, the stretched audio will be boosted by 6 dB.

Reversing Notes in a Clip

The **Process > Retrograde** command reverses the order of events in a selection. If one or more clips are selected, then the events within each clip are reversed. If several clips are selected from the same track, then the order of the clips is also reversed. You could use this command, for example, to take a scale or other long run of notes and reverse the order in which they are played. The **Process > Retrograde** command does not reverse the contents of audio clips. It only changes their start times. You can use the **Process > Audio > Reverse** command to reverse audio clips.

To Reverse the Sequence of Notes or Other Events

1. Select the notes you want to reverse.

2. Choose **Process > Retrograde**.

SONAR reverses the order of the selected events.

Adding Crescendos and Decrescendos

The **Process > Scale Velocity** command lets you create crescendos and decrescendos on those instruments that respond to MIDI velocity. Most such instruments map changes in velocity to changes in note loudness. Many synthesizer patches alter the timbre of the sound as well, so that higher velocities produce brighter, as well as louder, sounds. Changes in velocity also affect the playback of audio clips.

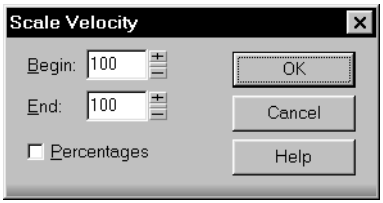
This command lets you set a starting and ending velocity for the entire time range of the selection. SONAR scales the velocity of each event to create a smooth linear change in velocity. As an option, you can enter a starting and ending percentage; existing velocity values are modified by the designated percentage.

You can also edit note velocities in the Notes pane of the Piano Roll view, which lets you draw shapes other than straight line changes. For more information, see “Adding and Editing Notes in the Piano Roll” on page 441.

To Scale Velocities

1. Select the events whose velocity data you want to change.
2. Choose **Process > Scale Velocity** to display the **Scale Velocity** dialog box.

Figure 88. *The **Scale Velocity** dialog*



3. Enter the starting and ending velocity values.
4. Check the **Percentages** box if the values are percentages.
5. Click **OK** when you are done.

SONAR alters the velocity of selected events.

Changing the Timing of a Recording

When you record a performance, there may be problems you'd like to correct. For example, the note timing may not have been as accurate as you would like. Or, you may have recorded without using a metronome and strayed from the tempo in one direction or another.

SONARhas two types of commands that you can use to modify the timing of a clip. The **Quantize** commands alter the timing of the notes in your recording so that they fit a time grid.

The grid can have fixed time intervals or intervals that are based on some existing note pattern. The **Fit to Improvisation** command, on the other hand, sets up a series of tempos that fit the material you have recorded. Here's a summary of when to use each type of command:

Use this command	To do this
Quantize	Change the timing of the notes you've recorded to fit with the tempo of a project
Fit to Improvisation	Change the tempos of a project to fit with the performance you've recorded

Table 89.

These two types of commands are discussed in the following topics.

See:

Quantizing

Fit Improvisation

Quantizing

Quantizing is one of the most important editing functions in SONAR. You use this feature to correct timing errors you make when recording from a MIDI instrument or to adjust the timing of audio clips.

Very few musicians are capable of performing in perfect time. As you play, you are likely to strike some notes slightly before or after the beat or to hold some notes slightly longer than you intended. The **Quantize** commands can help to correct these types of timing mistakes.

SONAR has two different quantize commands:

Command	How it works
Process > Quantize	Adjusts the start time and duration of selected notes so that they line up with a fixed size grid
Process > Groove Quantize	Lays a grid over an existing piece of music (the *groove pattern*), and then adjusts the start time, duration, and velocity of selected notes so that they line up with the grid

Table 90.

See also:

Drag-quantize

These commands have quite a few settings, making them very flexible and powerful. In addition, both of these commands lets you create, save, and re-use presets. This means that once you find the settings you like, you can save them and then apply them to other projects in a consistent way.

Resolution

The **resolution** indicates the spacing of the grid. You can use any value from a whole note down to a thirty-second note triplet. You can also specify resolution in clock ticks. A rule of thumb is to select a resolution that matches the smallest note in the region you are quantizing. If you are quantizing a run of sixteenth notes, use a sixteenth note as the resolution. If you are quantizing a mix of sixteenth and eighth notes, you should still use a sixteenth note. At the default timebase of 480 PPQ, 480 clock ticks is equal to quarter-note resolution.

When you use **Groove Quantize**, SONAR creates a grid at the desired resolution on top of the notes in the groove. For example, if the groove contains only quarter notes but you choose sixteenth-note resolution, SONAR builds the grid by dividing the space between each quarter note into four equal sections. In places where the groove file contains no notes, SONARbuilds a fixed grid of the desired resolution.

Offset

Normally, the resolution grid is aligned evenly with the start of measures and beats. As an option, you can shift the grid earlier or later by any desired number of clock ticks. If the resolution is a quarter note and you've set the offset to +3 ticks, then a note that is originally near 1:01:000 would be moved to 1:01:003—three ticks beyond the beat boundary.

Duration

As an option, SONAR can adjust the duration of note events so that each note ends one clock tick before the start of the nearest resolution-sized note. This ensures that the notes do not overlap, which can cause problems on some synthesizers. The adjustment may lengthen the duration of some notes and shorten the duration of others.

When you use **Groove Quantize**, the duration adjustment compares the note length to the duration of the sample note in the groove. If no duration information is available, SONAR uses the distance to the start of the groove event closest to the end of the note.

Velocity

The velocity adjustment, which is only available with the **Groove Quantize** command, adjusts the note velocity to the velocity of the corresponding notes in the groove.

Strength

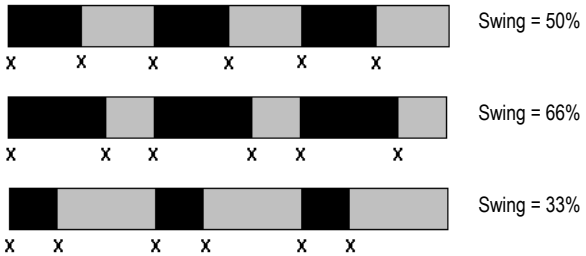
The human ear is tuned to the slight “imperfections” we hear from most musicians. If you quantize a project so that all notes are perfectly in position, it may end up sounding mechanical or rigid. To avoid this, SONAR lets you adjust the **strength** of the adjustment. A strength of 100 percent indicates that all notes are moved so that they are in perfect time, while a strength of 50 percent means that all notes are moved half-way towards the desired position. This lets you “tighten up” the timing as much as you want, without going too far.

The **Groove Quantize** command also lets you control the strength of duration and velocity adjustments. As you work with this command, you will notice that the note start time has a greater effect than the duration on the rhythmic feel of the track. For this reason, changing the starting times (time strength close to 100 percent) has a more noticeable effect than changing durations (duration strength close to 100 percent). However, there are situations in which you might want to change both to avoid ending up with notes that overlap or with unwanted rests.

Swing

Many projects do not have notes positioned on a perfectly even time grid. For example, projects with a swing feel, though they may be written entirely in eighth notes, are often played more like eighth-note triplets, with the first note extended and the second one shortened. The **Swing** option lets you distort the timing grid so each pair of notes is spaced unevenly, giving the quantized material a swing feel.

A swing value of 50 percent (the default) means that the grid points are spaced evenly. A value of 66 percent means that the time between the first and second grid points is twice as long as the time between the second and third points.



Window

When you quantize some portion of a project, you might not want to adjust notes that are very far from the grid. The **window**, or **sensitivity**, setting lets you choose how close to the resolution grid a note must be located for quantize to move it.

A window of 100 percent includes all notes and guarantees that all notes will be shifted to lie exactly on the grid. The window extends half the resolution distance before and after the quantization point. A window of 50 percent extends only a quarter of the way toward the adjacent quantization points.

When you use **Groove Quantize**, you can also perform adjustments on out-of-window events. There are four options:

Option	How it works
Do Not Change	Notes outside the window are not changed.
Quantize to Resolution	Notes outside the window are snapped to a regular grid of the specified resolution.
Move to Nearest	The window or sensitivity setting is ignored—all notes are moved toward the nearest reference event, regardless of how far off the grid they are located.
Scale Time	SONAR finds the two closest events before and after the event in question that are within the window sensitivity and adjusts any bracketed out-of-window events so that their relative timing is the same. This option can uniformly speed up, slow down, or shift out-of-window events.

Table 91.

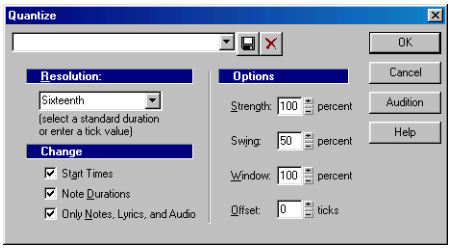
Other Settings

If you want, you can restrict the types of events that are affected by the **Quantize** commands to only notes, lyrics, and audio clips. If you choose this option, SONAR will not modify other events, like controllers.

To Use the Quantize Command

1. Select the material you want to quantize using any of the selection tools and commands.
2. Choose **Process > Quantize** to display the **Quantize** dialog box.

Figure 89. *The **Quantize** dialog*



3. Choose one of your own presets from the list, or enter the settings you want according to the table:

Setting	What to do
Resolution	Choose a note size or enter the number of clock ticks
Change	Check the event types and characteristics you want to change
Options	Enter values for Strength, Swing, Window, and Offset

Table 92.

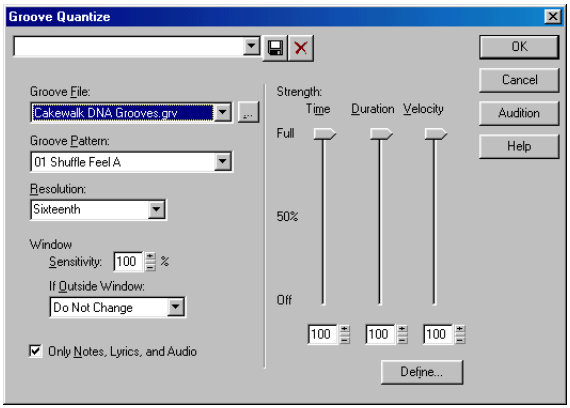
4. Click **Audition** if you want to hear how the quantization will sound; press **Stop** to stop auditioning the change.
5. Make adjustments as necessary.
6. Click **OK** when you are done.

SONAR quantizes the selected MIDI information and audio clips. You can use **Undo** to restore the material to its original state.

To Use the Groove Quantize Command

1. Select the track or clip you want to quantize, using any of the selection tools and commands.
2. Choose **Process > Groove Quantize** to display the **Groove Quantize** dialog box.

Figure 90. *The **Groove Quantize** dialog*



3. Choose a groove file from the **Groove File** field.
4. Choose a groove pattern from the **Groove Pattern** field.
5. Use the following fields to configure your pattern:

Setting	What to do
Resolution	Choose a note size or enter the number of clock ticks
Window Sensitivity	Enter the window sensitivity value (percentage)
If Outside Window	Choose what should happen to events outside the window
Only Notes, Lyrics and Audio	Check to prevent MIDI controller, aftertouch, and xRPN data from being adjusted
Stretch Audio	Check to stretch audio clips to adjust their duration
Strength	Use the sliders or enter values for Note strength, Duration strength, and Velocity strength

Table 93.

6. Click **Audition** if you want to hear how the quantization will sound; press Stop to stop auditioning the change.
7. Make adjustments as necessary.
8. Optionally, type a name in the **Preset** field (located at the top of the dialog box) and click the **Save** button to save your settings.
9. Click **OK** when you are done.

SONAR quantizes the selected MIDI information and audio clips. You can use **Undo** to restore the material to its original state. If you saved your settings, you can apply them to any pattern you want

by selecting the pattern and choosing a preset from the **Preset** field. To delete a group of settings, select the group from the **Preset** field and click the **Delete** button.

Defining a Groove

To use the groove quantize feature, you must create or choose a small snippet of music—the groove pattern—for SONAR to use as the timing and accent reference. You can use either of the following:

- A track, clip, or portion of a clip stored on the Windows clipboard
- A groove stored in a SONAR groove file

Any MIDI data that you place onto the Windows clipboard can be used as a groove pattern. With a carefully defined groove pattern, you can give an old project an entirely new feel. If you like the groove pattern you have created, you can save it to a groove file.

Groove files can store one or more groove patterns. SONAR supports two types of groove files:

- DNA™ grooves, which contain only timing information but are compatible with some other MIDI sequencer software products
- SONAR's native groove format, which stores timing, duration, and velocity information and can handle longer patterns and longer gaps between quantization points

You can add groove patterns to these files from the Windows clipboard, edit existing patterns, or delete patterns you do not want to keep. There is no limit to the number of groove patterns that can be stored in a single file. You can organize your grooves into several files or keep them all together in a single file. Groove files have an extension of .grv.

A groove pattern can be as short or long as you like. If the groove pattern is shorter than the material to be quantized, the pattern will be repeated as many times as necessary.

To Define a New Groove

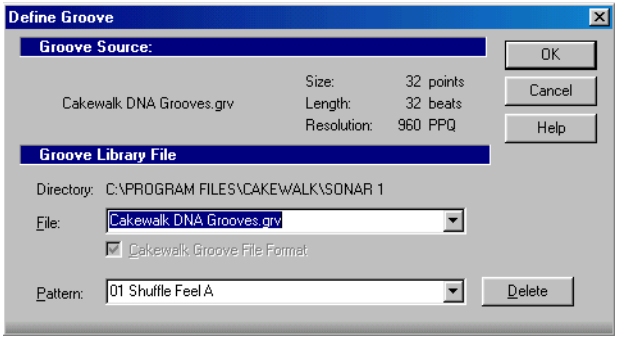
1. Select the music that defines the groove using any of the selection tools and commands.
2. Choose **Edit > Copy** to place the music onto the Windows clipboard.

You can now use the **Groove Quantize** command with the clipboard as the "Groove File."

To Save a Groove Pattern

1. Select the music that defines the groove using any of the selection tools and commands.
2. Choose **Edit > Copy** to place the music onto the Windows clipboard.
3. Choose **Process > Groove Quantize** to display the **Groove Quantize** dialog box.
4. Choose the **Clipboard** as the groove "Groove File."
5. Click the **Define** button to display the **Define Groove** dialog box.

Figure 91. *The **Define Groove** dialog*



6. Select an existing groove file, or enter the name for a new groove file.

7. Enter a pattern name, or choose an existing pattern to replace.

8. Click **OK**.

9. If you are replacing a groove, verify that you want to delete the existing version.

10. Click **Close** when you are done to return to the **Groove Quantize** dialog box.

SONAR stores the groove in the file and chooses the new groove as the current groove source.

To Copy an Existing Groove

1. Choose **Process > Groove Quantize** to display the **Groove Quantize** dialog box.

2. Choose the groove file and groove pattern you want to copy.

3. Click the **Define** button to display the **Define Groove** dialog box.

4. Select an existing groove file, or enter the name for a new groove file.

5. Enter a pattern name, or choose an existing pattern to replace.

6. Click **OK**.

7. If you are replacing a groove, verify that you want to delete the existing version.

8. Click **Close** when you are done to return to the **Groove Quantize** dialog box.

SONAR stores the groove on the Windows clipboard and chooses the new groove as the current groove source.

To Delete a Groove

1. Choose **Process > Groove Quantize** to display the **Groove Quantize** dialog box.

2. Click the **Define** button to display the **Define Groov**e dialog box.

3. Select the file containing the groove to delete.

4. Select the pattern name of the groove.

5. Click the **Delete** button, and confirm that you want to delete the groove pattern.

6. Repeat steps 3 to 5 for each groove you wish to delete.

7. Click **Close** when you are done to return to the **Groove Quantize** dialog box.

Groove Quantize Tips

Here are some tips to help you with groove quantizing:

Aligning sloppy tracks with a good one. Select the portion of the “good” track that you want to apply to the “sloppy” tracks and copy it to the Clipboard. Select the portion of the sloppy tracks you want to modify. Choose **Process > Groove Quantize**, choose the Clipboard as the groove source, and click **OK**.

Accenting beats in each measure. Create a sample measure containing note events at the desired accent points. Give the notes on the accented beats a greater velocity and the others a lesser velocity. Select the measure, copy it to the Clipboard, and then choose **Process > Groove Quantize**. Set the velocity strength as high as necessary so that the notes get accented the way you want.

Stealing that feeling. Suppose you have a dry piece that was composed and entered into SONAR with a rigid sense of timing (for example, using step recording). You’ve recorded a bass line that has exactly the off-beat rhythmic dynamic you want for the dry piece. You’d like to force your other tracks to share that feel. Copy the bass track to the Clipboard; from the **Groove Quantize** dialog box, select the Clipboard as the groove source; choose a resolution value roughly on the order of the duration of the bass notes and a window of 100 percent. SONAR aligns the melody note events with the nearest bass notes.

Synchronizing rhythm and solo tracks. If you want to preserve the unique rhythm of each track but want to synchronize them together in time, try a larger resolution value and a smaller window. For example, suppose you have one track with a highly stylized drum beat and another track containing a jazz solo with some very nice runs in it. The drum beats fall primarily on quarter notes, but the solo consists of runs of fast notes that aren’t quite sixteenth triplets. Copy the drum track to the Clipboard, and groove quantize using a quarter-note resolution and a window of perhaps 10 percent. SONAR aligns the solo notes near the quarter-note drum beats but maintains the feel of the solo during the fast runs of notes in between.

Correcting off-tempo tracks. Suppose you have both rhythm and melody tracks recorded, but the melody was played erratically. First, copy the rhythm track to the Windows clipboard. Then use groove quantize with a whole-note resolution, a window of 25 percent or less, and with the **Scale Time** option selected. The **Groove Quantize** command will synchronize the melody track with the groove source at roughly measure boundaries, while maintaining the relative timing of the notes in each measure.

Fixing a bad verse. Copy a good verse to the Clipboard. Then change the selected range to cover only the bad verse. Perform a groove quantize using the Clipboard contents as the groove source. The rhythms of the two verses then match.

Fit Improvisation

SONAR lets you record music from a MIDI controller without requiring that you use a fixed tempo. In fact, if you record without using a metronome, you are very likely to end up with a recording that does not fit onto a fixed tempo grid.

The **Process > Fit Improvisation** command lets you take a recording and create a tempo map (with measure and beat boundaries) that fits what you played. Your performance is not changed in any way, even though the note start times and durations are adjusted to fit the new tempo map. This is important if you later want to use any of SONAR's editing features that depend on a proper tempo map for best results.

To use this command, you must record a reference track containing a single clip that matches your original track or tracks but has only a single note on each beat boundary. You should make sure that the reference track has one event for every single beat, with no extra beats or missing beats. The first beat of the reference track should be at 1:01:000. You can use any editing command to adjust the reference track.

If you want, you can use other types of events as markers on the reference track, such as a sustain pedal. Remember, however, that MIDI sustain pedals generate one event when the pedal is pressed and another when it is released. So if you want to use the sustain pedal for the reference track, keep this in mind. Click down, up, down, up, for one, two, three, four.

Remember that the better the quality of your reference track, the better job the **Fit Improvisation** command can do. You want each of your reference track events to be as close as possible to the beat of the music. Note that some keyboards transmit aftertouch events when you record your reference track. These extra events will prevent **Process > Fit Improvisation** from working properly. Therefore, you should delete these events before using this command, or filter them out when recording the reference track (using **Options > Global > MIDI**).

To Fit Tempos to an Improvisation

1. Record the reference track.
2. Select the reference track.
3. If necessary, combine all clips in the reference track into a single clip using the **Edit > Bounce to Clip(s)** command.
4. Choose **Process > Fit Improvisation**.

SONAR adds tempo changes as necessary to fit the tempo grid to the reference track. When you're done, you should mute the reference track, since the reference track events are not rescaled.

Note: *If the resulting tempo grid exceeds 250 beats per minute, you will see an error message. If this happens, you can shorten the start times of each event using the **Process > Length** command, decrease the tempo to compensate for the change, and then try again.*

You can also use the **Set/Measure Beat At Now** command to align a freely played MIDI performance with the Time Ruler.

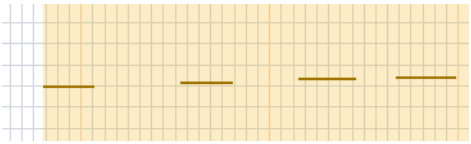
To sync the project tempo to freely played MIDI

If you have recorded a MIDI track without a metronome, you may want to align the project's tempo map with the MIDI performance. The **Set/Measure Beat At Now** command allows you to create new bar lines to fit your project. This command does not stretch audio. It works by adjusting tempo so that measure lines line up with audio transients *or* MIDI data. The tempo will ramp up/down from the previous tempo change in order to arrive at the required tempo.

To use the **Set Measure/Beat At Now** command, you need to be able to identify where you want to put the downbeats of each measure, and possibly where you want to place some other beats of the measure, if the tempo varies a lot.

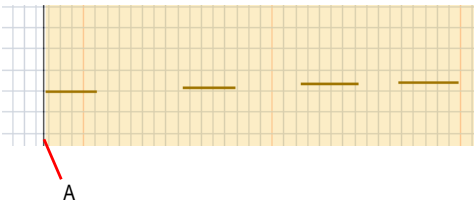
1. Display the MIDI clip that you want the measure/beats to align with in the Inline Piano Roll view: click the MIDI track's **PRV Mode** button . Zoom in enough to see the MIDI data clearly (you can also use the regular Piano Roll view).

Tip: *To make it easier to visually align note events with the Time Ruler, drag the MIDI track to the top position so it appears right below the Time Ruler.*



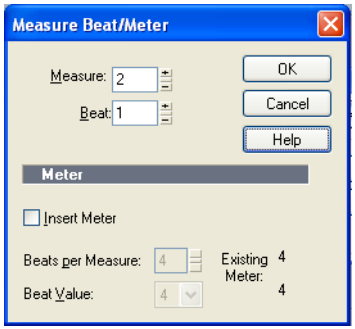
2. If you want other MIDI clips that exist in the project to retain their current M:B:T positions, select the clips, right-click one of them, and choose **Clip Lock > Lock Position** from the pop-up menu.

3. Turn off the **Snap to Grid** button, and use the PRV Select tool (it's in the **Track view** toolbar) to click the MIDI clip at the place where you want to set a measure or beat. The Now Time cursor moves to the place you clicked:



A. *Now Time cursor*

4. Press CTRL+M to open the **Measure Beat/Meter** dialog.



5. Enter the desired measure and beat values, and click **OK**.

Note: *SONAR attempts to guess the correct measure/beat, so you usually can just click **OK** to accept the default values.*

6. Move the Now Time to the next desired beat (click the start of the next note)..

Tip: *Press TAB to jump to the next note, or SHIFT+TAB to jump to the previous note.*

7. Press CTRL+M to open the **Measure Beat/Meter** dialog, enter the desired values, and click **OK**

8. Repeat steps 6 and 7 until the Time Ruler is correctly aligned.

After you align the Time Ruler to your clip, you can smooth out the tempo changes in the Tempo view, and your clip will retain its M:B:T position.

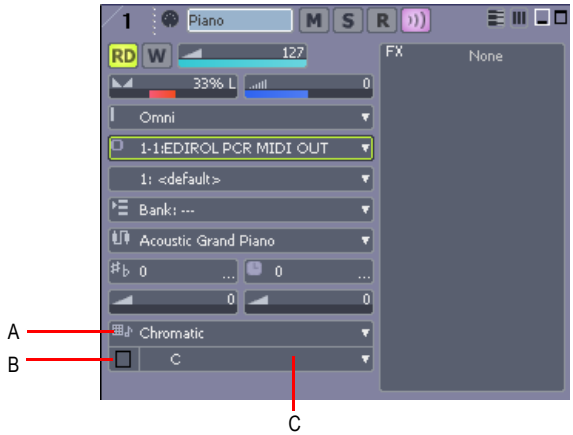
Snap to Scale

When Snap to Scale is enabled, any notes that you draw in the Piano Roll view (or Inline Piano Roll view) stay within the selected scale. Also, any notes that you move with the Select tool stay within the selected scale. When Snap to Scale is enabled, both Piano Roll views display grey rows at the pitch levels that are not in the selected scale. Also, both the Select tool and the Draw tool display a tuning fork icon when you create or modify notes to show that Snap to Scale is enabled.

You can create custom scales, modify existing ones, and choose how SONAR handles non-scale notes.

To Enable or Disable Snap to Scale for a Single Track

- In the Track view, in the track that you want to affect, click the **Scale Snap** button.



A. *Scale menu* ***B.*** *Scale Snap button* ***C.*** *Root Note menu*

Or

- In the Piano Roll view, in the Track List pane, right-click the track that you want to affect, and choose **Enable Snap to Scale** from the pop-up menu.

To Momentarily Bypass the Snap to Scale Feature

- Hold down both mouse buttons while you edit.

To Enable or Disable Snap to Scale for Multiple Tracks

1. Select the tracks in which you want to enable or disable Snap to Scale.
2. Use the **Tracks > Snap to Scale** > **Enable/Disable Snap to Scale** command.

To Choose a Root Note for a Single Track

- Do either of the following:
  - In the Track view, click the drop-down arrow in a track's **Root Note** menu, and choose a root note from the menu that appears.
  - In the Piano Roll view, right-click a track's name in the Track List pane, and choose **Root Note > (name of root note)** from the pop-up menu.

To Choose a Scale for a Single Track

- Do either or the following:
  - In the Track view, click the drop-down arrow in the track's **Scale** menu, and choose a scale from the menu that appears. The scale options in the menu contain both factory-supplied scales and ones that you create and/or edit.

- In the Piano Roll view, right-click a track's name in the Track List pane, and choose **Scales > (kind of scale) > (name of scale)** from the pop-up menu.

To Choose a Root Note and/or a Scale for Multiple Tracks

1. Select the tracks for which you want to choose root notes and/or scales.
2. To select a root note for the selected tracks, use the **Tracks > Snap to Scale** > **Root Note** command, and select the desired root note from the submenu.
3. To select a scale for the selected tracks, use the **Tracks > Snap to Scale** > **Scales** command, and select the desired scale from the submenu.

To Create a Scale

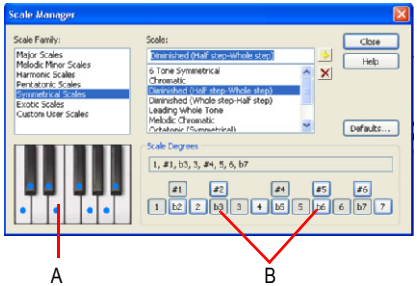
1. Open the **Scale Manager** dialog by clicking the drop-down arrow in the **Scale** menu, and choosing **Scale Manager** from the menu that appears (you can also use the **Tracks > Snap to Scale** > **Scales > Scale Manager** command, or the right-click menu in the Piano Roll view's Track List pane).
2. In the **Scale Family** field, click the scale family that you want your scale to appear under when your scale appears in the **Scale** menu.
3. Click the **Create New Scale** button .

   The Scale Manager displays a default name (New Scale "n") for the new scale, and automatically selects **C** as the root note of the scale.

Note: *All scales in the **Scale Manager** dialog use C as the root note.*

4. Edit the name of the new scale by clicking the default name (New Scale "n") where it appears at the very top of the **Scale** field, and then typing a new name for the scale.
5. Include or exclude individual notes for the scale by clicking either the keys in the keyboard display, or by clicking the scale degree buttons under the **Scale Degrees** field. Included notes appear as blue dots in the keyboard display, as depressed scale degree buttons, and as scale degrees in the **Scale Degrees** field.

Figure 92. *The **Scale Manager** dialog*

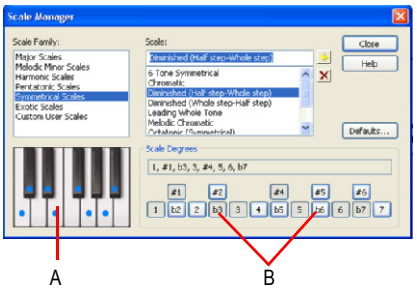


A. *Keyboard display* ***B.*** *Scale degree buttons*

6. When you're through choosing scale degrees, click the **Close** button to save your changes. If you want to delete your scale, just highlight it in the **Scale** field, and click the **Delete** button ☒.

To Edit or Delete a Scale

1. Open the **Scale Manager** dialog (click the drop-down arrow in the **Scale** menu, and choose **Scale Manager** from the menu, or use the **Track** menu command, or the right-click menu in the Track List pane of the Piano Roll view).
2. In the **Scale Family** field, click the scale family that the desired scale is filed under.
3. Select the desired scale by clicking the scale's name in the **Scale** field. If you want to delete the scale, click the **Delete** button ☒.
4. Include or exclude individual notes for the scale by clicking either the keys in the keyboard display, or by clicking the scale degree buttons under the **Scale Degrees** field. Included notes appear as blue dots in the keyboard display, as depressed scale degree buttons, and as scale degrees in the **Scale Degrees** field.



***A.** Keyboard display **B.** Scale degree buttons*

5. When you're through choosing scale degrees, click the **Close** button to save your changes.

To Restore a Scale or Scales to Factory Settings

1. Open the **Scale Manager** dialog.
2. If you want to restore a particular scale to factory settings, select it in the **Scale** field, click the **Defaults** button, and in the **Scale Defaults** dialog, select **Restore Current Scale (if factory)**, and click **OK**.
3. If you have deleted a factory-supplied scale and want to replace it with the original version, click the **Defaults** button, and in the **Scale Defaults** dialog, select **Restore Any Missing Scales**, and click **OK**.
4. If you want to restore all factory-supplied scales to factory settings, click the **Defaults** button, and in the **Scale Defaults** dialog, select **Restore All Factory Scales**, and click **OK**.

To Choose How SONAR Handles Non-scale Notes

1. Open the **Snap Settings** dialog by clicking the drop-down arrow in the **Scale** menu, and choosing **Snap Settings** from the menu that appears. You can also use the **Tracks > Snap to Scale** > **Scales > Snap Settings** command, or the right-click menu in the Track List pane of the Piano Roll view.
2. Choose one of the following options:
   - **Adjust to Next, Higher Note.** If you choose this option, SONAR moves any non-scale note that you move to the next higher note in the selected scale.
   - **Adjust to Previous, Lower Note.** If you choose this option, SONAR moves any non-scale note that you move to the previous, lower note in the selected scale.
   - **Adjust to Nearest Note.** If you choose this option, SONAR moves any non-scale note that you move to the note that is closest in pitch in the selected scale.

Searching for Events

The events in a project have many different parameters. For example, all MIDI notes have a channel, starting time, pitch, velocity, and duration. Controllers have a controller number and value. SONAR makes it simple to find, select, and modify events that have certain values for specific attributes.

Here are some of the things you can do and the commands that you would use to do them:

These capabilities can help you find problem spots or errors in a project or make systematic

Action	Command
Search through a project to find the first event that has specific attributes, and then search again to find the next such event	Go > Search, Go > Search Next
Select all the events in a project that have the specified attributes	Edit > Select > By Filter
Modify an existing selection to keep only those events that have the specified attributes	Edit > Select > By Filter

Table 94.

changes to events that have particular attributes. All of these capabilities rely on the use of an **event filter**, which lets you choose the types of events you want to work with and the range of values in which you are interested.

See:

Event Filters

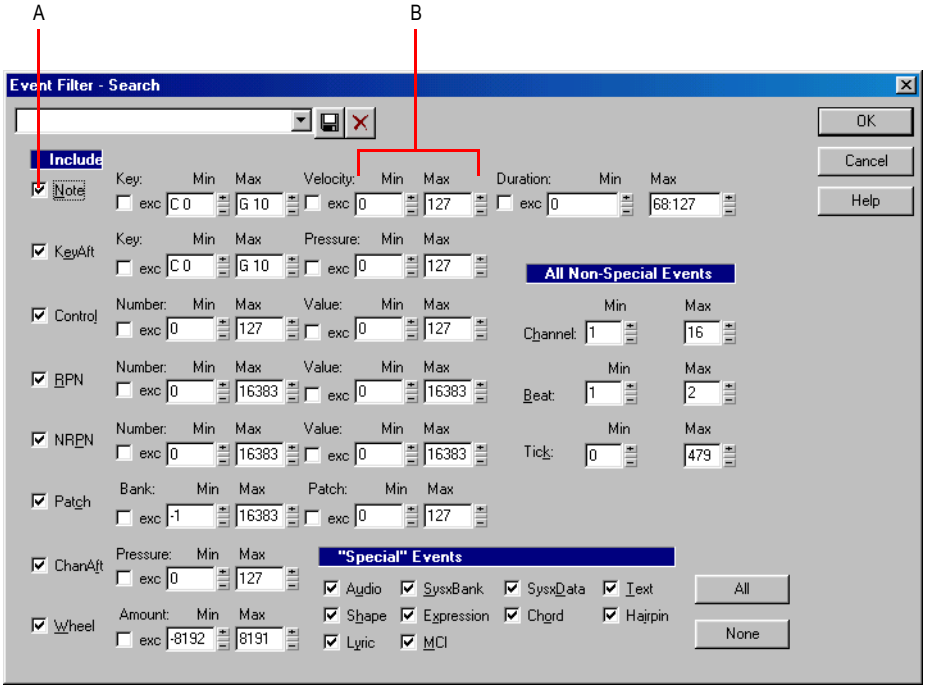
Event Filters

When you select individual clips, or select portions of clips by dragging the Time Ruler, you automatically select all the events that fall within the designated time range. Sometimes you need finer control over which events are selected. For example, you might want to:

- Select the notes that are played in a certain octave, so you can copy them to another track
- Select and boost the velocity of notes that have a velocity below a certain threshold
- Find the first patch change event on a particular track
- Select and change the duration of all notes that occur on the third beat of any measure

The **Event Filter** dialog box looks like this:

Figure 93. *The **Event Filter - Search** dialog*



***A.** Check to include this type of event **B.** Enter the range of values for the events you want*

Different types of events have different parameters, as shown in the table:

This event type	Has these parameters
Note	Pitch, velocity, and duration
Key Aftertouch	Pitch and pressure value

Table 95.

This event type	Has these parameters
Controller	Controller number and value
RPN/NRPN	RPN/NRPN number and value
Patch Change	Bank and patch numbers
Channel Aftertouch	Pressure value
Pitch Wheel	Value

Table 95.

The event filter only accepts events that meet all the specified ranges. This means that a note event must fall within the pitch range, the velocity range, and the duration range in order to be included. The event filter can also be used to accept events that occur in a range of channel numbers, beats, and clock ticks.

You can choose either to *include* or *exclude* the events that meet the specified criteria. To exclude events within the designated range and select the ones outside the designated range, check the **exc** check box for that value range.

The event filter can also be used to identify several special event types: audio, System Exclusive events, Lyrics, MCI commands, envelope shades, and a few others. You do not enter a range of values for these special events; SONAR finds all events of the types you choose.

The **All** and **None** buttons help you set up the event filter the way you want:

Click this button	To do this
All	Set the event filter to include all events. You can then modify the value ranges to narrow down your search or uncheck the types of events you want to exclude.
None	Set the event filter to *not* include any events. Starting from a blank slate, you can check off the types of events you want to find or select and enter the desired ranges of values.

Table 96.

In any place in the event filter where you would normally enter a pitch string, you can also enter the pitch by pressing a key on your MIDI keyboard. Also, you can use the question mark in place of the octave number as a wild card. This lets the event filter accept a single note, regardless of the octave. For example, the pitch string C? will match a C in any octave.

Searching for an Event

The **Go > Search** command is used to find the next event (searching forward from the Now time) that meets the criteria you lay out in an event filter. Once you have found the first such event, you can find the next event that meets the criteria using the **Go > Search Again** command (or by pressing F3).

To Search for an Event

1. Choose **Go > Search** to display the **Event Filter** dialog box.
2. Set up the event filter to find the events you want.
3. Click **OK**.

SONAR finds the next event that meets the criteria and sets the Now time to the start time of that event. To find the next occurrence, press F3 or choose **Go > Search Again.**

Selecting Events

The **Edit > Select > By Filter** command is used to refine a selection by applying an event filter to an initial selection. You can use this command any number of times to refine the selection even further. Before using this command, use any of the selection commands and tools to create an initial set of selected event. You can use the **Edit > Select > All** command to select all events in the current view.

The Track view cannot display individual selected events. As a result, the **Edit > Select > By Filter** command will not necessarily change the appearance of the Track view. SONAR applies the event filter rule, but the change is not visible. However, once you change the selection in any way (for example, by clicking on a track number or by clicking in the Time Ruler), the effects of the event filter are erased. If you want to use the filter, you must choose **Edit > Select > By Filter** again and click **OK** to use the same filter values.

Note: *The shading of a clip in the Track view indicates how many of the events in the clip are selected. If the clip is shown in solid black, all events in the clip are selected. If a portion of a clip is shown in medium gray, all the events in that time range are selected. If the clip is shown in light gray, only some of the events in the shaded time range are selected.*

To Select Events Using the Event Filter

1. First, select an initial set of tracks, clips, or events.
2. Choose **Edit > Select > By Filter** to display the **Event Filter** dialog box.
3. Set up the event filter to find the events you want.
4. Click **OK**.

SONAR searches the currently selected events and weeds out those that do not meet the requirements of the event filter.

Example: Splitting Left-Hand and Right-Hand Parts

Suppose you recorded a keyboard riff on Track 1 but want to split the left and right hands apart into separate tracks so you can edit them separately. Suppose that all the right-hand notes are above C4. Here's how to proceed:

1. Select all of Track 1 by clicking on the track number in the Track view.
2. Choose **Edit > Select > By Filter** to display the **Event Filter** dialog box.
3. Click the **None** button to clear the dialog box.

4. Check the **Note** check box, and enter a minimum value of **C4**. The maximum should already be set to **C9**.
5. Click **OK**. SONAR selects all the notes from C4 up.
6. Choose **Edit > Cut** to move the selected notes to the clipboard.
7. Choose **Edit > Paste** and paste the events to a different track.

Process > Interpolate

The **Process > Interpolate** command is an extremely flexible way of manipulating the data parameters of events. It works something like the search-and-replace function in a word processor but with scaling rather than simple replacement.

This command uses two event filters. The first event filter lets you set up your search criteria. The second event filter is used to define the replacement value ranges. When an event satisfies the search criteria, its parameters are scaled between the search ranges and the replacement ranges. This permits transposition, inversion, key signature changes, and other operations to be accomplished with this one simple command.

In the second **Event Filter** dialog box, the check boxes and value ranges for beats and ticks are ignored. Only the replacement value ranges for the selected event types are used.

The **Process > Interpolate** command understands a wild card octave number in the second event filter to mean, “replace the original note with a different note in the original octave.” Using octave wild cards for both the search and replacement event filters lets you, for instance, change all E-flats to E-naturals, preserving the octave of each note.

A few examples will illustrate some of the many uses of the **Process > Interpolate** command. These examples apply to the note event type, though the command can be used on any type of event.

Parameter	Search range	Replacement range	Effect
Pitch (key)	From C2 to C4	From C4 to C6	Transposes all notes in the search range up two octaves
Pitch	From E2 to E2	From Eb2 to Eb2	Converts all Es in octave 2 to Eb in the same octave
Pitch	From E? to E?	From Eb? to Eb?	Converts all Es in all octaves to Eb in the same octave
Pitch	From E? to E?	From E? to Eb5	Converts all Es to Eb in octave 5
Pitch	From C1 to C8	From C8 to C1	Inverts all the notes in the specified range
Velocity	From 0 to 127	From 80 to 127	Compresses the velocity values into a narrower range

Table 97.

Parameter	Search range	Replacement range	Effect
Velocity	From 0 to 127	From 127 to 0	Inverts the velocity values (makes loud notes soft, and soft notes loud)
Duration	From 0:01:00 to 0:02:000	From 0:01:000 to 0:01:000	Converts all notes that are between a quarter note and half note in length, and makes them all quarter notes
Channel	From 1 to 1	From 2 to 2	Changes all events on MIDI channel 1 to MIDI channel 2
Channel	From 1 to 16	From 4 to 4	Reassigns all events to MIDI channel 4

Table 97.

Controllers, RPNs, NRPNs, and Automation Data

SONAR projects contain a lot more information than the notes and digital audio files that are at the heart of your work. Controllers, RPNs, and NRPNs (xRPNs, for short) are special types of events used by MIDI software and hardware to control the details of how MIDI music is played. Automation data are used to adjust volume, pan, and other parameters of MIDI and audio tracks on the fly while playback is in progress.

SONAR lets you enter or edit controller, xRPN, and automation data in several ways:

- Using envelopes in the Track view
- Using the Piano Roll view and Inline Piano Roll view
- Using the **Insert > Controllers** command
- Editing controller events in the Event List view

Editing data in the Track view's Clips pane or the Piano Roll view gives you great flexibility. You can examine the controllers in graphical form and edit them even while recording or playback is in progress. This means you can loop over a portion of your project and hear any change you make on the next loop.

Note: *MIDI envelopes you create in the Piano Roll view and MIDI envelopes you create in the Track view Clips pane are actually separate envelopes, even if they control the same parameter. Both kinds of envelopes are visible in the Clips pane, and should generally not be used to control the same parameter. You can convert Piano Roll view envelopes to Track view envelopes by selecting the time range and tracks that the Piano Roll envelopes occupy, and using the* ***Edit > Convert MIDI To Shapes*** *command.*

For more information about automation, see the online help topics "Automation," and "Mixing." For more information about the Event List view, see "The Event List View" on page 512.

See also:

Adding and Editing Controllers in the Piano Roll

Controllers

Controllers are the MIDI events such as volume, sustain pedal, and pan that you use to change the sound while you're playing. You can enter controller data from within SONAR, or record them from external devices such as MIDI keyboards.

Controllers let you control the detail and character of your music. Say you’re playing a guitar sound on your synthesizer, but it sounds lifeless and dull. That’s partly because a guitar player doesn’t just play notes one after another—he often bends or slides on the strings to put emotion into his playing. You can use controllers in the same way, creating bends, volume swells, and other effects that make sounds more realistic and more fun to listen to.

Your computer can work the controllers on your electronic instrument by sending MIDI Controller messages. The MIDI specification allows for 128 different types of controllers, many of which are used for standard purposes. For example, controller 7 is normally used for volume events, and controller 10 is normally used for pan. Every controller can take on a value ranging from 0 to 127.

The Piano Roll toolbar contains several drop-down lists that let you choose the controller you want to see and edit. The contents of these lists depend on the output and channel settings and on the instrument assigned to that output and channel. Different instruments use controllers in different ways. See the online help topic: Instrument Definitions.

Note: *SONAR has automatic searchback for all continuous controller data to ensure that the correct controller values are in effect regardless of where you start playback. Suppose you start playback halfway through a project. SONAR searches back from that point to find any earlier controller values that should still apply.*

RPNs and NRPNs

RPNs (Registered Parameter Numbers) and NRPNs (Non-Registered Parameter Numbers) are similar to controllers, except that both the parameter number and data value can be any number between 0 and 16,383.

When RPNs and NRPNs are transmitted via MIDI or stored in a standard MIDI file, they are converted into four separate controller messages. SONAR detects incoming xRPN messages from MIDI inputs or files and reassembles them into a single RPN or NRPN event. This provides the convenience of single RPN or NRPN events in SONAR plus compatibility with existing files,

equipment, and software. The following table shows the controller numbers SONAR uses for RPN and NRPN events:

Message	Parameter number MSB Controller	Parameter number LSB Controller	Data value MSB Controller	Data value LSB Controller
RPN	101	100	6	38
NRPN	99	98	6	38

Table 98.

Automation Data

The Track and Console views allow you to record automation data that define changes in volume, pan and many other parameters throughout a project. The automation data can include step changes recorded using the **Snapshot** button or continuous changes recorded while using the knobs, faders, and buttons.

The Track view allows you to create envelopes to adjust several parameters. For more about automation, see the online help topic “Automation.”

Velocity, Pitch Wheel, and Aftertouch

SONAR lets you display and edit several other types of data the same way you do controller data. These data include:

- MIDI pitch wheel or pitch-bend messages
- MIDI channel aftertouch (ChanAft) values
- MIDI key aftertouch (KeyAft) values

Remember that note velocity is an attribute of each note and not a completely separate event. You cannot add or remove velocity events in the Notes pane, but you can use the draw tool to adjust the velocity values for existing notes. You can also edit velocities with the **Edit > Scale Velocities** command. For more information, see “Adding Crescendos and Decrescendos” on page 489. You can edit individual note velocities in the **Note Properties** dialog box, described in “Changing Note Properties” on page 754.

The Event List View

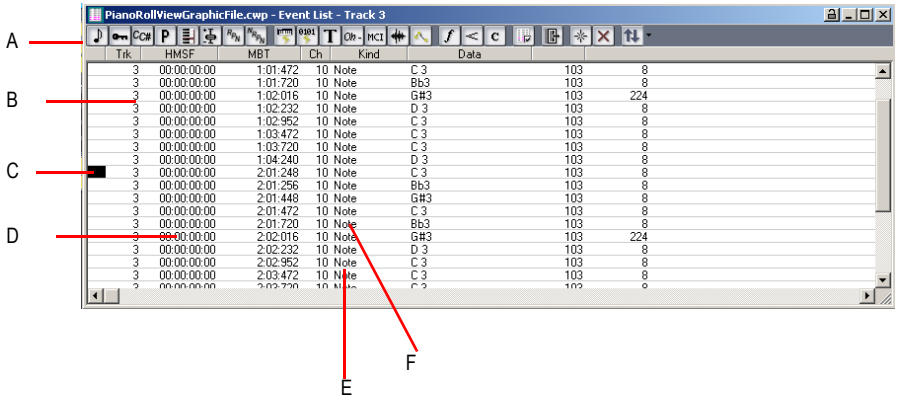
The Event List view shows events in a list format. You can insert, delete, or modify any kind of event, including notes, pitch-wheel data, velocity, MIDI controllers, patch changes, Wave files, lyrics, text strings, MCI commands, System Exclusive meta-events, and more.

There are three ways to open the Event List view:

- Select one or more tracks and choose **Views > Event List**

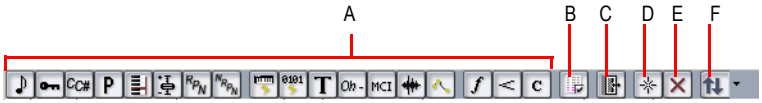
- Select one or more tracks and click in the **Views** toolbar
- Right-click a clip in the Clips pane and choose **Views > Event List** from the pop-up menu

Figure 94. *The Event List view*



A. *Toolbar* ***B.*** *Track* ***C.*** *This event is selected* ***D.*** *Event time* ***E.*** *Event channel* ***F.*** *Event type*

Figure 95. *The* ***Event List*** *toolbar*



A. *Hide different kinds of events buttons* ***B.*** *Event Manager* ***C.*** *Show events outside slip edit boundary* ***D.*** *Insert* ***E.*** *Delete* ***F.*** *Pick Tracks*

The events in the selected tracks are listed one per line, from top to bottom. As you move the highlight through the event list, SONAR updates the Now marker (time display). During playback, the event list scrolls to display the events at the current time. The current event is centered in the Event List during playback, and the highlight is on the correct event when playback stops. Any time you change the Now time, the event list is updated and the highlight is moved to the event that will be played next.

When the Event List view includes more than one track, events are mixed together in chronological order. For example, if you select tracks 1 and 3 when you open the Event List view, you see a single list of intermingled events from tracks 1 and 3. You can have any number of Event List views, each containing any number of tracks, open at the same time. You can change the tracks shown in the Event List view by clicking the button and choosing the tracks you want.

See:

Event List Buttons and Overview

Event List Display Filter

Event List Buttons and Overview

Each line of the Event List view shows a single event along with all of its parameters. There are many different types of events. All share the following parameters:

- The time of the event, displayed in SMPTE (hours:minutes:seconds:frames) format
- The time of the event, displayed in MBT (measures:beats:ticks) format
- The event type, or **kind** of event

The remaining parameters vary by event type. You can hide or show each kind of event by clicking its button in the **Event List** toolbar or by checking its check box in the **Event Manager** dialog box. Here is a summary listing of the parameters that apply to each type of event.

Short name and display button	Type of event	Parameters
Note	MIDI note	Pitch (MIDI key number), velocity (0-127), duration (beats:ticks or simply ticks), MIDI channel (1-16)
KeyAft	MIDI key aftertouch	Pitch (MIDI key number), pressure amount (0-127), MIDI channel (1-16)
Control	MIDI controller change	Controller number (0-127), controller value (0-127), MIDI channel (1-16)
Patch	MIDI patch change	Bank select method, bank number, number or name of the patch, MIDI channel (1-16)
ChanAft	MIDI channel aftertouch	Pressure amount (0-127), MIDI channel (1-16)
Wheel	MIDI pitch wheel position	Wheel position (-8192 to 8191, where the center is 0)
RPN	Registered Parameter Number	Parameter number (0-16383), parameter value (0-16383), MIDI channel (1-16)
NRPN	Non-registered Parameter Number	Parameter number (0-16383), parameter value (0-16383), MIDI channel (1-16)
Sysx Bank	System Exclusive data bank	Sysx bank number (0-8191)
Sysx Data	System Exclusive data message	Sysx message up to 255 bytes long
Text	Text	Text

Table 99.

Short name and display button	Type of event	Parameters
Lyric	Lyric	Text (a single word or syllable)
MCIcmd	Windows Media Control Interface (MCI) command	MCI command text
Wave Audio	Digital audio wave	Name, velocity (0-127), and number of samples
Shape Events	Automation graph segments made up of a solid line between two nodes	Change in values, kind of shape, and length in MBT format. **Note:** Shape events cannot be edited, only deleted.
Expression	Staff view expression marking	Text of expression mark
Hairpin	Staff view dynamics marking	Direction (crescendo or diminuendo) and duration
Chord	Staff view chord symbol	The name of the chord
Event List Manager	Opens **Event Manager** dialog box	Shows or hides various kinds of events
Events Out of Slip Edit Boundaries	Events that are outside of slip-edited boundaries	Note, audio, or controller data
Insert Event	Inserts a copy of highlighted event—double-click the event's **Kind** parameter to change it to the kind of event you want	Whatever the highlighted event's parameters are
Delete Event	Deletes the highlighted event	Whatever the highlighted event's parameters are
Pick Tracks and Show Next/Previous Track	Left side of button opens **Pick Tracks** dialog; right side of button opens **Next Track/Previous Track** drop-down menu	Allows you to pick what tracks the Event List shows events for

Table 99.

Here are some notes about events and their parameters:

- The Channel parameter in the Track view can force an event to play on a different MIDI channel from the one shown in the event list.
- Pedal marks entered in the Staff view are displayed in the Event List view as controller events

(64).

- Many keyboards do not support key aftertouch and channel aftertouch. Consult the *User's Guide* for your keyboard for more information.
- When you double-click the value of a patch event, SONAR displays the **Bank/Patch Change** dialog box. For more information about bank and patch changes, "To insert a bank/patch change" on page 208.
- See "System Exclusive Data" on page 805, for more information about System Exclusive banks.
- See "Editing Audio" on page 545, for more information about audio clips.

Selecting Events in the Event List View

The following table describes how to select events in the Event List view:

To do this	Do this
Select a single event	Click on the event.
Select multiple, contiguous events	Select the first event, hold the SHIFT key down and click the last event.
Select multiple, contiguous events using the arrow keys	Hold down the CTRL and SHIFT keys while pressing the up or down arrows.
Select multiple, non-contiguous events	Select an event, hold the CTRL key while selecting additional events

Table 100.

Event List Display Filter

You can configure the Event List view to display different event types, as described in the following table:

To do this	Do this
Hide events of a certain type	Select the event type in the toolbar, in the Event List view pop-up menu, or in the Event Manager. To display a type of event, deselect it.
Open the Event Manager	Choose **Event Manager** from the pop-up menu, or click .
Show or hide slip-edited events	As a default, if you slip edit the boundaries of a clip, all events outside those boundaries are hidden in the Event List view. If you want to see these events, click this button . **Note:** You can not edit slip-edited material in the Event List view.

Table 101.

Editing Events and Event Parameters

The Event List view lets you add, delete, or change events one by one. You can also print the list of events or audition the events one at a time to see how they sound.

You can change the parameters of any event by moving the rectangular highlight to the cell you want to change and doing one of the following:

- Type a new value and then press ENTER.
- Press the - and + keys on the numeric keypad to decrease or increase values by a small amount.
- Press the [and] keys to decrease or increase values by a larger amount.
- Click and hold the mouse button, and then drag the mouse up or down to change the value by a small amount.
- Click and hold both mouse buttons, and then drag the mouse up or down to change the value by a larger amount.
- Double-click a cell, and then enter or choose a new value.

If you change the time of an event, it may also change its position in the event list. The Event List view follows that event to its new location.

If you try to change the event type (kind of event), SONAR lets you choose the kind of event you want from a dialog box. When you change one kind of MIDI event into another kind of MIDI event, SONAR preserves the parameters as fully as possible.

Note: *Shape events cannot be edited, only deleted.*

To Insert a New Event

1. Move the highlight (use the mouse or arrow keys) to the point at which you want to insert an event.
2. Press INSERT, or click . SONAR makes a copy of the highlighted event.
3. Change the event to the kind of event you need by double-clicking the name of the event that's listed in the Kind column. The **Kind of Event** dialog box appears.
4. Choose what kind of event you want and click **OK**. SONAR changes the highlighted event to the kind you chose.
5. Edit the event time and other parameter values as required.

If the Event List is initially empty, pressing the INSERT key creates a default note event.

To Delete an Event

1. Move the highlight (use the mouse or arrow keys) to the event you want to delete.
2. Press DELETE, or click .

SONAR deletes the event.

To Delete Several Events

1. Select the events you want to delete by clicking, dragging, or CTRL or SHIFT-clicking in the first column of the Event List view.
2. Choose **Edit > Cut**.

SONAR deletes the selected events.

To Print the Event List

1. Choose **File > Print Preview** to display a preview of the printed event listing.
2. Click the **Zoom** button (or just click the page) to zoom in and out, and use the PAGE UP and PAGE DOWN to review the pages.
3. Click **Print** to print the event list, or click **Close** to close the Preview window without printing.

To Play Events Step by Step

1. Using the keyboard, hold the CTRL and SHIFT keys and press the SPACEBAR to play the currently highlighted event. If the event is a note event, it plays until you release the SPACEBAR.
2. When you release the SPACEBAR, the highlight moves to the next event.
3. Continue pressing the SPACEBAR to play events one by one.
4. To edit the last event you heard, release the SHIFT key.

The highlight moves back to the last event you heard, so you can make changes. You can also audition a single event using the mouse. CTRL-click on an event to play the event. If the event is a note or Wave event, it plays until you release the mouse button.

Additional Event Information

Note Events. There are three values parameters for note events:

- A pitch, which represents the MIDI key number as a note and an octave.
- A velocity (0–127), which is how fast the key is struck. Some keyboards don't transmit or receive velocity messages.
- A duration, which is how long the note lasts. This amount is shown in beats:ticks format. (If the note lasts less then one beat, then only the number of ticks is shown.)

Note names may also represent percussion instruments, and lists of such note names are sometimes associated with a particular percussion patch. The note C3, for example, may really be "kick drum." If a patch is associated with a percussion note name list, the name of the percussion instrument appears in Event List view rather than a note and an octave from the piano keyboard.

SONAR uses the following notation to display flats and sharps in this and other views:

Character	Meaning
b	flat
#	sharp
"	double flat
x	double sharp

Table 102.

MCIcmd Events

Media Control Interface (MCI) commands are special events that let you control other multimedia hardware and software (e.g., CD-ROM drives, laserdiscs, sound cards, animations, video) during playback. MCI commands are part of the multimedia extensions in Windows. MCIcmd events have one parameter—the command line text of the MCI command. Here are some examples:

This command	Does this
`PLAY C:\`Train.wav	Plays the Wave file `Train.wav`
`PLAY C:\Videos\Vacation.avi`	Plays the video file `Vacation.avi` from the VIDEOS folder
`SET CDAUDIO TIME FORMAT TMSF PLAY CDAUDIO 3`	Plays a specific track from the CD drive
`STOP CDAUDIO`	Stops the CD from playing

Table 103.

While MCI commands can be used to play Wave files, these files are played at their normal speed and are not necessarily synchronized with MIDI or other audio data. By contrast, Wave audio clips are played in lock-step synchronization with MIDI and other audio data.

For complete documentation of Windows MCI commands, search for MCI on the Microsoft World Wide Web site (www.microsoft.com).

MIDI Effects (MIDI Plug-ins)

SONAR provides the ability to use plug-in MIDI effects. Using plug-in effects is similar to using the MIDI processing commands off-line. The overall procedure is as follows:

- Select the MIDI data to be affected.
- Choose the effect you want from the **Process > MIDI Effects** menu or from the pop-up menu's **MIDI Effects** menu.

- Set effect parameters (or select a preset if you've made one for this purpose).
- Click **Audition** to preview the music with the effect applied.
- Click **OK** to apply the effect to the selected MIDI data.

If you're not happy with the result, choose **Edit > Undo** before doing any additional work.

MIDI effects can be applied to whole or partial clips. For example, you can apply an echo to just one note.

MIDI effects can also be applied to MIDI tracks in real time (during playback) in the Track and Console views. Unlike any of the processing described so far, using effects in real time is non-destructive. This means that the MIDI data itself is not modified.

Note: *Offline effects may cause your MIDI events to grow in size. For example, when you apply echo, the clip may need to grow to accommodate the tail end of the echo.*

See:

MIDI Effects Presets

Quantizing

Adding Echo/Delay

Filtering Events

Adding Arpeggio

Analyzing Chords

Changing Velocities with the Velocity Effect

Transposing MIDI Notes with the Transpose MIDI Effect

MIDI Effects Presets

The MIDI effects dialogs support the use of presets. For information about presets, see "Presets and Property Pages" on page 625.

Quantizing

Figure 96. *MFX Quantize*

The **Quantize** command moves events to (or towards) an evenly-spaced timing grid. The Quantize effect is similar to the **Process > MIDI Effects > Cakewalk FX > Quantize** command. For more information, see “Other Settings” on page 493.

The quantize effect parameters are as follows:

Parameter/Option	Meaning
Start Times	Quantize event start times.
Durations	Quantize event durations.
Resolution	The spacing of the grid used for quantization.
Tuplet	Specify the resolution as a tuplet note, for example 5 notes in the time of 4.
Strength (%)	The strength of the adjustments. 100% indicates perfect quantization; otherwise, the command moves the notes only part way towards the desired position.
Swing (%)	The distortion of timing used to produce a swing feel. A value of 50% indicates a straight rendition; negative and positive values produce distortion of the timing grid. For more information about swing, see “Swing” on page 492.
Window (%)	The sensitivity of quantization. A value of 100% causes all notes to be quantized. Lower values cause the effect not to quantize notes that are far from the timing grid.
Offset (Ticks)	The offset of the quantization grid from the start of measure boundaries. A value of 0 indicates perfect alignment. Values less than 0 shift the grid points earlier; values greater than 0 shift the grid later.
Randomize	Causes a random time offset to be added to or subtracted from each new event time. You must also specify the maximum offset, as a percentage of the quantization resolution.

Table 104.

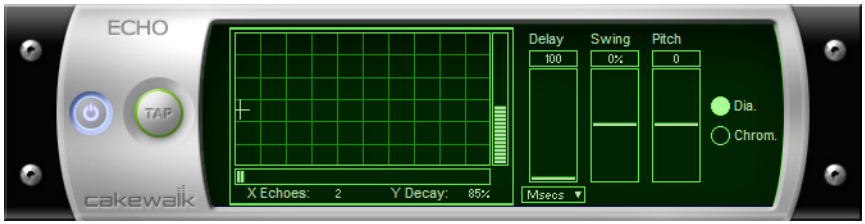
To Quantize MIDI Data

1. Select the data to be affected.
2. Choose **Process-Quantize** to open the **Quantize** dialog box.
3. Set the quantization parameters, as described in the table above.
4. Click **OK**.

SONAR applies the specified quantization to the selected data.

Adding Echo/Delay

Figure 97. *MFX Echo/Delay*



The **Echo Delay** command creates a series of repeating echoes of each note. The echo notes can decrease or increase in velocity, and can be transposed from the original by regular intervals.

The parameters used to specify the echo/delay effect are as follows:

Parameter/Option	Meaning
Decay (%)	The reduction in velocity with each echo. A value greater than 100% indicates an increase in velocity.
No. Echoes	The number of echo notes for each original note. If the velocity reaches 0 before the specified number of echoes, the effect generates no more echo notes.
Delay	The delay between successive echo notes.
Delay Units	The units used to specify the delay. You may specify delay in ticks, in milliseconds, or as a note duration.
Tap	The delay you specify by tapping the control with the mouse.
Swing (%)	The distortion of timing used to produce a swing feel to the echo. A value of 0% indicates a straight rendition; negative and positive values produce distortion of the timing grid. For more information about swing, see “Swing” on page 492.
Pitch (Steps)	The number of steps to transpose each echo note from the previous. You can specify a Diatonic or Chromatic scale.

Table 105.

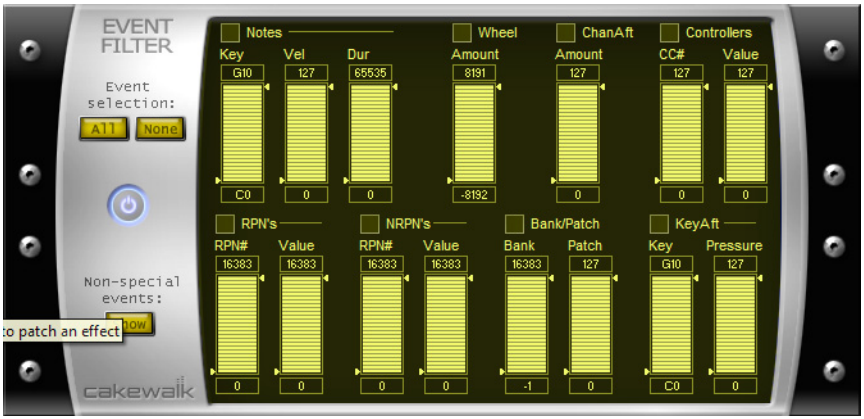
To Apply Echo/Delay to MIDI Data

1. Select the data to be affected.
2. Choose **MIDI Effects > Cakewalk FX > Echo Delay** from the **Process** menu or from the pop-up menu to open the **Echo Delay** dialog box.
3. Set the echo/delay parameters, as described in the table above.
4. Click **OK**.

SONAR applies the specified echo effect to the selected data.

Filtering Events

Figure 98. *MFX Event Filter*



The **Event Filter** command lets you remove events from the MIDI data, keeping or passing through only those events that you specify. The Event Filter effect works almost identically to the event filter used by the **Edit > Select > By Filter** command. For more information, see “Event Filters” on page 505.

To Apply an Event Filter to MIDI Data

1. Select the data to be affected.
2. Choose **MIDI Effects > Cakewalk > FX MIDI Event Filter** from the **Process** menu or from the pop-up menu to open the **Event Filter** dialog box.
3. Set the event filter parameters.
4. Click **OK**.

SONAR applies the specified event filter to the selected data, removing all those events that do not meet the filter criteria.

Adding Arpeggio

Figure 99. *MFX Arpeggiator*

The **Arpeggiator** command applies an arpeggio to its input and plays it back in real time. You can make it arpeggiate with a swing feel, or straight and staccato or legato, vary its speed and direction, and specify its range.

The parameters used to specify the arpeggiator effect are as follows:

Parameter/Option	Meaning
Swing (%)	The distortion of timing used to produce a swing feel. A value of 0% indicates a straight rendition; negative and positive values produce distortion of the timing grid. For more information about swing, see “Swing” on page 492.
Rate	The delay between successive notes.
Units	The units used to specify the delay. You may specify delay in ticks, in milliseconds, or as a note duration.
Legato (%)	The smoothness of the notes of the arpeggio. 1 percent plays each notes and releases it instantly. 99 percent plays each note up to the start of the next note.
Path	The direction of the arpeggio. Options are *Up, Up* (arpeggios go up), *Up, Down* (arpeggios go up, then down), *Down, Down* (arpeggios go down), *Down, Up* (arpeggios go down, then up).
Play thru	The disposition of the notes you play to specify the arpeggio. Checked plays the original notes. Unchecked filters out the original notes.
Specify output range	The range over which the arpeggio plays. Checked specifies that the arpeggiator repeats notes at each octave over the entire specified range. Unchecked specifies that the arpeggiator includes only the notes you actually play.
Lowest note	The MIDI number of the lowest note of the arpeggio. Numbers run from 0 to 127.
Span (Notes)	The number of half-steps in the range. Numbers run from 12 to 127.
Use chord control	The chord you specify. Checked specifies that the arpeggiator infers the chord from the notes played in the range. It identifies the chord in the Chord recognized box and uses it to play arpeggios for notes outside the range.
Lowest note	The MIDI number of the lowest note the arpeggiator uses for chord recognition (0 to 126).
Span (Notes)	The number of half-steps in the range. Numbers run from 1 to 127.
Chord recognized	The chord the Arpeggiator recognizes and plays.

Table 106.

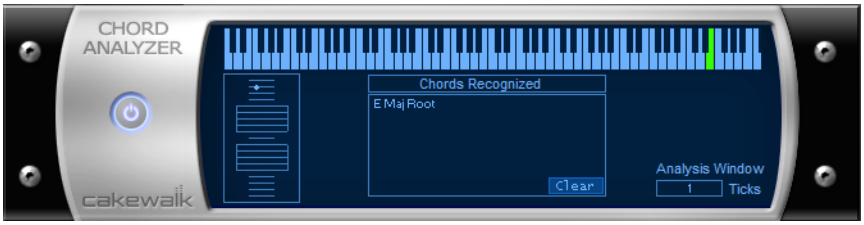
To Apply the Arpeggiator to MIDI Data

1. Select the data to be affected.
2. Choose **MIDI Effects > Cakewalk FX > Arpeggiator** from the **Process** menu or from the pop-up menu to open the **Arpeggiator** dialog box.
3. Set the arpeggiator parameters, as described in the table above.
4. Click **OK**.

SONAR applies the specified arpeggio effect to the selected data.

Analyzing Chords

Figure 100. *MFX Chord Analyzer*



The **Chord Analyzer** command analyzes chords. You select the notes to be analyzed in one of SONAR's windows, then open the Chord analyzer and press the **Audition** button. The chord appears on the MIDI display and the staff, and its name with possible alternatives appears in the Chords recognized box.

You can play the notes on your MIDI input device and have the Chord Analyzer identify the chords in real time. You do not have to set to playback.

You can open the Chord Analyzer in the Track and Console views, press Playback and have the Chord Analyzer identify the chords in real time.

The Chord Analyzer has a single parameter:

Parameter/Option	Meaning
Analysis window	The frequency with which the Chord Analyzer samples the chord. Lower numbers (smaller intervals) are more accurate, but require more computation.

Table 107.

To Analyze a Chord

1. Select the notes to be analyzed.
2. Choose **MIDI Effects > Cakewalk FX > Chord Analyzer** from the **Process** menu or from the pop-up menu to open the **Transpose** dialog box.
3. Click the **Audition** key.

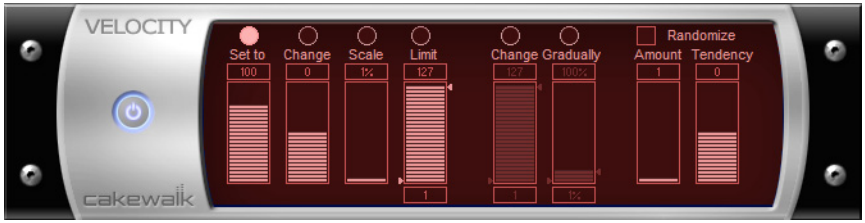
SONAR displays the chord and its name.

To clear the display, press the **Clear** button.

Note: *When analyzing chords you may see chords being displayed before you hear them. You can reduce the amount of time these chords appear ahead of playback. To do so, open the **MIDI** tab in the **Global Options** dialog (**Options > Global**) and enter a lower value in the **Prepare Using "N" Milliseconds Buffer** option. Excessively low values may cause glitches during playback, so it is best to gradually reduce the value in this option until the desired result is achieved.*

Changing Velocities with the Velocity Effect

Figure 101. *MFX Velocity*



The **Velocity** effect lets you adjust velocities of MIDI notes. You can set velocity values, set scale values, add specific or random offsets, create smooth transitions, and limit the velocity range.

The velocity effect options are as follows:

Parameter/Option	Meaning
Set all velocities to X	Sets all velocities to the specified value.
Change velocities by X	Adds a specified increment to all velocities.
Scale velocities to X% of their current value	Multiplies all velocities by a constant factor.
Change gradually from X to Y	Creates a smooth velocity change across the selection.
Change gradually from X% to Y%	Scales velocities by a gradually changing factor.
Limit range from X to Y	Brings all velocities into the specified range.

Table 108.

Parameter/Option	Meaning
Randomize by +/- X	Adds or subtracts a random offset from each velocity. You must also specify the maximum offset. You can select this option in addition to one of the previous options.
Tendency	The tendency of the random offset to be lower or higher, on a scale from -10 to 10.

Table 108.

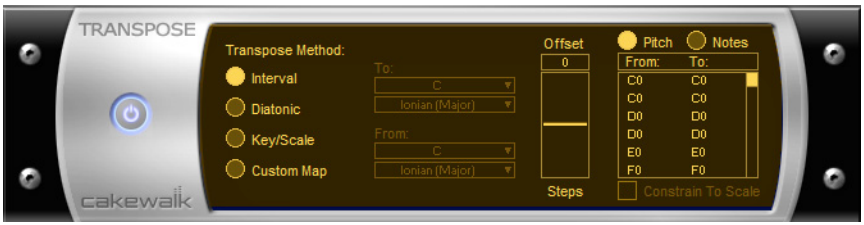
To Change Note Velocities

1. Select the data to be affected.
2. Choose **MIDI Effects > Cakewalk FX > Velocity** from the **Process** menu or from the pop-up menu to open the **Velocity** dialog box.
3. Select options as described in the table above.
4. Click **OK**.

SONAR changes note velocities according to the specified options.

Transposing MIDI Notes with the Transpose MIDI Effect

Figure 102. *MFX Transpose*



The **Process > MIDI Effects > Cakewalk FX > Transpose** command is a flexible transposition feature. You can perform simple chromatic or diatonic transpositions, transpose from one key to another, or define your own custom transposition.

The transpose options are as follows:

Parameter/Option	Meaning
Interval	Specifies chromatic transposition. Transposes notes by the specified number of steps.
Diatonic	Specifies diatonic transposition. Transposes notes by the specified number of scale steps within the specified scale.
Key/Scale	Specifies transposition from one scale and key to another.

Table 109.

Parameter/Option	Meaning
Custom Map	Specifies custom transposition as defined by the map.
Offset	For Interval transposition, the number of steps for the transposition. For Diatonic Transposition, the number of scale degrees for the transposition. For Key/Scale transposition, a number of octaves added to each note after transposition.
Key	For Diatonic transposition, the key in which the transposition is made.
From, To	For Key/Scale transposition, the starting and ending key and scale.
Transposition Map	A table of pitch mappings for the specified transposition. You can select to show the pitches as note names or as note numbers. For Diatonic and Key/Scale transpositions, pitches not in the starting (from) key are indented. To change a pitch mapping, click on a **From** pitch and select a **To** pitch with the pop-up slider. If you change a pitch mapping, the transposition type is automatically set to **Custom Map**.
Constrain to Scale	For Diatonic and Key/Scale transpositions, forces all non-scale notes to be transposed to the nearest appropriate scale tone.

Table 109.

To Transpose MIDI Data

1. Select the data to be affected.
2. Choose **MIDI Effects > Cakewalk FX > Transpose** from the **Process** menu or from the pop-up menu to open the **Transpose** dialog box.
3. Set the transposition options as described in the table above.
4. Click **OK**.

SONAR transposes the selected data according to the options you specified.

Drum Maps and the Drum Grid Pane

There are several panes in the Piano Roll view designed for use with MIDI drum tracks: the Note Map pane which lists the original pitch values and the mapped values for each note, and the Drum Grid pane which displays your drum tracks (any track assigned to a drum map) and where you can edit your drum tracks.

The Basics

The Note Map Pane

The Drum Grid Pane

Creating and Editing a Drum Map

Using Drum Maps

The Basics

Drum maps are virtual MIDI ports that you create and edit. Drum maps give you total control over all the MIDI drum sounds you have access to either in the form of software (soft synths) or hardware (external MIDI sound modules).

Drum maps in SONAR allow you to do the following:

- Re-map note events, for example, map a General MIDI drum kit to a non-General MIDI drum kit.
- Create a custom drum kit from several MIDI devices (soft synths, hardware synths) and play it from a single MIDI track if desired.
- Use the Drum Grid Editor to show only the drum sounds you want to see.
- Sort drum sounds to suit your needs.
- Mute and solo individual drum sounds

See:

Assigning a MIDI Track to a Drum Map

Opening a Drum Map

To Preview a Mapped Sound

Creating and Editing a Drum Map

You can create a drum map by either modifying an existing drum map or by creating a new drum map.

See:

The Drum Map Manager

The Map Properties Dialog

Saving a Drum Map

The Drum Map Manager

In the **Drum Map Manager** dialog you can create and save drum maps for use with hardware or software synths and samplers. You can customize drum maps to select specific sounds on any of your available sound sources.

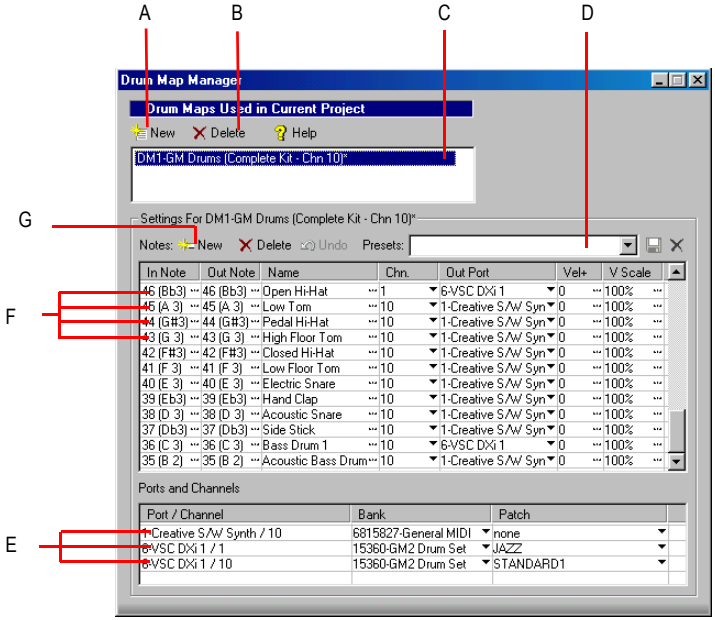
To Open the Drum Map Manager Dialog

You can open the Drum Map manager in one of the following ways:

- Select **Options-Drum Map Manager** from the menu

  Or
- Click on the **Output** field of your MIDI drum track and select **Drum Map Manager**

Figure 103. *The Drum Map Manager*



A. *New Drum Map button* ***B.*** *Delete Drum Map button* ***C.*** *Current Drum Map* ***D.*** *Preset list* ***E.*** *Port/Channel pairs* ***F.*** *Rows* ***G.*** *Click to create a new row*

Drum Maps Used in Current Project

This field displays all the currently available drum maps. click the **New** button New to create a new drum map and **Delete** Delete to delete a drum map. Select a drum map to display the drum mappings in the Drum Map Manager. All drum maps in this field are saved with the current project.

Presets

Presets can be used to populate the fields in the Drum Map Manager. This field is also used to save new drum maps by entering a name in the field and clicking the **Save** button.

Settings

The **Settings** section is where you map the following for each **In Note** (source):

- **In Note.** The source MIDI note value.
- **Out Note.** The MIDI note value that plays on the destination sound source.
- **Name.** The user-defined name for the row.
- **Chn.** The channel on which the note is transmitted.
- **Out Port.** The hardware output port or software virtual output port to which you are sending the

note.

- **Vel+.** Apply a velocity offset setting to an individual mapped pitch.
- **V Scale.** The V Scale value sets a level of compression or expansion. A value below 100% is compression. A value above 100% is expansion. The Vel+ setting allows for gain make-up.

Ports and Channels

This section lists each unique **Port** and **Channel** pairing. This allows you to make quick global changes that **Port** and **Channel** pairing's **Bank** and **Patch** settings.

See:

Working in the Drum Map Manager

Working in the Drum Map Manager

The following table lists several ways of editing settings in the Drum Map Manager.

To do this	Do this
Audition a row	Select the row and press SHIFT+SPACEBAR
Sort rows	Drag and drop a row to a new location
Select multiple rows	Click a row, hold down the CTRL key while selecting additional rows
Change the Output Port for all rows with the same Channel/Port	Press CTRL+SHIFT while changing the port.
Undo an edit	Press the **Undo** button Undo

Table 110.

See:

The Drum Map Manager

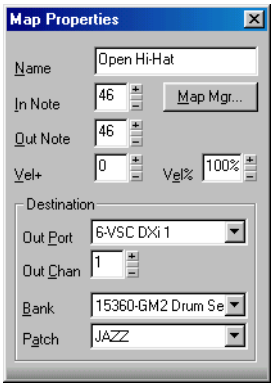
Creating and Editing a Drum Map

Working in the Drum Map Manager

The Map Properties Dialog

The **Map Properties** dialog lets you change all the settings for an individual mapped note in your drum map. The settings in the **Map Properties** dialog are the same as a single row in the Drum Map Manager. If you want to edit more than one drum note pitch mapping, click the **Map Mgr** button to open the **Drum Map Manager** dialog.

Figure 104. *The **Map Properties** dialog*



To Open the Map Properties Dialog

- Double-click on a row in the Note Map pane.

  Or

- Right-click on a row in the Note Map pane and select **Map Properties** from the menu that appears.

See:

The Drum Map Manager

Working in the Drum Map Manager

Creating and Editing a Drum Map

Saving a Drum Map

Use the following procedure to save a new or modified drum map.

1. In the Drum Map Manager, enter a name for the new drum map in the **Preset** field.

2. Click the **Save** button .

Drum map presets are saved and available for all projects. Drum maps are saved on a per-project basis.

Using Drum Maps

The following topics cover using drum-mapped tracks, including how to display drum tracks in the Drum Grid pane and how to edit note velocities.

See:

Assigning a MIDI Track to a Drum Map

Opening a Drum Map

Displaying Tracks in the Drum Grid Pane

Velocity TailsEditing Note Velocities

To Change the Order of Mapped Notes in the Drum Map Pane

Assigning a MIDI Track to a Drum Map

Use the following procedure to assign a MIDI track to a drum map:

To Assign a MIDI Track to a Drum Map

1. Display the Track view if it is minimized.
2. In the track you want to assign to a drum map, click the **Output** drop-down and select a drum map from the options in the menu that appears.

See:

Opening a Drum Map

Displaying Tracks in the Drum Grid Pane

Velocity TailsEditing Note Velocities

To Change the Order of Mapped Notes in the Drum Map Pane

Opening a Drum Map

Use the following procedure to open a drum map in the Drum pane:

To Open a Drum Map

1. In the Track view, assign the drum map you want to open to a MIDI track. See “Assigning a MIDI Track to a Drum Map” on page 534.
2. Select the MIDI track you just assigned the drum map to and select **Views > Piano Roll**.

To Open All Tracks Assigned to a Drum Map

1. Select a single track assigned to the drum map.
2. Hold down CTRL+SHIFT while selecting **Views > Piano Roll**.

See:

Assigning a MIDI Track to a Drum Map

Displaying Tracks in the Drum Grid Pane

Velocity TailsEditing Note Velocities

To Change the Order of Mapped Notes in the Drum Map Pane

Displaying Tracks in the Drum Grid Pane

Use the following procedure to display a drum track or tracks in the Drum Grid pane.

To Display Tracks in the Drum Grid Pane

1. Create a drum map if you have not already done so. See “Creating and Editing a Drum Map” on page 530.
2. Change the focus to the Track view.
3. In the track(s) you want to view in the Drum Grid Editor, select a drum map from the **Output** drop-down menu.
4. Select the tracks you want to view in the Drum Grid Editor and select **Views > Piano Roll**.

The Piano Roll view appears with the selected track’s data appearing in the Drum Grid Editor.

See:

Assigning a MIDI Track to a Drum Map

Opening a Drum Map

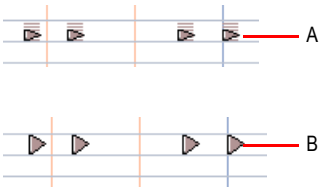
Velocity TailsEditing Note Velocities

To Change the Order of Mapped Notes in the Drum Map Pane

Velocity Tails

In the Drum Grid pane, you have the option of showing the velocity of each note as a series of bars. The higher the bars, the higher the velocity value.

Figure 105. *Velocity tails can be shown or hidden*



A. *Notes with velocity showing* ***B.*** *Notes without velocity showing*

To Display Velocity Tails in the Drum Grid Pane

- Click the **Show/Hide Velocity Tails** button in the **Piano Roll view** toolbar.

  Or

- Press the Y key.

See:

Assigning a MIDI Track to a Drum Map

Opening a Drum Map

Displaying Tracks in the Drum Grid Pane

Editing Note Velocities

To Change the Order of Mapped Notes in the Drum Map Pane

Editing Note Velocities

In the Drum Map Editor you can display note velocities as a series of horizontal bars behind the note. Click the **Show/Hide Velocity Tails** button to display note velocities.

To Edit a Note Velocity in the Drum Grid Pane

1. Click the **Draw tool** button .
2. Move your cursor over the velocity tail you want to edit until the cursor changes to look like this:
3. Click and drag the velocity tail. Drag it up to increase the velocity. Drag it down to decrease the velocity.

To Edit Multiple Note Velocities in the Drum Grid Editor

When you edit multiple notes that have different initial velocities, the velocities are adjusted on a relative basis, so if you reduce a velocity by 50%, all other selected notes have their velocities reduced by the same percentage. For example: you select three notes. The first has a velocity of 100, the second a velocity of 50, and the third a velocity of 30. You click and drag the velocity of the first note down to 50. The second note's velocity changes from 50 to 25 and the third note's velocity changes from 30 to 15.

1. Select the notes you want to change the velocity of.
2. Click the **Draw tool** button .
3. Move your cursor over one of the selected notes.
4. Hold down the SHIFT key.
5. Click and drag the velocity tail. Drag it up to increase the velocity. Drag it down to decrease the velocity.

See:

Assigning a MIDI Track to a Drum Map

Opening a Drum Map

Displaying Tracks in the Drum Grid Pane

Velocity TailsTo Change the Order of Mapped Notes in the Drum Map Pane

Previewing a Mapped Sound

Use the following procedure to hear the drum sound you have mapped a note to.

To Preview a Mapped Sound

- In the Note Map pane, click on the name of the sound you want to hear.

See:

Assigning a MIDI Track to a Drum Map

Opening a Drum Map

Displaying Tracks in the Drum Grid Pane

Velocity TailsTo Change the Order of Mapped Notes in the Drum Map Pane

The Note Map Pane

The Note Map pane displays the current drum map. In the Note Map pane each row represents a pitch. The Note In pitch is the recorded pitch. You map the recorded pitch to whatever pitch you want using the Note Out pitch setting. You can also change the name of the mapped note and mute or solo the mapped note.

Pedal Hi-Hat	44	44	M	S
High Floor Tom	43	43	M	S
Closed Hi-Hat	42	42	M	S
Low Floor Tom	41	41	M	S
Electric Snare	40	40	M	S
Hand Clap	39	37	M	S
Acoustic Snare	38	38	M	S
Side Stick	37	37	M	S
Bass Drum 1	36	36	M	S
Acoustic Bass Drum	35	35	M	S

Changing Mapped-note Settings

Changing Mapped-note Settings

You can change the following settings in the Note Map pane:

- Mapped-note name
- Note Out
- Mute
- Solo

To Change the Name Setting

The name of a mapped note in the Note Map pane is a user-assigned variable. Make it descriptive for easy reference. To change the Name setting, use the following procedure:

1. In the Note Map pane, double-click on the appropriate row.

   The **Map Properties** dialog appears.
2. In the **Map Properties** dialog, enter a new name in the **Name** field and press the ENTER key.

To Change the Note Out Setting

The Note Out setting is the actual note you hear when the Note In value is played. To change the Note Out setting, use the following procedure:

1. In the Note Map pane, double-click on the appropriate row.

   The **Map Properties** dialog appears.
2. In the **Map Properties** dialog, enter a new value in the **Note Out** field and press the ENTER key, or use the **+**/**-** buttons to change the value and press the ENTER key.

To Change Multiple Note Out Settings

1. Open the Drum Map Manager.
2. In the Drum Map Manager, select a contiguous range of rows by selecting the first in the range, and holding down the SHIFT key while selecting the last in the range.

   Or

   Select a non-contiguous range by selecting one row and holding down the CTRL key while selecting additional rows.
3. Hold down both the CTRL and SHIFT keys while selecting a new Output in the Output column.

To Mute or Solo a Mapped Note

The Mute and Solo controls in the Note Map pane allow you to mute or solo an individual mapped note. To mute or solo a mapped note, use the following procedure:

- In the Note Map pane, click the **Mute** M or **Solo** S button in the appropriate row.

  Or
- Right-click on the row you want to mute or solo and select **Mute** or **Solo** from the menu that appears.

To Display the Note In and Note Out Values By Their Pitch Name

You have the option of showing the **Note In** and **Note Out** values by their pitch names. To do so, use the following procedure:

- Right-click on any row in the Note Map pane and select the **Display Pitch Names** command from the menu that appears.

To Change the Order of Mapped Notes in the Drum Map Pane

Use the following procedure to change the order of mapped notes in the Note Map pane.

1. Move your cursor over the row you want to move in the Note Map pane.
2. When your cursor changes to look like this , click and drag the row to the place you want it to be and release the mouse button.

The Drum Grid Pane

The Drum Grid pane is where you edit your drum tracks. The Drum Grid pane is the top pane in the Piano Roll view and opens automatically when you open a MIDI drum track.

The Drum Grid pane is for MIDI drum tracks what the Note pane is for other MIDI tracks. In the Drum Grid pane you can add, delete and edit notes and note properties. You can edit controllers in this pane if you hide the Controller pane. You can customize the number of grid lines in the Drum Grid pane and choose whether or not to show note velocity “tails.”

See:

Event Inspector Toolbar

Adding and Editing Controllers in the Piano Roll

Velocity Tails

Grid Lines

Grid Lines

The Drum Grid pane is divided into a time grid. You can set the resolution of the grid lines from 1/4 note to 1/64 note, or to follow the current snap grid setting.

The **Show/Hide Grid Lines** combo button toggles on and off the grid lines in the Drum Grid pane and sets the grid line resolution.

To Turn on Grid Lines in the Drum Map Pane

- Click the **Show/Hide Grid Lines** combo button in the **Piano Roll view** toolbar.

  Or
- Press the I key.

To Set the Drum Map Pane Grid Line Resolution

- Click the down arrow on the **Show/Hide Grid Lines** combo button and select an option from the menu that appears.

See:

Piano Roll View

The Pattern Brush Tool

The Pattern Brush Tool

The Pattern Brush tool, on the **Piano Roll View** toolbar, allows you to insert multiple notes using your mouse, either following a pattern used in an existing MIDI file or at the current note duration setting.

See:

Piano Roll View

How the Pattern Brush Tool Works

Creating Custom Patterns

How the Pattern Brush Tool Works

When you select the Pattern Brush tool you can click and drag in the Drum Grid pane (also works in the Note pane) to produce a series of notes. Which notes appear in the Drum Grid depends on the settings you make in the Pattern Brush tool's drop-down menu. To open the Pattern Brush tool's drop-down menu, click the right side of the Pattern Brush tool.

The following table covers the options found in the Pattern Brush tool's drop-down menu:

Option	Description
Velocity	Select this option to open the **Pattern Velocity** dialog. The value you enter in this dialog sets the default velocity for all notes entered using the Pattern Brush tool unless you select Use Pattern Velocities.
Use Pattern Velocities	Select this option to use the note velocities used in the custom pattern file you are using. If you are using the **Note Duration** option, this option is not available.

Table 111.

Option	Description
Use Pattern Polyphony	Select this option to use the pitch values from the custom pattern file you are using. If you are using the **Note Duration** option, this option is not available. When using this option, the vertical position of your mouse does not affect the note pitches draw; that information is read from the pattern.
Note Duration	This option uses the current note duration setting in the **Piano Roll View** toolbar as the interval between notes.

Table 111.

To Paint Notes Using the Pattern Brush Tool

1. Open a track in the Drum Grid pane or the Note pane.
2. In the Pattern Brush tool's drop-down menu, select **Note Duration**.
3. In the **Piano Roll View** toolbar, select a note duration. This value is the interval between notes when using the Pattern Brush tool.
4. Click the **Pattern Brush tool** button to select it.

   Your cursor should appear like this when in the Drum Grid pane.
5. Click where you want to begin placing notes and drag until you have inserted all the notes you want.
6. Release the mouse button.

SONAR creates a series of notes, at equal intervals.

To Paint a Custom Pattern of Notes Using the Pattern Brush Tool

1. Open a track in the Drum Grid pane.
2. In the Pattern Brush tool's drop-down menu, select the custom pattern you want to use. If you need to create a custom pattern, see "Creating Custom Patterns" on page 542.
3. Click the **Pattern Brush tool** button to select it.

   Your cursor should appear like this when in the Drum Grid pane.
4. Click where you want to begin placing notes and drag until you have inserted all the notes you want.
5. Release the mouse button.

To Use a Custom Pattern's Note Velocities

1. Open a track in the Drum Grid pane.
2. In the Pattern Brush tool's drop-down menu, select the custom pattern you want to use. If you need to create a custom pattern, see Creating Custom Patterns.
3. In the Pattern Brush tool's drop-down menu, select **Use Pattern Velocities**.
4. Click the **Pattern Brush tool** button to select it.

Your cursor should appear like this when in the Drum Grid pane.

5. Click where you want to begin placing notes and drag until you have inserted all the notes you want.
6. Release the mouse button.

To Use a Custom Pattern's Pitch Values

1. Open a track in the Drum Grid pane.
2. In the Pattern Brush tool's drop-down menu, select the custom pattern you want to use. If you need to create a custom pattern, see Creating Custom Patterns.
3. In the Pattern Brush tool's drop-down menu, select **Use Pattern Polyphony**.
4. Click the **Pattern Brush tool** button to select it.

   Your cursor should appear like this when in the Drum Grid pane.
5. Click where you want to begin placing notes and drag until you have inserted all the notes you want.
6. Release the mouse button.

See:

Piano Roll View

How the Pattern Brush Tool Works

Creating Custom Patterns

Creating Custom Patterns

You can create custom patterns and use the Pattern Brush tool to quickly paint them into the Drum Grid pane. Use the following procedure to create a custom pattern.

To Create a Custom Pattern

1. Create a new file, or open an existing MIDI file or pattern file that you want to edit.
2. Right-click in the Time Ruler where you want the pattern to start and select **Insert Marker** from the menu that appears.

   The **Marker** dialog appears.
3. Enter the name you want to use for the first pattern and click **OK**.
4. In a MIDI track, enter a pattern of notes.
5. If you want to create a second pattern, repeat steps 2 through 4.
6. Create as many patterns as you want, ending the last pattern with a marker called "end".

7. Save the file as a MIDI file (.mid) in the Pattern Brush Patterns folder in the directory where you installed SONAR.

Note: *You can change the default directory where SONAR looks for patterns in the **Folders** tab of the **Global Options** dialog.*

You may need to re-start SONAR to see the new patterns in the drop-down menu next to the Pattern Brush. The name you gave the file appears with an arrow next to it. Move your mouse over it to see a subdirectory which contains each of the patterns you created.

See:

Piano Roll View

How the Pattern Brush Tool Works

Creating Custom Patterns

Editing Audio

The Track view lets you edit and arrange audio clips. You can perform basic tasks such as cut, copy, paste, and move; apply simple audio processing such as gain change, fades, and equalization; and use sophisticated audio effects such as stereo chorus and reverb. The Track view lets you see your audio clips on a timeline, arranged by track, to help you visualize the organization of your project's audio data.

Most audio processing commands and audio effects can be used from the Event List view as well, by selecting one or more audio clips, then choosing the desired command from the **Process > Audio** or **Process > Audio Effects** menu. Plug-in effects can also be applied to audio data non-destructively, in real time, in both the Console and Track views. For more information, see the online help topic "Mixing."

See:

Digital Audio Fundamentals

Basic Audio Editing

Basic Audio Processing

Advanced Audio Processing

Applying Fades and Crossfades Offline

Audio Effects (Audio Plug-ins)

Digital Audio Fundamentals

Digital audio is a numeric representation of sound; it is sound stored as numbers. In order to understand what the numbers mean, you need to start with the basic principles of **acoustics**, the science of sound.

See:

Basic Acoustics

Example—A Guitar String

Waveforms

Recording a Sound

The Decibel Scale

Audio Clips

Managing Audio Data

Basic Acoustics

Sound is produced when molecules in the air are disturbed by some type of motion produced by a vibrating object. This object, which might be a guitar string, human vocal cord, or a garbage can, is set into motion because energy is applied to it. The guitar string is struck by a pick or finger, while the garbage can is hit perhaps by a hammer, but the basic result is the same: they both begin to vibrate. The rate and amount of vibration is critical to our perception of the sound. If it is not fast enough or strong enough, we won't hear it. But if the vibration occurs at least twenty times a second and the molecules in the air are moved enough, then we will hear sound.

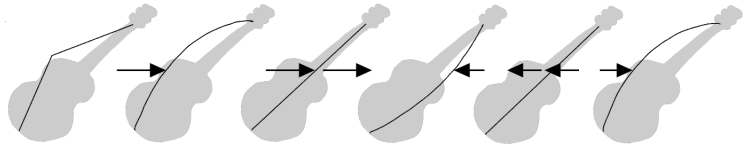
See:

Digital Audio Fundamentals

Example—A Guitar String

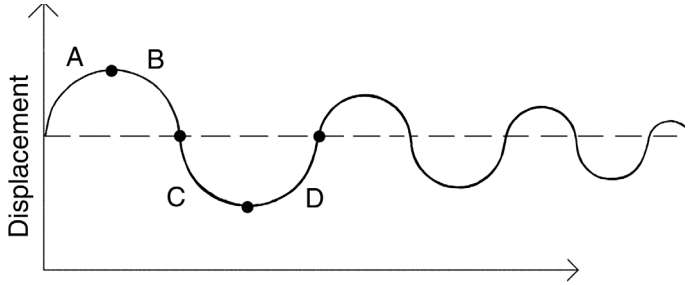
To understand the process better, let's take a closer look at a guitar string.

When a finger picks a guitar string, the entire string starts to move back and forth at a certain rate. This rate is called the **frequency** of the vibration. Because a single back and forth motion is called a **cycle**, we use a measure of frequency called **cycles per second**, or **cps**. This measure is also known as **Hertz**, abbreviated **Hz**. Often the frequency of vibration of an object is very fast, so we can also express the frequency in thousands of cycles per second, or **kilohertz** (abbreviated **kHz**)



The actual distance the string moves is called its **displacement**. This is proportional to how hard the string is plucked. A greater displacement results in a louder sound.

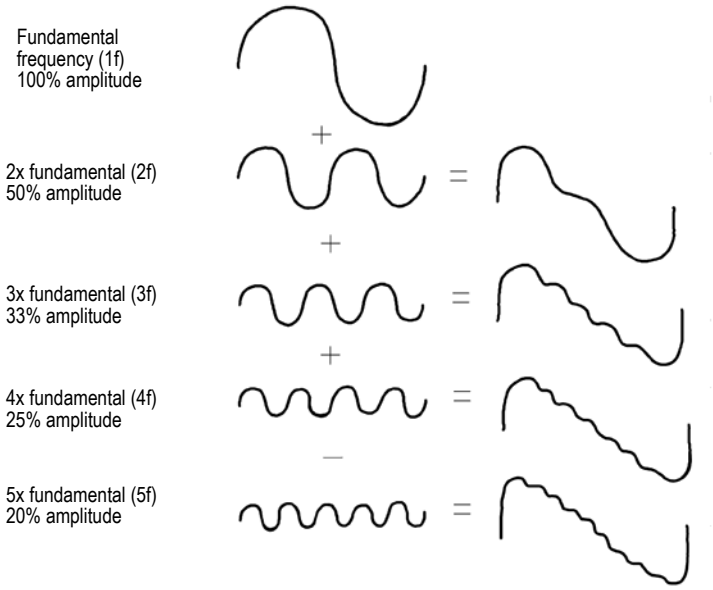
The displacement of the string changes as the string vibrates, as shown here:



The segment marked “A” represents the string as it is pulled back by the pick; “B” shows it moving back towards its resting point, “C” represents the string moving through the resting point and onward to its outer limit; then “D” has it moving back towards the point of rest. This pattern repeats continuously until the friction of the molecules in the air gradually slows the string to a stop. As the string vibrates, it causes the molecules of air around it to vibrate as well. The vibrations are passed along through the air as **sound waves**. When the vibrations enter your ear, they make your eardrum vibrate, and you hear a sound. Likewise, if the vibrating air hits a microphone, it causes the microphone to vibrate and send out electrical signals.

In order for us humans to hear the sound, the frequency of the vibration must be at least 20 Hz. The highest frequency sound we can hear is theoretically 20 kHz, but, in reality, it's probably closer to 15 or 17 kHz. Other animals, and microphones, have different hearing ranges.

If the simple back-and-forth motion of the string was the only phenomenon involved in creating a sound, then all stringed instruments would probably sound much the same. We know this is not true, of course; the laws of physics are not quite so simple. In fact, the string vibrates not only at its entire length, but at one-half its length, one-third, one-fourth, one-fifth, and so on. These additional vibrations (**overtones**) occur at a rate faster than the rate of the original vibration (the **fundamental frequency**), but are usually weaker in strength. Our ear doesn't hear each frequency of vibration individually, however. If it if did, we would hear a multinote chord every time a single string were played. Rather, all these vibrations are added together to form a complex or composite sound that our ear perceives as a single tone.



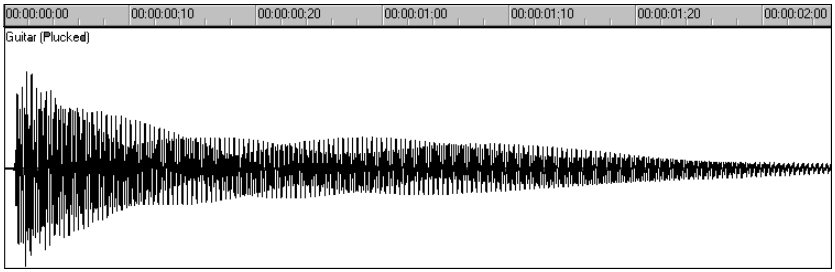
This composite waveform still doesn't account for the uniqueness of the sound of different instruments. For example, stringed instruments usually have a resonator. In the case of the guitar, the resonator is the big block of hollow wood to which the string is attached (the guitar body). This has a major impact on the sound we perceive when a guitar is played because it enhances or amplifies some of the vibrations produced by the string and diminishes or attenuates others. The ultimate effect of all the vibrations occurring simultaneously, being altered by the resonator, adds up to the sound we know as guitar.

See:

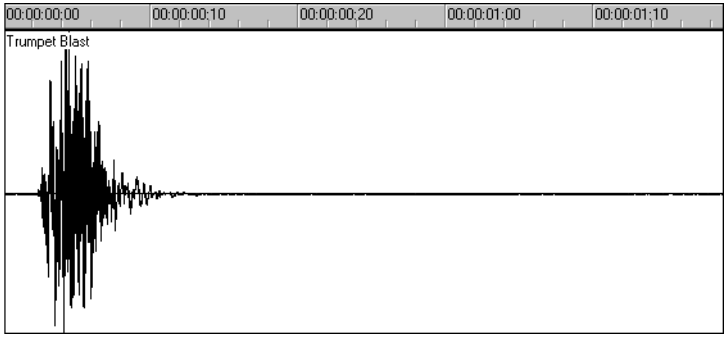
Digital Audio Fundamentals

Waveforms

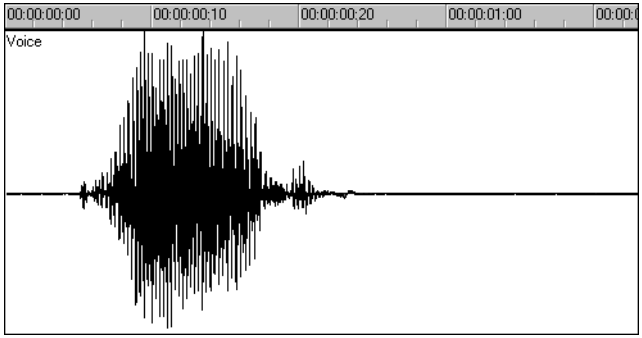
A sound wave can be represented in many different ways: as a mathematical formula, as a series of numbers, or graphically as a **waveform**. A waveform displays the size, or **amplitude**, of the vibration as a function of time. For example, the waveform of the sound of the plucked guitar string might look like this:



The waveform of a trumpet blast might look like this:



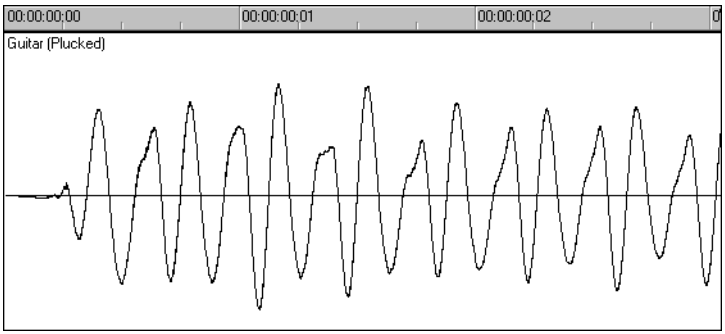
And the waveform of a spoken word might look like this:



The three waveforms shown above are quite different from one another, both in appearance and sound. Each has its own characteristic shape, or envelope, and each has its own complex combination of frequency components, which can change across the duration of the sound.

The center line of a waveform is the zero line; it corresponds to the rest position (displacement of 0) of the original vibrating object. (A waveform for perfect silence would be a horizontal line at zero.)

Back and forth motions of the vibrating object translate to upward (positive) and downward (negative) excursions of waveform amplitude. For example, a close-up of a portion of the guitar waveform might look like this:



The waveform crosses the zero line twice during each complete vibration. These **zero-crossings** are important in digital audio processing; they are good places to cut waveforms apart and splice them together. If waveforms are cut or spliced at other locations, clicks and pops can occur. The maximum amplitude of the waveform in each vibration is also important: it determines the strength of the vibration, and thus the loudness of the sound.

See:

Digital Audio Fundamentals

Recording a Sound

To record digital audio, your computer monitors the electrical signal generated by a microphone (or some other electroacoustical device). Because the signal is caused by a sound, the signal strength varies in direct proportion to the sound's waveform. The computer measures and saves the strength of the electrical signal from the microphone, thus recording the waveform.

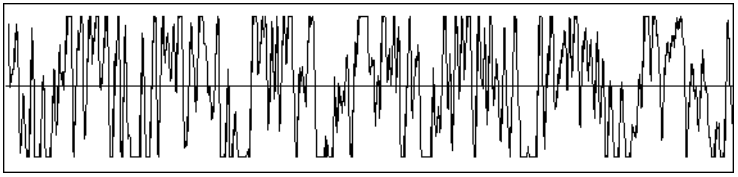
There are two important aspects of this measuring process. First is the **sampling rate**, the rate at which the computer saves measurements of the signal strength. It is a known fact of physics that you must measure, or **sample**, the signal at a rate at least twice that of the highest frequency you wish to capture. For example, suppose you want to record a moderately high note on a violin—say the A whose fundamental frequency is 440 Hz and all overtones up to five times the fundamental. The highest frequency you want to capture is 2,200 Hz, so you need to measure the electrical signal from the microphone at least 4,400 times per second.

Since humans can hear frequencies well above 10 kHz, most sound cards and digital recording systems are capable of sampling at much higher rates than that. Typical sampling rates used by modern musicians and audio engineers are 22 kHz, 44.1 kHz, and 48 kHz. The 44.1 kHz rate is called **CD-quality**, since it is the rate used by audio compact discs.

The other important aspect of the measuring process is the **sampling resolution**. The sampling resolution determines how accurately the amplitude of each sample is measured. At present, the music industry has settled on a system that provides 65,536 different values to assign to the amplitude of a waveform at any given instant. Thus, each sample saved by your computer requires 2 bytes (16 bits) to store, since it takes 2 bytes to store a number from –32,768 to 32,767. The scaling of the electrical input signal level to amplitude value is determined by your audio hardware and by the position of your input level control.

What if the amplitude of the sampled signal gets too high, such that a 16-bit number is not large enough to represent it? What typically happens is that the signal is **clipped**, cut off at the maximum value.

Here is what a clipped waveform might look like:



Clipping is not usually desirable and may have unpleasant audible effects. Sudden irregularities in the waveform of any type can cause clicks, pops, and distortion of the original sound.

See:

Digital Audio Fundamentals

The Decibel Scale

In acoustics, the decibel (dB) scale is a scale for measuring the relative loudness of two sounds. For example, environmental noise is often measured as follows:

```
L = 20 log (p/p0)
```

where L is the sound pressure level (in dB), p is the sound pressure amplitude, and p0 is a reference amplitude of 20 micropascals (less than one billionth of atmospheric pressure). On this scale, a barely audible sound (p = p0) has a sound pressure level of 0 dB, normal conversation (p = 1,000*p0) is at a level of around 60 dB, and a jet engine at close range (p = 1,000,000*p0) is at a level of around 120 dB.

Similar decibel scales are used in other branches of science and engineering to measure electrical power levels and other signal levels, always with respect to some reference level.

In SONAR, decibels are used in several places:

- To indicate volume levels of audio tracks in the Track view and Console view
- To indicate the effects of filters and equalizers

The reference level (0 dB) usually corresponds to the current loudness of the sound. A positive change in decibels makes the sound louder; a negative change makes the sound quieter.

See:

Digital Audio Fundamentals

Audio Clips

If you have read Digital Audio Fundamentals, you should have a good idea of what is contained in a SONAR audio clip. An audio clip contains a long series of numbers, or samples, representing the fluctuating amplitude of a waveform. Audio clips are typically quite large, hundreds of kilobytes to many megabytes in size. By comparison, a MIDI event takes only a few bytes to store.

The Track view lets you see your audio waveforms in great detail; you can zoom in until you see the individual samples.

You should also now be aware of some things to watch out for when editing your audio data. First, if you cut audio clips apart or splice them together, you should do so at zero-crossings in the waveform (places where the amplitude is zero), in order to avoid sudden changes in amplitude that may cause clicks and pops. Second, you should beware of clipping. Clipping of the audio waveform can occur if you record a signal at too high a record level, or if you apply audio processing or effects that increase the waveform amplitude too much. If you accidentally cause the waveform to clip, you should undo the command and try again with different parameters.

Clipping can also occur in other situations, for example, if you try to play or mix several loud audio tracks together, the aggregate signal strength may at times exceed the clipping limit, and the output signal will be distorted. To correct the problem, you can create a volume envelope to reduce the level in loud audio clips or reduce the track volume in the Console or Track views.

See:

Digital Audio Fundamentals

Managing Audio Data

Because of the great size of audio data, SONAR uses an intelligent scheme for storing audio clips on disk to conserve disk space and minimize the time it takes to load and save data. Audio data is not stored directly in your project file, but rather in separate files in a special directory. For more information, see “Audio File Management” on page 833.

You can export your project in MP3, WMA, or Wave format. You can also convert your project’s MIDI data to audio and export it to any of the above formats. For more information, see “Preparing Audio for Distribution” on page 669.

See:

Digital Audio Fundamentals

Basic Audio Editing

The Track view lets you perform basic editing tasks such as cut, copy, paste, delete, drag-and-drop, split, and bounce. You can drag fade-ins and fade-outs onto a clip using your mouse or you can set complex envelopes on both clips and tracks. You can use envelopes to change settings for gain (volume), pan, mute, bus send level and bus send pan. The Scrub tool lets you audition portions of audio by dragging the mouse.

Use the Select tool to make selections.

Here is a summary of the ways in which you can select audio clips:

To do this	Do this
Select a single clip	Click the clip
Select several clips at once	Drag a rectangle around them
Select part of a clip	Press ALT and drag over a portion of the clip
Add clips to the selection	Press SHIFT and either click the clips or drag a rectangle around the clips
Add or remove clips from the selection	Press CTRL and either click the clips or drag a rectangle around the clips
Add or remove clips in a track from the selection	Press CTRL and click the track number
Select clips in a time range	Drag in the Time Ruler
Select clips between two markers	Click between the markers
Remove all selections	Click in an empty area outside of any clip

Table 112.

See:

Editing Clip Properties

Moving, Copying, Pasting and Deleting Audio Clips

Splitting Audio Clips

Bouncing to Clips

Scrubbing

Editing Clip Properties

Audio clips have several properties that you can change:

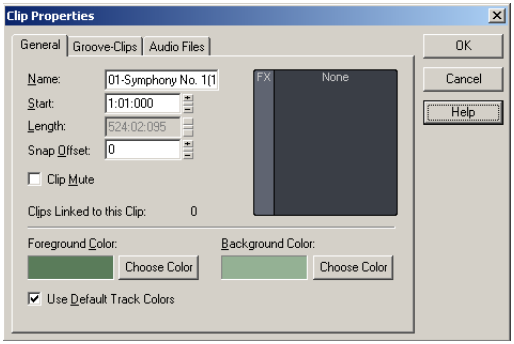
Property	Description
Name	The name of a clip is used in the Track view and Event List view. You can assign any name to help you remember the contents of the clip.
Start	The start determines when the sample is played.
Length	The length indicates the size of the clip.
Snap Offset	A value that represents the number of samples into the clip at which the clip snaps to.
Display Color	The clip's color in the Track view.

Table 113.

To Change an Audio Clip's Name

1. Right-click the audio clip and choose **Clip Properties**.

Figure 106. *The **Clip Properties** dialog*



2. Type a new name in the **Name** box.
3. Click **OK**.

The new clip name appears in the upper left corner of the clip.

To Change a Clip's Start

1. Right-click an audio clip and choose **Clip Properties**.
2. Enter a new starting time in the **Start** field.
3. Click **OK**.

The Track view displays the clip at the new starting time.

Moving, Copying, Pasting and Deleting Audio Clips

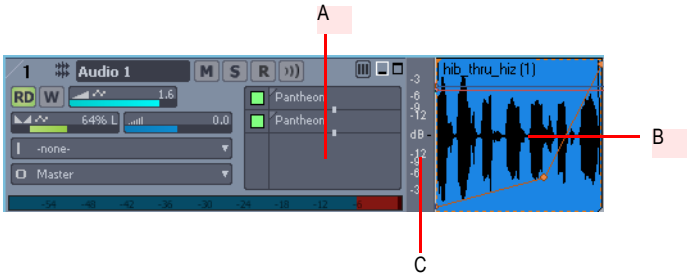
Clips can be cut, copied, pasted, and deleted with **Edit** menu commands, or moved and copied with drag-and-drop techniques. For more information, see “Arranging and editing” on page 287.

Audio Scaling

Audio scaling is the increase or decrease in the size (scale) of the waveform in a track or bus. Audio scaling allows you to make detailed edits by zooming in on the parts of the waveform closest to the zero crossing (silence) while preserving the track or bus size. By showing just the quietest parts of a clip, you can make very precise edits. You can also zoom out on the waveform.

You can change the audio scale using keyboard shortcuts or the Audio Scale Ruler.

The Audio Scale Ruler is located in the vertical splitter bar between the Clips pane and the Track pane.



A. *Track pane* ***B.*** *Clips pane* ***C.*** *Audio Scale Ruler*

Note: *The Audio Scale Ruler does not appear on multi-layered tracks.*

There are three display options in the Audio Scale Ruler:

- **Percentage.** Shows audio scaling by percentage. For example, if the highest percentage in the Audio Scale Ruler reads 2.0%, then only the parts of the waveform which are within 2% of the zero crossing appear in the clip.
- **dB.** Shows audio scaling by dB. For example, if the highest dB in the Audio Scaling Ruler reads -36, then only the parts of the waveform which are 36 dB below 0 dB appear in the clip.
- **Zoom Factor.** Shows audio scaling by a factor. For example, if the Zoom Factor reads 10, then

the waveform is zoomed in by a factor of 10.

Note: *The Audio Scale Ruler display reflects the type of audio clip directly beneath it. If it is a stereo waveform, the Audio Scale Ruler appears in stereo (one for each channel). If it is a mono clip it appears in mono. Also, the Audio Scale Ruler only displays numbers when it is above a certain height. If you cannot see the Audio Scale Ruler, increase the size of your track or bus.*

To Change the Audio Scale Display Option

1. Right-click on the Audio Scale Ruler in any track.

   A menu appears. The current display option is checked.

2. Select an option from the menu.

To Scale All Audio Tracks Together

To scale all audio tracks together, follow the instructions in the table below:

To do this	Do this
Increase the scale for all tracks	Press ALT+UP ARROW. Or Hold down the CTRL key and click the **Vertical Zoom In** button. When you hold down the CTRL key and position your cursor over the **Vertical Zoom In** button, your cursor looks like this:
Decrease the scale for all tracks	Press ALT+DOWN ARROW. Or Hold down the CTRL key and click the **Vertical Zoom Out** button. When you hold down the CTRL key and position your cursor over the **Vertical Zoom Out** button, your cursor looks like this:
Increase/Decrease the scale for all tracks using your mouse	Hold down the CTRL key, click the **Vertical Zoom** fader and drag the fader up or down. When you hold down the CTRL key and position your cursor over the **Vertical Zoom** fader, your cursor looks like this:

Table 114.

To do this	Do this
Increase to maximum scale	Hold down the CTRL and SHIFT keys and click the **Vertical Zoom In** button. When you hold down the SHIFT and CTRL keys and position your cursor over the **Vertical Zoom In** button, your cursor looks like this:
Decrease to minimum scale	Hold down the CTRL and SHIFT keys and click the **Vertical Zoom Out** button. When you hold down the SHIFT and CTRL keys and position your cursor over the **Vertical Zoom Out** button, your cursor looks like this:

Table 114.

To Scale a Single Track or Bus

To scale a single audio track, follow the instructions in the table below:

To do this	Do this
Increase/decrease the scale of individual stereo or mono tracks	There are several ways to increase or decrease the size of an individual track's or bus's waveform: • Press CTRL+ALT+UP/DOWN ARROW keys • Click and drag vertically in the track's Audio Scale Ruler. When you click and drag in the Audio Scale ruler of a track, your cursor looks like this: • Select the Zoom tool, hold the SHIFT key and drag around the clip you want to zoom in on.
Restore a track to minimum scale	Double-click in the track's Audio Scale Ruler.

Table 115.

To Undo Audio Scaling

- Press the U key.

To Scale a Single Track or Bus Using the Audio Scale Ruler

- In the track in which you want to change the audio scale, click in the Audio Scale Ruler and drag. Drag up to increase the audio scaling. Drag down to decrease the audio scaling.

To Show or Hide the Audio Scale Ruler

1. Right-click in the Clips pane.
2. Select **View Options** from the menu that appears.

   The **Track View Options** dialog appears.
3. In the **Track View Options** dialog, click the **Show Audio Scale** check box and click **OK**.

Splitting Audio Clips

You can split long audio clips into shorter ones. This lets you extract and rearrange individual sounds, adjust timing and alignment, and apply effects selectively. Audio clips can be split using the Scissors tool in the Track view or with the **Split** command.

To Split Clips with the Scissors Tool

1. If necessary, zoom-in in the Track view and use the Scrub tool to determine where you want to make a split.
2. If you want the split to be made on a note or measure boundary, a marker, or by an event, open the **Snap to Grid** dialog, make the appropriate settings and click the **Snap to Grid** button to turn on the Snap to Grid.
3. Click the **Scissors tool** button on the **Track view** toolbar.
4. Click once to make a single split, or to make two splits, click where you want the first split, drag within a clip and release to make a second split.

To Split Clips with the Split Command

1. Select the clip you want to split.
2. Right-click the selected clip and select **Split** from the menu.

   The **Split Clips** dialog appears.
3. In the **Split Clips** dialog, select from the following options.

Option	Description
Split At Time	Specify the time at which you want to split the clip and the time format.
Split Repeatedly	Specify the first measure at which you want to split the clip in the **Starting At Measure** field and the intervals at which you want to split the clip in the **And Again Every** field.

Table 116.

Option	Description
Split At Each Marker	Creates a split in the clip at every marker.
Split When Silent For At Least	Creates a split after each period of silence which exceeds the number of measures specified.

Table 116.

SONAR splits the audio clip according to your specifications. Each new clip has the same name as the original clip.

Note: *A shortcut to split a selected clip is to move the Now time to where you want to split it, and press S on your computer keyboard.*

Bouncing to Clips

Individual audio clips in the same track can be combined into a single clip with the **Bounce to Clip(s)** command.

Note 1: *Like any clips, slip-edited clips can be combined with other clips using the **Bounce to Clip(s)** command. When a slip-edited clip is combined with another clip, any slip-edited data (audio clips or MIDI events that are cropped from view) is overwritten.*

Note 2: *You control the bit depth of all rendering operations (bouncing, freezing, applying effects) on the **Audio Data** tab of the **Global Options** dialog (**Options > Global** command) in the **Render Bit Depth** field. The default value of **32** is the best for most situations. See "Bit Depths for Rendering Audio" on page 849 for more information.*

To Bounce to Clips

1. Select the clips to be combined in the Track view.
2. Choose **Edit > Bounce to Clip(s)**.

The clips are combined into a single clip. Empty space between clips is filled with silence in the new clip. All clip automation from the source clips is applied to the new clip.

To Bounce Multiple Audio Clips to a New Track

1. Select the clips to be combined in the Track view.
2. Choose **Edit > Bounce to Track(s)**.

   The **Bounce to Track(s)** dialog appears.
3. Select the track you want to bounce to in the **Destination** field.
4. Select other options in the **Mixdown Audio**/**Bounce to Track(s)** dialog and click **OK**.

The clips are combined into a single clip on the destination track. Empty space between clips is filled with silence in the new clip.

Scrubbing

You can use the Scrub tool to locate or audition a particular sound or passage as you drag the mouse. You can scrub a single audio track by dragging over that track or all tracks by dragging in the Time Ruler.

Note: *The Scrub tool is not affected by current Mute and Solo settings of a track.*

To Audition Audio with the Scrub Tool

1. Click the **Scrub tool** button .
2. Click and drag the pointer over an audio track.

Note: *To bypass the current volume and pan settings when scrubbing, hold down the ALT key. This will force scrubbing to play back at unity gain and centered.*

Tip: *To hear the clips in all audio tracks, drag with the Scrub tool in the horizontal ruler.*

Scrubbing audio at unity gain

In SONAR 4.0.0, the Scrub function would automatically scrub at unity gain. This has changed in version 4.0.1 and later, where audio scrubbing is performed at the mix level (volume and pan settings are applied). You can also scrub at unity gain by holding down the ALT key while scrubbing.

Basic Audio Processing

Audio processing commands let you modify audio data according to some rule or algorithm. The rule can be as simple as reversing the audio data or boosting it by a certain factor, or as complex as performing a Fourier analysis and selectively amplifying or attenuating sounds at certain frequencies.

Audio processing commands can work on whole, partial and non-contiguous clips. For example, suppose you want to make certain words in a vocal passage softer. You can create a volume envelope and use it to lower the volume, non-destructively in just the section of the track containing those words. You could also use the **Process > Audio > Gain** command to lower the volume destructively.

You should listen to the results of your work after each audio processing command. If you don't like what you hear, you can use **Edit > Undo** to restore your audio data to its previous state.

Many of the dialog boxes associated with SONAR's audio processing and effects commands have two important features: Audition and Presets.

The **Audition** button is used to audition the processed audio data. When you click **Audition**, SONAR processes the first few seconds of your data, then plays it repeatedly until you click **Stop**. This helps you to get an idea of whether the settings in the dialog box are producing the desired effect.

The audition duration is three seconds by default. You can change this value by choosing **Options > Global, selecting the General** tab and changing Audition Commands for ( ) Seconds.

Presets are a way to store dialog settings so that you can apply the exact same processing or effect again in the future. The following table tells you how to use presets in the effects dialog boxes.

To do this	Do this
Save the current settings as a preset	Enter a preset name and click the **Save** button
Use a preset	Select the preset from the drop-down list
Delete a preset	Select the preset, then click the **Delete** button

Table 117.

Many audio processing and effects presets are supplied with SONAR.

See:

Using the Normalize and Gain Commands

Reversing Audio Data

Using the Normalize and Gain Commands

SONAR provides several commands to boost or cut the volume of audio data. The **Process > Audio > Normalize** command, and the **Process > Audio > Gain** commands are used to control the volume of selected audio data, in decibels. For more information about the decibel scale, see "The Decibel Scale" on page 551. The **Normalize** command "normalizes" the audio data: it boosts the volume until the maximum amplitude is reached somewhere in the data. By normalizing the data, you achieve the maximum possible volume without distortion or clipping. The **Gain** command lets you edit the volume, phase, and stereo interleave of selected audio data. You can also use this command to remove center material from a clip (good for removing vocals).

Like all the audio processing commands, these commands work by modifying the waveform data. You can achieve volume changes non-destructively using automation. For more information, see the online help topic "Automation."

When increasing or decreasing the volume of audio clips, you should consider the following points:

- **Normalize** raises the noise floor; that is, while it increases the volume of the signal, it also boosts the noise it contains. (This is true when you raise the volume by other means, too.)

- Due to the nature and limitations of digital audio, the sum of all audio signals played together cannot exceed the waveform amplitude limit. Even though no individual clip is clipped, the combination may cause distortion.

If the selection contains any loud signals, **Normalize** may not seem to have any effect. This is because the volume increase is determined by the loudest audio in the selection. If an audio clip contains segments that are too quiet and others that are loud, you should probably split off the quiet segments into separate clips and then normalize those.

To Normalize Audio Data

1. Select the audio data to be affected.
2. Choose **Process > Audio > Normalize** from the menu.

   The **Normalize** dialog appears.
3. Drag the **Normalize Level** slider to the approximate level you think is appropriate.
4. Click **OK** to process the selected audio.

Listen to the edited data. You can use the **Edit > Undo** command if you don't like the results, and then try a different setting in the **Normalize** dialog.

To Use the Gain Command

1. Select the audio data you want to edit.
2. Use the **Process > Audio > Gain** command to open the **Gain** dialog.
3. If you only want to change the overall volume of the selection, move the **New Left Channel-From Left** slider and the **New Right Channel-From Right** sliders by a similar amount. You can press the **Audition** button to try out your edits.
4. If you want to switch the two channels, reverse all four sliders from their present positions.
5. If you want to invert the left channel phase, click the **Invert left-channel phase** button . If you want to invert the right-channel phase, click the **Invert right-channel phase** button in the **New Right Channel** section.
6. If you want to remove center material (usually where the vocal track is), set the N**ew Left Channel-From Left** slider and the **New Right Channel-From Right** slider to **100%**, and set the **New Left Channel-From Right** slider and the **New Right Channel-From Left** slider to **-100%** (negative 100%).
7. Press the **Audition** button if you want to audition your edits.
8. Click **OK** to process the selected audio.

Listen to the edited data in your mix. You can use the **Edit > Undo** command if you don't like the results, and then try different settings in the **Gain** dialog.

Reversing Audio Data

By reversing audio data, you can make it play backwards. You may wish to do this to obtain unusual sounds for special effects.

The **Reverse** command does not reverse the musical position of audio data. Use the **Process > Retrograde** command to invert the order of clips in time.

To Reverse Audio Data

1. Select the audio data to be affected.
2. Choose **Process > Audio > Reverse** from the menu.

SONAR reverses the selected audio data.

Advanced Audio Processing

SONAR provides a number of advanced audio processing commands for power users. Among these are commands to remove silent sections of audio from the data and to apply fades, and crossfades.

See:

Removing Silence

Removing Silence

The **Remove Silence** command detects sections of audio that fall below a given loudness threshold, and replaces those sections with absolute silence. **Remove Silence** gives you the option of actually deleting the silent sections from the selected audio clips, splitting long audio clips into a greater number of shorter audio clips.

SONAR treats passages of absolute silence intelligently. It doesn't store stretches of silence on disk, and thereby conserves disk space. During a passage of absolute silence, SONAR sends no signal to the digital output port; this results in cleaner audio playback. **Remove Silence** is great for cleaning up your final audio mix, because it can mute all audio tracks in which the live performers were "laying out."

Using **Remove Silence** to split long audio clips into smaller ones opens a variety of creative possibilities.

The parameters in the **Remove Silence** dialog box are used to specify exactly what you mean by silence. More precisely, **Remove Silence** employs what is called a digital noise gate. The gate is a type of filter, it passes data through, or stops it from passing through, according to certain criteria. Parameters in the dialog box specify the conditions under which the gate is opened and under which it closes again.

The digital noise gate parameters are described in the following table.

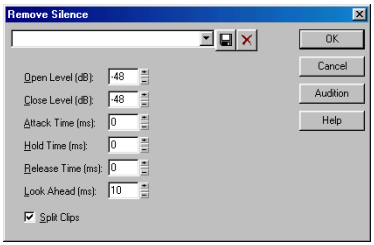
Parameter	Meaning
Open Level (dB)	The loudness threshold for opening the noise gate. The gate officially opens when loudness rises above this level, although it can open earlier because of the **Attack Time**.
Close Level (dB)	The loudness threshold for closing the noise gate. The gate officially closes when loudness falls below this level, although it can stay open later because of the **Release Time**.
Attack Time (ms)	The value in this field is the interval of time after the volume reaches the **Open Level** for the gate to fully open. Opening the gate gradually produces a fade-in effect instead of an instant on-off sound.
Hold Time (ms)	The minimum time for the gate to stay open. **Hold Time** is useful when you've set high open and close levels, for example, when your source signal is very loud. Noise gates set this way tend to react to repeated percussive passages (such as drum rolls) by repeatedly opening and closing; this can sound unpleasant. By setting a hold time, you can ensure that the gate stays open long enough during percussive passages.
Release Time (ms)	The amount of time after the **Close Level** is reached that the gate actually closes. This lets the tail end of sounds pass through without being clipped.
Look Ahead (ms)	The value in this field causes the gate to open slightly before the sound reaches the **Open Level** so you don't lose the sound's attack.

Table 118.

To Remove Silence

1. Select the audio data to be affected.
2. Choose **Process > Audio > Remove Silence** to open the **Remove Silence** dialog box.

Figure 107. *The **Remove Silence** dialog*



3. Set the digital noise gate parameters as described in the table above.
4. Check the **Split Clips** box to delete the silent sections of audio.
5. Click **OK** to remove silence from the selected data.

SONAR processes the audio as directed.

Removing DC Offset

Some models of audio hardware produce a DC offset while recording, which is caused by electrical mismatches between the audio hardware and the input device or instrument. Although imperceptible, DC offset may cause problems in further stages of sound processing.

Note: *An easy way to spot DC offset is to zoom in to a silent section of your sound file. If the silent waveform matches the centerline in the waveform display, your file does not contain DC offset.*

To Remove DC Offset From Existing Audio

1. Select the audio data and choose **Process > Audio > Remove DC Offset**. This launches the **Remove DC Offset** dialog.
2. Choose from the following options, and click **OK**:
   - **DC Offset Threshold (dB).** You can set a minimum dB threshold. If the analyzed DC offset is below this value, no removal takes place.
   - **Analyze Left Channel (dB) and Right Channel (dB).** This field displays the DC offset separately for the left and right channels. Press the **Audition** button to update the display.
   - **Compute DC Offset from first 5 seconds only.** To speed processing, select the Compute DC offset from first 5 seconds only check box. Only the first five seconds of a sound file will be analyzed when measuring the DC offset. The only time that five seconds is not sufficient is if a long fade-in or mute has been applied at the beginning of the file.

To Remove DC Offset During Recording

1. Use the **Process > Audio > Remove DC Offset** command to open the **Remove DC Offset** dialog.
2. In the **DC Offset Threshold (dB)** field, set a minimum dB threshold, and click **OK** to close the dialog. If the analyzed DC offset is below this value, no removal takes place.
3. Open the **Audio Options** dialog (**Options > Audio** command), and on the **Advanced** tab, enable the **Remove DC Offset During Recording** check box, and click **OK**.

This option filters out DC Offset according to the threshold value that you set in the **Remove DC Offset** dialog.

Applying Fades and Crossfades Offline

SONAR provides several commands for applying gradual volume changes to audio data. The first command, **Fade/Envelope**, lets you fade-in or fade-out, and lets you choose an envelope, a curve that governs the rate of the fade. The starting envelope can be linear (straight line), exponential, or inverse exponential. You can change the shape of the envelope before applying the fade.

The envelope in the **Fade/Envelope** dialog box is made of one or more connected line segments (the linear curves are a single segment, the exponential curves consist of nine segments each). Although the endpoints of the curve are fixed, you can move the intermediate points, and create new intermediate points, to change the shape of the curve.

To do this	Do this
Move a point	Click and drag it to a new location
Insert a new point	Click on the line between existing points
Remove a point	Drag it onto the next point
Restart from the original curve	Click **Reset**

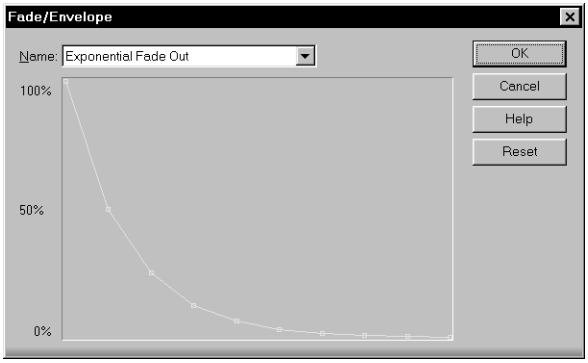
Table 119.

The second command, **Crossfade**, lets you create a smooth transition from one audio clip to another, by fading two overlapping audio clips simultaneously (one fades out, the other fades in). As with **Fade/Envelope**, you can choose from three different starting curves and change the shape of the curve.

To Apply a Fade to Audio Data

1. Select the audio data to be affected.
2. Choose **Process > Audio > Fade/Envelope** to open the **Fade/Envelope** dialog box.
3. Select an envelope from the drop-down list.

Figure 108. *The **Fade/Envelope** dialog*



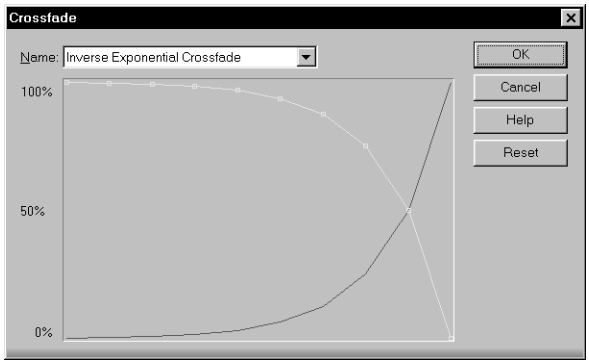
4. If desired, manipulate the curve as described in the table above.
5. Click **OK**.

SONAR applies the fade to the selected audio data.

To Crossfade Two Overlapping Clips

1. Select two overlapping audio clips. They need not be on the same track, but they must overlap in time for the command to have any effect.
2. Choose **Process > Audio > Crossfade** to open the **Crossfade** dialog box.
3. Select an envelope from the drop-down list.

Figure 109. *The **Crossfade** dialog*



4. If desired, manipulate the curve as described in the table above. You can manipulate only the curve pertaining to the first of the two overlapping clips; the second curve is automatically adjusted so that the two curves constantly add up to 100%.
5. Click **OK**.

SONAR applies the two fades to the selected data.

See “Slip-editing (Non-destructive Editing)” on page 346 for information on non-destructive editing.

Audio Effects (Audio Plug-ins)

SONAR provides the ability to use plug-in audio effects. Some audio plug-in effects are supplied with SONAR. Others can be purchased from third-party software manufacturers, and appear automatically in SONAR’s menus once they are installed on your system. If you need help when using a plug-in, press the F1 key on your computer keyboard to open the plug-in’s help file. Please note that third-party plug-ins may not have a help file.

This section describes the effects that are included with SONAR.

Using plug-in effects is similar to using the audio processing commands off-line. The overall procedure is as follows:

- In the Track view, right-click the FX bin and select an effect from the pop-up menu.
- Set effect parameters (or select a preset).
- Listen to the track and adjust parameters based on what you hear.

You can add audio effects, like MIDI effects, to audio tracks in real time (during playback) in the Console and Track views. Unlike some of the audio processing discussed so far, using effects in real time is non-destructive. This means that the audio clip data itself is not modified, and no new audio files are created. See “Mixing,” for more information about real-time effects.

Note: *Off-line effects may cause your audio clips to grow in length. For example, when you apply reverb, your clip may need to lengthen to accommodate the sound of the reverberation. The additional sound that an effect produces from a clip is called an effects tail.*

See:

Real-Time Audio Effects Processing

Destructive Audio Effects Processing

Real-Time Audio Effects Processing

From the Console and Track views you can destructively apply audio effects for one or more tracks. When you are pleased with the audio effects you have patched into a track, you can apply the effects to the track. Destructively applying effects to a track saves resources, allowing you to include additional tracks and/or effects.

To Apply Audio Effects

Add one or more audio effects to one or more tracks in either the Track view or the Console view, and then:

1. In the Track view, select the tracks you want to be affected.
2. Select **Process > Apply Audio Effects** from the menu.
3. If desired, select the option to delete the effects after applying them.
4. Click **OK**.

If you do not delete the effects from each track after applying them, they remain active.

Note: *Applying effects can be undone, but the effects are not then re-patched in the FX bin.*

Destructive Audio Effects Processing

You can also directly apply an audio effect to an audio clip. Right-click the clip and select an effect from the **Process Effect** menu. Set the effect parameters, and click **OK** to start processing.

Software Instruments

SONAR's Synth Rack view (also referred to as just the Synth Rack) makes inserting a soft synth or ReWire instrument a one-step process, and makes viewing and configuring these instruments simple. In the Synth Rack you can insert and delete synths, create control knobs to control and/or automate parameters, scroll through patches and presets, mute, solo, freeze, and choose what track to display automation data on. You can easily control all of your soft synths from one view.

SONAR also supports *multi-port* synths, which allow you to use different synth tracks and effects for each patch or group of patches in a multi-timbral, multi-port synth.

SONAR now seamlessly integrates VST synths. The VST Configuration Wizard runs automatically on startup, registering all your VST plug-ins. See "VST Configuration" on page 638 for more information.

For more information, see:

Synth Rack View

Inserting Soft Synths

Playing a Soft Synth

Using the Assignable Controls Feature

Synth Tracks

Multi-port Soft Synths

To Remove A Soft Synth from a Track or Bus

ReWire Instruments

Playing a Stand-alone Synth

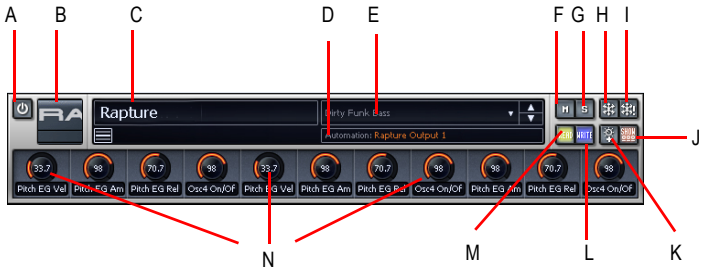
Converting Your Soft Synth Tracks to Audio

Recording a Stand-alone Synth

Synth Rack View

Open the Synth Rack view with the **Views > Synth Rack** command. The Synth Rack view lets you view, insert, delete, and configure your soft synths. You can also mute, solo, and freeze any or all of them from this view. Each time you insert a soft synth into your project, a new row appears in the Synth Rack view with the name of the soft synth and its current preset. You can select different presets from the view. You can insert as many copies of the same soft synth as you like; each new copy appears in a new row and has the same name, but has a higher number after the name (ReWire soft synths can only have one copy open). The new higher-numbered name also appears on the menus of synth track inputs and MIDI track outputs.

Figure 110. *One Row in the Synth Rack*



A. *Connect/Disconnect synth button* ***B.*** *Synth icon* ***C.*** *Synth name* ***D.*** *Automation track menu* ***E.*** *Patch menu* ***F.*** *Mute button* ***G.*** *Solo button* ***H.*** *Freeze/Unfreeze button* ***I.*** *Quick Freeze/Quick Unfreeze button* ***J.*** *Show/Hide Assigned Controls button* ***K.*** *Assign Controls button* ***L.*** *Write button* ***M.*** *Read button* ***N.*** *Automated knobs*

For step by step instructions, see:

Inserting Soft Synths

Playing a Soft Synth

Synth Rack Icons

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Using the Assignable Controls Feature

Automating Controls from the Synth Rack

To Remove A Soft Synth from a Track or Bus

Freeze Tracks and Synths

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Multi-port Soft Synths

ReWire Instruments

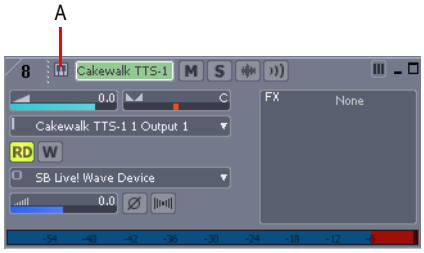
Playing a Stand-alone Synth

Recording a Stand-alone Synth

Synth Tracks

Using a soft synth introduces a third kind of track to your project alongside audio and MIDI tracks. A **synth track** functions much like an audio track, but with a few differences:

- A synth track's input is always a synth or a ReWire device, which means you cannot record audio or enable input monitoring from another source on that track.
- A synth track can display a waveform preview of its output. When you enable this display function by clicking the button on the track strip, the amplitude of a synth track's audio signal is graphed in real time as a waveform.
- Synth tracks are distinguished by the synth icon to the right of the track number.



A. *Synth icon*

For step by step instructions, see:

Inserting Soft Synths

Waveform Preview for Buses and Synth Tracks

ReWire Instruments

Freeze Tracks and Synths

Inserting Soft Synths

In order to play a soft synth from a MIDI controller or with recorded MIDI data, you need to have at least one synth track that lists the soft synth in its **Input** field, and at least one MIDI track that lists the soft synth in its **Output** field. The data from the MIDI track feeds the synth track and plays the soft synth. If you're playing the soft synth with a MIDI controller, the MIDI track that's feeding the synth track must have the focus (lighter color). You can also patch the soft synth into an audio track's FX bin instead of a synth track's **Input** field.

To add a soft synth to the audio and synth tracks' **Input** menus (drop-downs) and the MIDI tracks' **Output** menus, you have to insert each soft synth that you want to use into each project. There are two basic ways to insert soft synths in SONAR:

1. You can insert soft synths from the Synth Rack view or with the **Insert > Soft Synths** command. If you use this method, you can choose to have SONAR create the necessary synth and MIDI tracks, and patch them together correctly. If you want to use multiple synth tracks to take advantage of SONAR's support for the multi-output soft synth format, you need to create and patch additional MIDI tracks manually to feed the additional synth tracks.
2. You can insert soft synths into FX bins of individual audio tracks. If you use this method, you need to set a MIDI track's **Output** field to the name of the soft synth you inserted. Then you can record MIDI data in the MIDI track to play the soft synth with.

The procedure for inserting multi-output and single-output soft synths is basically the same. There are just more tracks possibly involved when you insert a multi-output soft synth.

You can insert more than one copy (also called an *instance*) of the same soft synth. Each new copy has the same name as the previous copy except for having a higher number after the name. Every copy appears in a separate row in the drop-down menus of synth and audio track inputs and MIDI track outputs.

To Insert a Soft Synth from the Synth Rack View or Menu

1. If you want to use the Synth Rack view, open the Synth Rack view with the **Views > Synth Rack** command, and click the **Insert** button to display the pop-up menu of installed soft synths.
2. If you want to use the menu command, use the **Insert > Soft Synths** command to display the pop-up menu of installed soft synths.
3. In the pop-up menu, click the name of the soft synth you want to insert.

   The **Insert Soft Synth Options** dialog appears, unless you've previously unchecked the **Ask This Every Time** check box that's in the dialog. If you have, SONAR inserts the soft synth according to the preferences you set the last time you used the **Insert Soft Synth Options** dialog. If you need to open the **Insert Soft Synth Options** dialog when it's hidden, click the **Insert Soft Synth Options** button in the **Synth Rack view** toolbar.
4. Choose options from the **Insert Soft Synth Options** dialog according to the following:
   - If you want to create a MIDI track that uses the soft synth as an output, check the Create These Tracks: MIDI Source check box.
   - If you want to create a single synth track that acts as an output for Output 1 of the soft synth, check the Create These Tracks: First Synth Audio Output check box.
   - If you want to create separate synth tracks for each of the soft synth's outputs, check the Create These Tracks: All Synth Audio Outputs check box.
   - If you want to use existing MIDI and audio tracks to play the soft synth, uncheck all of the Create These Tracks options. SONAR adds the soft synth to the audio track input and MIDI track **Output** menus. You need to set an existing MIDI track's **Output** field to the soft synth, and set an existing audio track's **Input** field to the soft synth (the audio track will then become a synth track).

- If you want to open the soft synth's interface from this dialog, check the **Open These Windows: Synth Property Page** check box.
- If you opened this dialog from the **Insert** menu and want to open the Synth Rack view, check the **Open These Windows: Synth Rack View** check box.
- If the synth you're inserting can create or send MIDI data, and you want to record or redirect this MIDI data, enable the Enable MIDI Output check box.
- Any automation data you create for this synth is displayed by default on the Synth track for this synth. If you want to display this data on a different track, choose the track in the **Display Automation On** menu.
- If you create some new knobs on the Synth Rack to control certain parameters on a particular synth, you can display the same knobs every time you insert that synth by enabling the Recall Assignable Controls check box.
- If you want to open this dialog every time you use the **Insert > Soft Synths** command, or click the **Insert** button in the Synth Rack view and choose a synth from the pop-up menu, check the **Ask This Every Time** option. If you always insert soft synths in the same way, you can uncheck this option so you don't have to deal with the dialog each time. To open the dialog when the option is unchecked, click the **Insert Soft Synth Options** button in the **Synth Rack view** toolbar.

5. Click **OK** to close the dialog and insert the synth.

SONAR adds the soft synth to the audio track **Input** and MIDI track **Output** menus, and creates any new tracks that you requested. The new tracks already have the correct inputs and outputs patched. Now you can record MIDI data in the soft synth MIDI tracks, and/or play the soft synth from a MIDI keyboard or controller. See Playing a Soft Synth.

To Insert a Soft Synth in an FX Bin

1. In either the Track or Console view, right-click the FX bin of an unused audio track or bus.

Note: *If you patch a soft synth into a bus that has no audio track assigned to it, the soft synth does not sound. Always use a bus that has at least one audio track sending data to it.*

The plug-in menu appears.

2. Under **Soft Synths**, choose the name of a soft synth.

Two things happen: the soft synth's interface appears, and the soft synth's name appears in the track's or bus's FX bin, with a **Bypass** button next to the name.

3. Set the soft synth's parameters (choose sounds, effects, etc.), and drag its interface out of the way.

4. Click the **Output** field of a MIDI track to display the **Output** menu.

5. Select the name of the soft synth that you patched into the audio track or bus.

6. If the soft synth is multi-timbral, choose a MIDI channel for the MIDI track.

7. Also in the MIDI track, select a bank and patch.

Now you can record some MIDI data into the MIDI track to play the soft synth with. See “To Play a Soft Synth with Recorded MIDI Data” on page 576.

You can also play the soft synth in real-time from a MIDI controller. See “To Play a Soft Synth from a MIDI Controller” on page 576.

See also:

Synth Rack View

Multi-port Soft Synths

Recording a Soft Synth’s MIDI Output

Synth Tracks

Playing a Soft Synth

Converting Your Soft Synth Tracks to Audio

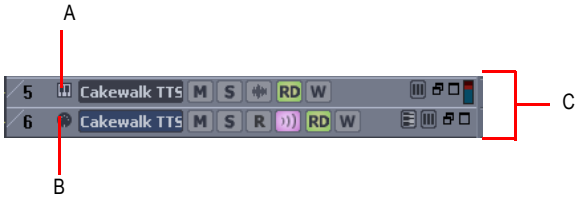
Muting and Soloing Soft Synth Tracks

To Remove A Soft Synth from a Track or Bus

Opening a Soft Synth’s Property Page

There are several different methods to open a soft synth’s property page (interface):

- When you insert the soft synth from the **Insert** menu or Synth Rack view, check the **Open These Windows: Synth Property Page** check box in the **Insert soft synth Synth Options** dialog.
- Double-click the name of the soft synth in either a MIDI track’s **Output** field or a synth track’s **Input** field.
- Double-click the track icon of a MIDI track or the Synth track that the synth uses. **This works even when a track is minimized**:



***A.** Double-click here **B.** Or here **C.** Minimized tracks*

- Double-click the row in the Synth Rack view that displays the soft synth.
- Double-click the name of the soft synth in an FX bin.
- Click one of the rows in the Synth Rack view to select it, and then click the **Properties** button in the **Synth Rack** toolbar (or press C).

Synth Rack Icons

Each Synth Rack strip displays a synth icon so that you can easily tell one synth from another when the rack contains multiple synths.

Icons have the same image format and file location as track icons, and use the same commands to show or hide the icons. Synth Rack Icons are enabled in SONAR by default, and the default icon for each synth is `track_icon_dxi_large.bmp`. The Synth Rack only displays large format icons, fixed at 48x48 pixels.

Use the following procedures to manage your synth icons:

To do this	Do this
To hide Synth Rack icons	Right-click an icon in the Synth Rack and choose **Show Synth Icons** from the pop-up menu. Or Use the **Options > Icons > Synth Rack > Show Large Icons** command.
To show Synth Rack icons	Use the **Options > Icons > Synth Rack > Show Large Icons** command.
To load a particular synth icon	Right-click the icon in the Synth Rack that you want to change, and select **Load Synth Icon** from the pop-up menu.
To reset a particular synth icon to its original icon	Right-click the icon in the Synth Rack that you want to reset, and select **Reset Synth Icon** from the pop-up menu.
To open a synth's property page	Double-click the synth's icon in the Synth Rack.

Table 120.

Playing a Soft Synth

There are several ways to play a soft synth:

- You can record MIDI data and use the soft synth as a playback device.

Note: *WDM or ASIO drivers do not improve performance when you play back recorded MIDI data—the improvement comes only when you play a soft synth in real time from an external MIDI controller or keyboard.*

- You can play the soft synth in real time from a MIDI controller or keyboard. To avoid excessive latency, your sound card must be using a WDM or ASIO driver. Also, you must set mixing latency to the lowest achievable level (probably less than 10 msec.), which you do by using the **Options > Audio** command to open the **Audio Options** dialog box, and dragging the Buffer Size slider on the General tab.

- Some soft synths that use the DXi 2 format can send MIDI data, sometimes including MIDI notes, from their interfaces to SONAR. For example, some soft synths have MIDI keyboards built into their interfaces that you can click to send note on/off messages.

  See “Recording a Soft Synth’s MIDI Output” on page 583 for more information.

To Play a Soft Synth with Recorded MIDI Data

1. Insert a soft synth into the project.
2. In the MIDI track that sends its output to the soft synth, choose a MIDI channel.
3. Open the soft synth’s interface (if it’s not open already) by clicking the **Properties** button in the Synth Rack view, or by double-clicking the name of the soft synth if it’s patched into the FX bin of an audio track.
4. Set the soft synth’s parameters (choose sounds, effects, etc.), and drag its interface out of the way (the soft synth’s interface does not have to be open for the soft synth to sound).
5. If you want to save your soft synth settings, type a name in the **Presets** field, and click the **Disk** icon that’s next to the **Presets** field.
6. Record some MIDI data into the MIDI track.

When you play back the recorded MIDI data, you should hear the soft synth through your sound card’s outputs. If you don’t, make sure your data is in the right range; a bank, patch, and channel are selected; your monitor speakers or headphones are turned up; and that none of the relevant tracks are muted.

You can add effects to each of the synth tracks. You can also add MIDI effects to your soft synth MIDI tracks.

To Play a Soft Synth from a MIDI Controller

1. Make sure your controller is set to local off.
2. Make sure that the **Audio Engine** button in the **Transport** toolbar is depressed.
3. Insert a soft synth into your project (see “Inserting Soft Synths” on page 571, if necessary).

Note: *If you patch a soft synth into a bus that has no audio track assigned to it, the soft synth does not sound. Always use a bus that has at least one audio track sending data to it.*

4. In the MIDI track that sends its output to the soft synth, choose a MIDI channel.
5. Open the soft synth’s interface (if it’s not open already) by clicking the **Properties** button in the Synth Rack view, or by double-clicking the name of the soft synth if it’s patched into the FX bin of an audio track.

Note: *You can also open a soft synth’s interface by double-clicking its name where it appears in a MIDI track’s **Output** menu or a synth track’s **Input** menu.*

6. Set the soft synth’s parameters (choose sounds, effects, etc.), and drag its interface out of the way.

7. If you want to save your soft synth settings, type a name in the **Presets** field, and click the **Disk** icon that's next to the **Presets** field.
8. Make sure that the MIDI track has the focus (its titlebar is lighter), and play your MIDI controller.

When you play your MIDI controller you should hear the soft synth through your sound card's outputs. If you don't, make sure you're playing in the right range; a bank, patch, and channel are selected; your monitor speakers or headphones are turned up; your controller is attached to your MIDI interface; and that none of the relevant tracks are muted.

To Remove A Soft Synth from a Track or Bus

- If your soft synth is patched into the FX bin of an audio track or bus, right-click the name of the soft synth, and choose **Delete** from the pop-up menu.

  OR
- In the synth track that uses the soft synth as an input, choose another input for the track. If you don't select another soft synth as an input, the synth track becomes a regular audio track.

To Remove a Soft Synth from a Project

- If your soft synth is patched into the FX bin of an audio track or bus, right-click the name of the soft synth, and choose **Delete** from the pop-up menu.
- If your soft synth is patched into the **Input** field of a synth track, go to the Synth Rack view, click the name of the soft synth to select it, and then click the **Delete** button. SONAR deletes the soft synth strip from the Synth Rack view and sets the inputs and MIDI outputs of all affected tracks to the next lower-numbered option. SONAR does not delete the affected tracks.

Note: *If you're using a ReWire instrument and not a soft synth, always close the ReWire instrument's interface before you delete the instrument from SONAR, or before you close SONAR.*

See:

Playing a Stand-alone Synth

Converting Your Soft Synth Tracks to Audio

Recording a Stand-alone Synth

Muting and Soloing Soft Synth Tracks

SONAR automatically places any synth and MIDI tracks that use soft synths into a group that makes muting and soloing the tracks easy:

- To mute or solo a MIDI track that is patched to a synth track, simply mute or solo the MIDI track—SONAR automatically mutes or solos the correct synth track. If another MIDI track uses the synth track as an output, SONAR leaves the synth track unmuted.
- To mute or solo all the MIDI tracks that are patched to a specific soft synth, simply mute or solo the synth track that the MIDI tracks are patched into.—SONAR automatically mutes or solos all

the correct MIDI tracks.

Or

- Click the **M** or **S** buttons (mute and solo, respectively) next to the soft synth's name in the Synth Rack view. This mutes or solos all the tracks associated with this instance of the soft synth.

You can use the **Mute** and **Solo** buttons in the Track view, Synth Rack view, or Console view.

Rename synths in the Synth Rack view

It is possible to rename synth in the Synth Rack view. This is especially useful if you use many instances of a particular synth and you need to distinguish each instance.

To rename a synth

Do *one* of the following:

- Double click the **Name** field of the synth you wish to rename.
- Press F2 key to rename the selected synth.

Multi-port Soft Synths

A multi-port soft synth allows you the option of using a different synth track for every output that the soft synth has. This allows you to use different plug-in effects for each sound (or in some cases, group of sounds) that a soft synth produces. For example, if a soft synth can produce 16 sounds at the same time, and has 4 outputs, you can send any of the 16 sounds out through any of 4 different outputs, giving you a choice of 4 different plug-in configurations for that soft synth. You would use 4 different synth tracks: one for each output. If a soft synth can produce 8 sounds at the same time, and has 8 outputs, you could use 8 synth tracks and 8 plug-in configurations. If you need more plug-in configurations or just more sounds, you can insert more copies of the same soft synth, using new synth tracks for all of the new copy's outputs. You can also send all the MIDI tracks out the same output and synth track if you don't need separate plug-ins for each sound, or just want to use the soft synth's internal effects.

The **Insert Soft Synth Options** dialog gives you the option of automatically creating a separate synth track for each audio output that the soft synth has, or creating just one synth track for Output 1 of that particular soft synth. Each new copy (also called an *instance*) of a soft synth is considered to be a separate instrument, and appears in a separate row in the Synth Rack view, with a number after its name representing which copy it is.

For step by step instructions, see:

Synth Rack View

Synth Tracks

Inserting Soft Synths

Playing a Soft Synth

Converting Your Soft Synth Tracks to Audio
Muting and Soloing Soft Synth Tracks
To Remove A Soft Synth from a Track or Bus

Converting Your Soft Synth Tracks to Audio

Once your project sounds the way you want it to, it's extremely easy to convert your soft synth MIDI tracks to either new audio tracks, or Wave, MP3, or other exported files.

You can also do a temporary conversion, called freezing. See "Freeze Tracks and Synths" on page 617 for more information.

To Convert Your Soft Synth Tracks to New Audio Tracks

1. Mute all tracks that you don't want to convert.
2. Use the **Edit > Bounce to Track(s)** command.

   The **Bounce to Track(s)** dialog box appears.
3. In the **Destination** field, choose a new or pre-existing track to put the new audio data on.
4. If you've saved presets from previous bounce operations, you can choose a preset from the **Preset** field.
5. In the **Source Category** field, choose **Tracks**.
6. In the **Channel Format** field, choose **mono** if you want a mono track, **stereo** if you want a stereo track, and **split mono** if you want to create separate mono tracks.
7. In the **Source/Buses** field, choose the output bus(es) that the soft synth tracks are using (usually the main outputs).
8. In the **Mix Enables** field, make sure all choices are selected.
9. Click **OK**.

SONAR creates new audio tracks from the outputs you selected. When you're through converting, don't forget to mute your MIDI tracks so you won't hear them and the new audio track(s) at the same time.

Note: *You control the bit depth of all rendering operations (bouncing, freezing, applying effects) on the **Audio Data** tab of the **Global Options** dialog (**Options > Global** command) in the **Render Bit Depth** field. The default value of 32 is the best for most situations. See "Bit Depths for Rendering Audio" on page 849 for more information.*

To Export Your Soft Synth Tracks as Wave, MP3, or Other Type Files

1. Mute all tracks that you don't want to export; make sure you don't mute the synth track or the audio track that the soft synth is patched into, or the MIDI track(s) that you are using as a source.
2. Use the **File > Export > Audio** command.

The **Export Audio** dialog box appears.

3. In the **Look in** field, choose the location where you want the new, exported file to be.
4. Type a file name in the **File name** field.
5. Choose the type of file, the format, and the bit depth of the new file you're creating—for MP3 use 16 bits.
6. In the **Mix Enables** field, make sure all choices are selected.
7. Click **OK**.

SONAR creates a new audio file of the type you specified. Find the file in the folder you specified, and double-click it to listen to it.

See:

Drawing Soft Synth Automation in the Clips Pane

Synth Rack View

Using the Assignable Controls Feature

You can create knobs on the Synth Rack to control any of a synth's automatable parameters (each knob learns what parameter to control when you create the knob). This makes it easy to adjust the controls that you use most often on a particular synth, and also lets you record automation from the Synth Rack. After you create some control knobs, the next time you insert the same synth, you can choose to display the same control knobs that you used previously.

You can also group control knobs on the Synth Rack, and use Remote Control to move the knobs.

To Create Control Knobs on the Synth Rack

1. In the Synth Rack, open the property page (interface) of the synth that you want to create knobs for.
2. In that synth's strip of controls in the Synth Rack, click the **Assign Controls** button to enable it.
3. While the **Assign Controls** button is enabled, click on each control in the synth's property page that you want to create a knob for.
4. When you're finished clicking on controls, click the **Assign Controls** button to disable it.

The Synth Rack displays knobs for the controls you selected, with the each knob's name displayed below each knob. Now you can adjust some of the synth's parameters by moving the appropriate knob in the Synth Rack.

To Hide or Show Control Knobs on the Synth Rack

- In the Synth Rack, click the **Show/Hide Assigned Controls** button.

The Synth Rack displays knobs for the controls you selected, with the each knob's name displayed below each knob. Now you can adjust some of the synth's parameters by moving the appropriate knob in the Synth Rack.

See also:

Recording a Soft Synth's MIDI Output

Automating Controls from the Synth Rack

Displaying Synth Rack Automation

Automating Controls from the Synth Rack

Note: *Your synth's manufacturer determines which controls (if any) you can automate. If your synth does not expose its controls to SONAR, you can not automate the synth.*

Once you create some control knobs on the Synth Rack, you can record automation from them. Use the same procedure you would use to record automation of any other SONAR knob or widget. See "Recording Individual Fader or Knob Movements" on page 709 and "Displaying Synth Rack Automation" on page 582 for more information

You can also draw and edit synth automation in the Clips pane. See Drawing Soft Synth Automation in the Clips Pane"Drawing Soft Synth Automation in the Clips Pane" on page 583 for more information.

See also:

Recording a Soft Synth's MIDI Output

Displaying Synth Rack Automation

You can choose what track you want a synth's automation to appear in for editing. Use the **Automation Track** menu in each strip of controls in the Synth Rack to choose what track you want to display the synth's automation on. You can display the automation from several different synths on the same track, or put a synth's automation on a track that is completely unrelated to the synth if you want.

See "Synth Rack View" on page 570 for a picture of the Synth Rack and all its components.

See also:

Recording a Soft Synth's MIDI Output

Automating Controls from the Synth Rack

Remote Control of the Synth Rack

Once you create some control knobs on the Synth Rack, you can assign knobs or sliders on your MIDI controller to control the Synth Rack knobs.

See "Using Remote Control" on page 662 for more information.

Drawing Soft Synth Automation in the Clips Pane

Some synths have controls that you can automate by drawing envelopes in the Track view.

To Automate a Soft Synth's Controls in the Clips Pane

1. In the Synth Rack, the **Automation Track** menu in a particular synth's control strip displays the track that this synth's automation appears in. Right-click in the Clips pane of this track, and choose **Envelopes > Create Track Envelope > Name of your synth** from the pop-up menu.

   The **Synth Envelope** dialog box appears.
2. Click the check box(es) of the parameter(s) you want to draw.
3. Choose a color (optional).
4. Click **OK**.

SONAR draws an envelope for the parameter that you chose. You can edit the envelope to make the parameter behave as you want it to.

See also:

Recording a Soft Synth's MIDI Output

Automating Controls from the Synth Rack

Displaying Synth Rack Automation

Synth Rack View

Synth Tracks

Playing a Soft Synth

To Remove A Soft Synth from a Track or Bus

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Recording a Stand-alone Synth

Soft Synth MIDI Output Support

Some soft synths produce MIDI output as well as audio output. You can now record the MIDI output of both VST and DirectX instruments that have this feature.

Recording a Soft Synth's MIDI Output

SONAR allows you to record the MIDI output of a synth onto another MIDI track in your project. This can be convenient if your synth creates arpeggios, drum patterns, or other MIDI data that you wish to edit as a MIDI clip.

To Enable MIDI Outputs on a Synth

- When inserting a synth from the **Insert** menu or the Synth Rack, check the **Enable MIDI Output** check box in the **Insert Soft Synth Options** dialog box.

  Or

- Right-click a synth name in the Synth Rack to enable or disable **Enable MIDI Output** from a pop-up menu.

The soft synth will now appear as an **Input** option on all MIDI tracks just like any hardware inputs.

To Hear a Soft Synth's MIDI Output Through Another Track

1. Verify that **Enable MIDI Output** is enabled for the synth whose MIDI output you wish to hear through another track.
2. On a new MIDI track in your project, set the **Input** to the synth whose MIDI output you wish to hear.
3. Set the **Output** of that track to another synth or MIDI output used in your project and enable **Input Echo**.
4. Play some MIDI data through the synth whose MIDI **Output** has been enabled.

The MIDI data sent from that synth will be echoed through the **Output** of the new MIDI track.

To Record a Soft Synth's MIDI Output to a Track

1. Verify that Enable MIDI Output is enabled for the synth whose MIDI output you wish to record.
2. On a new MIDI track in your project, set the Input to the synth whose MIDI output you wish to record and arm the track.
3. Click the **Record** button to start recording.
4. If you're recording live MIDI input through the synth, place track focus on the synth's MIDI track and begin playing your MIDI controller. If you're recording pre-existing MIDI data through the synth, record through the duration of the pre-existing clips.

The MIDI Output of the synth will be recorded to the new MIDI track. You can then edit the MIDI data and route it to a different MIDI output as you see fit.

Note: *Be careful to avoid creating a MIDI feedback loop. To prevent this, make sure the Input of a soft synth's MIDI track is not set to the same synth's Output.*

ReWire

SONAR can send MIDI events to any object in a ReWire client application on as many MIDI channels as the client application makes available.

ReWire Instruments

ReWire is a technology for transferring audio data between software applications in real time—the software equivalent of a multi-channel audio cable. ReWire is built on the following cornerstones:

- Real-time audio streaming between applications
- Sample accurate synchronization
- Common transport functionality

SONAR supports the ReWire 2.0 format, but with some differences. SONAR interacts with ReWire applications in the following ways:

- You can insert one instance of a ReWire application into each SONAR project.
- You can use as many MIDI channels and devices in each ReWire application as that application makes available.
- You can insert ReWire devices into SONAR projects from the Synth Rack view or **Insert** menu, and you can tell SONAR to create the necessary synth tracks and one MIDI track at that time. You can also tell SONAR to open the ReWire application's property page, because, unlike synths, ReWire applications must have their property pages (interfaces) open in order to function.
- SONAR's tempo, transport, and loop points are linked to the ReWire application. Activating or changing any of these settings in the ReWire application(s) changes the same setting in SONAR, and vice versa. If you have several applications open and you make a change in one of them, it may be necessary to put the focus on the other application(s) to update their interfaces.
- You cannot send patch or bank changes from SONAR to the ReWire application. All other track property controls in SONAR control the ReWire device, except the pan controls on MIDI tracks. The pan controls on SONAR's synth tracks control the ReWire device's panning.
- You can mix down or bounce ReWire tracks in SONAR the same way you mix down or bounce synth tracks.
- You can use SONAR's automation functions on both synth and MIDI tracks that the ReWire application uses.
- Muting or soloing a synth track that a ReWire device uses automatically mutes or solos the MIDI track that feeds that synth track. Muting or soloing a MIDI track that a ReWire device uses will mute or solo the corresponding synth track only if there is only one MIDI track feeding that synth track.
- You must always close your ReWire application(s) before you close SONAR. Some ReWire applications prevent SONAR from closing properly if the ReWire applications are still open.

For step-by-step procedures, see:

Inserting a ReWire Instrument

To Use Separate Synth Tracks for Each ReWire Device

Automating ReWire Instruments

Mixing Down ReWire Instruments

ReWire Troubleshooting Guide

Inserting a ReWire Instrument

After you install your ReWire applications and reboot your computer, the names of the ReWire applications appear in SONAR's **Insert** menu under ReWire Devices, and also in the Synth Rack view's **Insert** button pop-up menu.

To Insert a ReWire Instrument

1. Open a SONAR project. Do not launch your ReWire application.
2. In the SONAR's Synth Rack view, click the **Insert** button, and click **ReWire Devices** to display the submenu of installed ReWire devices.

   OR

   Use the **Insert > ReWire Devices** command to display the submenu of installed ReWire devices.
3. Click the name of the ReWire device you want to insert.

   The **Insert Soft Synth Options** dialog appears.
4. Choose options from the **Insert Soft Synth Options** dialog according to the following:
   - If you want to create a MIDI track that uses the ReWire Instrument as an output, check the Create These Tracks: MIDI Source check box.
   - If you want to create a single synth track that acts as an output for Output 1 of the ReWire Instrument, check the Create These Tracks: First Synth Audio Output check box.
   - If you want to create separate synth tracks for each of the ReWire Instrument's outputs, check the Create These Tracks: All Synth Audio Outputs check box.
   - If you want to use existing MIDI and audio tracks to play the ReWire Instrument, uncheck all of the Create These Tracks options. SONAR adds the ReWire Instrument to the audio track **Input** and MIDI track **Output** menus. You need to set an existing audio track's **Input** field to the ReWire Instrument, and set an existing MIDI track's **Output** field to the ReWire Instrument. The existing audio track will then become a synth track.
   - If you want to open the ReWire Instrument's interface from this dialog, check the **Open These Windows: Synth Property Page** check box (**always check this option**: ReWire Instruments do not sound unless their property pages are open).
   - If you opened this dialog from the **Insert** menu and want to open the Synth Rack view, check the **Open These Windows: Synth Rack View** check box.
   - If you want to open this dialog every time you use the **Insert > ReWire Instrument** command, or click the **Insert** button in the Synth Rack view and choose a ReWire instrument from the pop-up menu, check the **Ask This Every Time** option. If you always insert ReWire Instruments

in the same way, you can uncheck this option so you don't have to deal with the dialog each time. To open the dialog when the option is unchecked, click the **Insert Soft Synth Options** button in the **Synth Rack view** toolbar.

5. Click **OK** to close the dialog.

   SONAR adds your ReWire devices to the audio and synth track **Input** menus and the MIDI track **Output** and **Channel** menus, creates any tracks you requested, adds the ReWire instrument to the Synth Rack view, and opens the ReWire application's interface.

6. In the MIDI track whose output is the ReWire synth track, click the drop-down arrow in the **Channel** field to display the names of the available ReWire devices in your ReWire instrument.
7. Click the name of the device you want to use.
8. Make sure that the synth track you want to hear the ReWire instrument through has the appropriate ReWire channel listed in its **Input** field.

Now you can record MIDI data in the MIDI track and hear it through the synth track. If you want to use different synth tracks for each ReWire device, see the following procedure.

Note: *Always close your ReWire applications before closing a SONAR project.*

To Use Separate Synth Tracks for Each ReWire Device

1. Open SONAR**,** insert a ReWire instrument, and choose the **All Synth Audio Outputs** option in the **Create These Tracks** field of the **Insert Soft Synth Options** dialog. Make sure you choose to open the Synth window, and click **OK**.

   SONAR inserts the ReWire instrument and creates multiple synth tracks.

2. In your ReWire application, assign the devices you want to use to the outputs or channels you want to use. For example, in Propellerheads Reason, you use the back panel of the mixer to drag cables from a device to the output channel you want to use for that instrument.
3. In SONAR**,** set the **Output** field of a MIDI track to the name of your ReWire application, and set the **Channel** field to the name of the ReWire device you want to play with this track.
4. Record some MIDI data in the track and play it. Find the synth track whose **Input** field lists the output channel you patched your device into—the playback meter lights up as you play the MIDI track that plays your device.

Now you can use separate effects for each of your ReWire devices.

Note: *Always close your ReWire applications before closing a SONAR project.*

See also:

Mixing Down ReWire Instruments

Automating ReWire Instruments

ReWire Troubleshooting Guide

Routing MIDI Data to ReWire Instruments

Some ReWire applications can create large numbers of instruments. You can send a track's MIDI data to any of these instruments by selecting the specific instrument in the **MIDI channel** menu of the relevant track.

To Send MIDI Data to a Specific ReWire Instrument

1. In the SONAR MIDI track that contains the recorded MIDI data you want to send, make sure that the **Output** menu is set to the correct ReWire device.
2. Then use the **Ch** menu in the same track to choose the instrument you want to send to. This also works if you just want to use this track to play your MIDI controller through a particular instrument in the ReWire application.

Mixing Down ReWire Instruments

To either mix down or bounce ReWire instruments to new audio tracks, use the same procedures as for synths.

See also:

Automating ReWire Instruments

ReWire Troubleshooting Guide

Inserting a ReWire Instrument

Automating ReWire Instruments

You can automate audio and MIDI tracks that are patched to ReWire instruments the same ways you can automate any of SONAR's audio and MIDI tracks.

See also:

Inserting a ReWire Instrument

To Use Separate Synth Tracks for Each ReWire Device

Mixing Down ReWire Instruments

ReWire Troubleshooting Guide

Inserting a ReWire Instrument

ReWire Troubleshooting Guide

The following lists some common issues when you use ReWire with SONAR:

- **SONAR Won't Close Properly.** Always close your ReWire applications before closing SONAR or a SONAR project.
- **Rebirth Won't Play After I Open Its Property Page.** Make sure that the Loop switch in Rebirth is enabled.

- **My ReWire Project Plays at a Different Tempo when Opened from SONAR.** When you open a ReWire project from SONAR, the ReWire project assumes SONAR's default tempo, which is 100. Change SONAR's tempo to match your ReWire project.
- **My MIDI Controller Works in SONAR or my ReWire Application, but not Both.** Choose different MIDI In ports for both SONAR and your ReWire application. Do this in SONAR by using the **Options > MIDI Devices** command, and highlighting the MIDI In port you want to use in SONAR. If you only have one MIDI In port on your MIDI interface or sound card, enable that input in either SONAR or your ReWire application, and disable that input in the other application.
- **I Get a MIDI Input Error Message When I Open a ReWire Application.** If you only have one MIDI Input port on your MIDI interface, you probably have that one reserved for SONAR, leaving none for your ReWire application. If you would rather use your MIDI controller in the ReWire application instead of SONAR, you can deselect your MIDI input port in SONAR's **MIDI Devices** dialog (**Options > MIDI Devices** command), and then select that MIDI **Input** from whatever menu your ReWire application has for that purpose. If you have multiple inputs on your MIDI interface, simply select different ones for SONAR and your ReWire application.

ReWire and fast forwarding in SONAR

When there is a ReWire application loaded into a SONAR project, the SONAR **Fast Forward** button/command only works if there is a clip at the end of the SONAR project or if **Stop at Project End** is not checked.

ReWire tracks silent when using metronome record count-in

When using a metronome count-in and recording, any ReWire tracks will be silent at the start of recording. The silence period will equal the count-in duration. To fix this issue, disable metronome count-in (go to **Options > Project > Metronome** and set **Record Count-in** to **zero**).

Stand-alone Synths

Some soft synths can be run independently of SONAR and do not need to be inserted to the Synth Rack or an FX bin to use. After you install this kind of synth and restart your computer, the name of the synth's MIDI driver appears in SONAR's **MIDI Devices** dialog box under **Outputs**.

See:

Playing a Stand-alone Synth

Recording a Stand-alone Synth

Playing a Stand-alone Synth

SONAR plays this kind of synth by seeing it as additional MIDI outputs in both the **MIDI Devices** dialog box and in MIDI tracks' **Output** fields.

To Play a Stand-alone Synth

1. Use the **Options > MIDI Devices** command to open the **MIDI Devices** dialog box.
2. In the **Outputs** field, make sure the name of your stand-alone synth's MIDI driver is highlighted, and click **OK**.
3. Click the **Output** field of an unused MIDI track to display the **Output** menu.
4. Select the name of the stand-alone synth's MIDI driver.
5. If your stand-alone synth is multi-timbral, change the track's MIDI channel to the same one that the synth uses for the sound you want to hear.
6. Select a bank and patch on your stand-alone synth, if you haven't already.
7. Record some MIDI data in the MIDI track, or play any MIDI controller that's an input for the MIDI track.

When you play your MIDI controller or play back the recorded MIDI data, you should hear the stand-alone synth through your sound card's outputs. If you don't, make sure you're playing in the right range and that your monitor speakers or headphones are turned up, and that none of the relevant tracks are muted.

See:

Recording a Stand-alone Synth

Recording a Stand-alone Synth

There are several ways to record a stand-alone synth:

- You can use the synth's wave capture function, if it has one. See your synth's documentation for a procedure. Make a note of where the resulting captured Wave file is stored, and then you can import the file into SONAR by using the **File > Import > Audio** command.
- You can connect your sound card's outputs to your sound card's inputs, either internally or externally, depending on your sound card's design. After you do this, you need to arm an audio track in SONAR and select one of your sound card's wave drivers as an input. Start recording, and make sure the MIDI track that is routed to the synth is playing back.
- You can use your sound card's **wave capture** or **what-you-hear** option, if it has one. See the following procedure.

To Record A Stand-alone Synth with your Sound Card's Wave Capture Function

1. Pick a destination audio track and set the **Input** field to **Stereo**.

Note: *If you have more than one sound card installed, select the one that your stand-alone synth uses as an output.*

2. Arm the destination track.
3. Mute or archive any tracks that you don't want to record to the destination track.

4. If SONAR's metronome is set to use any software synth to produce a click, disable the **Recording** option in the **Project Options** dialog box. To do this, select **Options > Project** to open the **Project Options** dialog box, select the **Metronome** tab and uncheck **Recording** in the **General** section.
5. Open your sound card's mixer device. This is normally done by double-clicking the speaker icon on the Windows taskbar, or by choosing **Start > Programs > Accessories > Multimedia > Volume Control > Options > Properties**.

Note: *Some sound cards, such as the SoundBlaster Live, have their own proprietary mixer. If yours has one, please use it instead.*

6. Click **Adjust Volume For Recording**, and make sure all boxes below are checked.
7. Click **OK**, and locate the slider marked **MIDI**, **Synth**, **Mixed Input**, or **What You Hear**. Check the **Select** box at the bottom, then close the window.
8. In SONAR, click the **Record** button.

   SONAR records all the MIDI tracks that are assigned to the stand-alone synth as a stereo audio track.

After you finish recording, mute the MIDI tracks that you just recorded so you don't hear them and the new audio track at the same time.

Mixing

SONAR lets you mix your projects with tremendous control and flexibility. The extensive bussing controls, support for DX and VST plug-ins, built-in EQ's, automation, remote control, metering, grouping, and freeze features let you design your own style of mixing, with your own workflow. (Automation is covered in a separate chapter.)

After you finish mixing a project, you can export the project in a variety of audio file formats to create a CD master or to publish your work on the Internet. You can choose to include all real-time effects and control movements in the mixed-down tracks that you export (see "Preparing Audio for Distribution" on page 669 for more information).

See:

Preparing to Mix

Mixing MIDI

Signal Flow

Routing and Mixing Digital Audio

Metering

Using Real-Time Effects

Sidechaining

V-Vocal Clips

Using Control Groups

Main Outs

Using Remote Control

Bouncing Tracks

Preparing Audio for Distribution

Burning audio CDs

Cakewalk Publisher

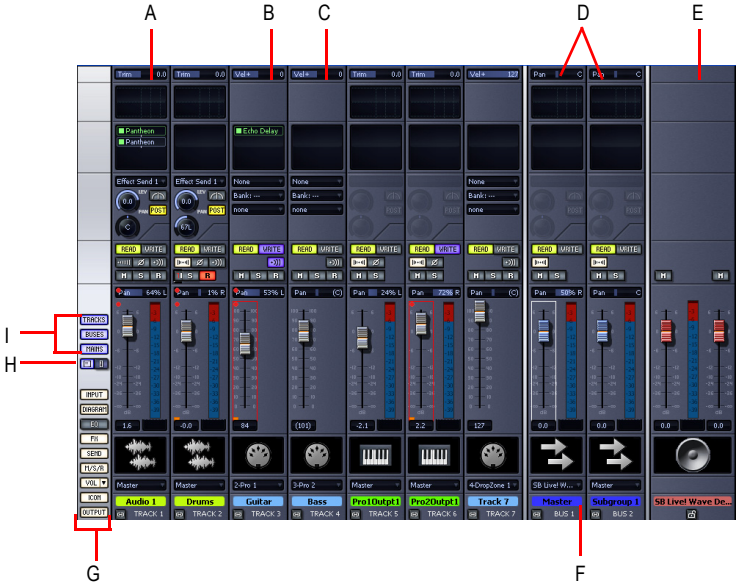
Freeze Tracks and Synths

Preparing to Mix

The Console and Track views contain all the controls you need to mix your project. To open the Console view click the **Console view** button or choose **Views > Console**. The Track view is always open.

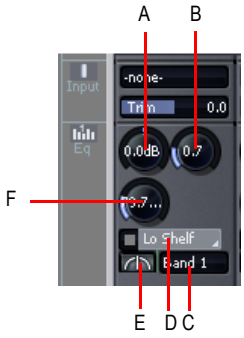
Note: *You can control all sliders and knobs in the Console and Track Views by hovering over them with the mouse and manipulating the mouse wheel.*

Figure 111. *The Console view*



A. *Audio module* ***B.*** *MIDI module* ***C.*** *MIDI velocity* ***D.*** *Bus out* ***E.*** *Main out* ***F.*** *Bus pane* ***G.*** *Show/hide strip controls buttons* ***H.*** *Widen all strips* ***I.*** *Show/hide for tracks, buses, mains*

Note: *The above view does not show EQ. It is pictured below.*



***A.** Gain **B.** Band Q **C.** Band select **D.** EQ type select **E.** EQ enable **F.** Frequency*

Sound controls in the Console view are grouped in **modules**. There are several types of modules:

Module type	What you can do
MIDI track	Set the track's output, channel, bank, and patch; set the input; mute, solo, and arm the track; set channel volume, panning, chorus, and reverb levels; add real-time effects
Audio track	Set the track's output (bus or Main out destination); choose an input; monitor input levels; mute, solo, and arm the track; set track volume and panning; add real-time effects; send audio data to buses or main outs.
Synth track	Set the track's output (bus or Main out destination); set the input; mute and solo the track; set track volume and panning; add real-time effects; send audio data to buses or main outs.
Bus	Receive input from one or more audio tracks, add real-time effects, and send the results to a main out or another bus
Main outs	Monitor output levels using meters and control the stereo volume of audio to an output on your audio interface. To adjust both the left and right volume levels at the same time, use the **Link** button for that module.

Table 121.

One module's name is always outlined with a white line. This corresponds to the track with the focus. You can change the focus by clicking to the right of the module's volume fader.

You can adjust Console view controls in the following ways:

- Click on the center of the knob and drag the mouse up or down to adjust the knob
- Click and drag a fader up or down
- Double-click the center of the knob to return it to its snap-to position

Volume and pan faders also have snap-to positions; double-click a fader's knob to return the fader to its snap-to value.

The controls and effects patch points all have tool tips associated with them. To see a description of a particular control or effect, simply rest the cursor over the item for a few seconds.

There are four types of modules in the Track view:

Track type	What you can do
MIDI track	Set the track's output, channel, bank, and patch; set the input; mute, solo, and arm the track; set channel volume, panning, chorus, and reverb levels; add real-time effects.
Audio track	Set the track's output; set the input and monitor input levels; mute, solo, and arm the track; set track volume and panning; add real-time effects; send audio data to buses or main outs.
Synth track	Set the track's output; set the input; mute and solo the track; enable a waveform preview; set track volume and panning; add real-time effects; send audio data to buses or main outs.
Bus	Receive input from one or more audio tracks, add real-time effects, and send the results to a main out or another bus.

Table 122.

For information on using the controls in the Track view, see "Changing track settings" on page 193.

Volume, pan, bus send level and bus send pan also have snap-to positions; double-click the control to return it to its snap-to value.

The controls and effects patch points all have tool tips associated with them. To see a description of a particular control or effect, simply rest the cursor over the item for a few seconds.

See:

Configuring the Console and Track Views

Configuring the Console and Track Views

The Console and Track view can be reconfigured in a variety of ways. You can:

- Choose the tracks that you want to see
- Adjust the display of audio meters and clip indicators
- Change the number of buses
- Set control snap-to positions
- Insert new tracks

- Name tracks and buses

Note: *The Console view has additional controls to configure its appearance. See the online help topic "Console View" for more information.*

Meters are helpful in determining the relative volumes of your audio tracks and in detecting and preventing overload. By default, the Console view displays output level meters in main out modules at all times, and displays record level meters in individual tracks whenever they are armed and have an audio input. The display of meters, however, can place a considerable load on your computer. Showing only the peak indicators, or hiding the meters entirely, can reduce the load on your computer. This may increase the number of audio tracks and real-time effects you can play back at one time.

In the Track view, there are several ways to configure which tracks are displayed.

To Display All the Tracks in a Project

- Click the **Zoom tool** button's down arrow and select **Show All Tracks** from the **Zoom tool** menu.

To Hide Selected Tracks

1. Select the tracks you want to hide.
2. Click the **Zoom tool** button's down arrow and select **Hide Selected Tracks** from the **Zoom tool** menu.

To Display Only Selected Tracks

1. Select the tracks you want to display.
2. Click the **Zoom tool** button's down arrow and select **Show Selected Tracks** from the **Zoom tool** menu.

To Choose the Tracks that are Displayed Using the Track Manager

3. Click the down arrow next to the Zoom tool and select **Track Manager** to open the **Track Manager** dialog boxIn the list, check those tracks you would like displayed in the view in which you are working, and uncheck the rest. You can use SHIFT-click, CTRL-click, or the quick select buttons to select multiple modules; press the SPACEBAR to check or uncheck all the selected modules at once. Please note that the track display selections you make in the Track view do not affect those in the Console view and vice versa.
4. Click **OK**.

To Hide a Bus or Track

- Right-click on the module and choose **Hide Track** or **Hide Bus**.

To Show or Hide Meters in the Track View

- Click the **Show/Hide Meters** button to display all meters or click on the arrow to the right of the **Show/Hide Meters** button to display only the meters you want to see or to customize the

appearance of your meters.

Option	What it does
Record meters	Displays record meters for any armed track.
Playback meters	Displays playback meters.
Output bus meters	Displays meters in buses

Table 123.

For more information about metering options, see “Changing the Meters’ Display” on page 611.

To Change a Meter’s Range

- Right-click on the meter and choose a new range.

To Add a Bus

1. Right-click in the Bus pane (to add a bus at the end of the current buses) or over an existing bus (to add a bus before it).
2. Select **Insert Stereo Bus** or **Insert Surround Bus** from the menu that appears.

A bus appears in the Bus pane.

To Delete a Bus

1. Right-click in the Bus pane over an existing bus.
2. Select **Delete Bus** from the menu that appears.

The bus is deleted from the Bus pane.

Note: *If you have any track or bus routed through the bus you delete, the signal will be rerouted to the deleted bus’s output.*

To Create a Bus Send in a Track

1. Right-click in an empty part of the Track pane (Track view) or a track module (Console view).
2. Select **Insert Send** for a list of buses available.
3. Select a bus from the list.

To Set the Snap-to Position of a Knob or Fader

1. Set the control to the desired position.
2. Right-click on the control and choose **Value > Set Snap-To=Current**.

From now on, the control returns to this position when double-clicked.

To Insert a New Track

1. Right-click in the Console view or on the header of a track in the Track view.
2. Choose **Insert Audio Track** or **Insert MIDI Track**.

SONAR adds a new track to the project.

To Rename a Track or Bus

1. In the Console view, click on the module name. In the Track view double-click on the Track name.
2. Type a new name.
3. Press ENTER.

If you rename a track, the new name is copied to the Track view. If no name has been assigned to a track, the Console view and Track view display the track's number.

To Link Left/Right Faders in a Console View Module

1. In the module whose faders you want to link, adjust the volume of each fader to the appropriate level.
2. Click the **Link** button .

Console view auto-resizing

By default, the Console view will automatically resize itself vertically as modules are shown or hidden. If you prefer, you can keep the Console view from automatically resizing by holding down the SHIFT key as you click on a module's **Show/Hide** toggle (leftmost pane in the Console view). This will preserve the current Console view size without resizing the view to fit all visible modules.

Mixing MIDI

SONAR gives you many tools to control your MIDI mix. When your MIDI tracks sound the way you want them to, there are several ways to convert them to audio (see "Converting MIDI to Audio" on page 600).

See:

Mixing a MIDI Track

Converting MIDI to Audio

Mixing a MIDI Track

You can control the mixing and playback of a MIDI track as follows:

To do this	Do this
Add a real-time MIDI effect to the track	Right-click in the FX bin and select an effect from the list (for more information, see Using Real-Time Effects)
Remove an effect	Select the effect and press DELETE or right-click and select **Delete**.
Select the output	Click the **Output** control and choose one from the list
Select the channel	Click the **Channel** button and choose one from the list
Select the bank	Click the **Bank** button and choose one from the list
Select the patch	Click the **Patch** button and choose one from the list
Set the Chorus level	Adjust the **Chorus** slider
Set the Reverb level	Adjust the **Reverb** slider
Mute the track	Click the **Mute** button
Solo the track	Click the **Solo** button
Arm the track for recording	Click the **Arm** button
Set the Pan level	Adjust the **Pan** fader
Set the Volume level	Adjust the **Volume** fader
Select the input	Click the **Input** button and choose one from the list

Table 124.

When moving the **Volume** fader, the **Value** box in the toolbar displays the level from a scale of 0 (minimum) to 127 (maximum). When you move the Pan slider, the Value box displays the pan value on a scale that ranges from 100% Left to 100% Right with center represented by a C.

Converting MIDI to Audio

The following options cover three basic MIDI setups:

- If your MIDI tracks play back through a soft synth, use either the **File > Export > Audio** or **Edit > Bounce to Track(s)** commands (see the procedures in “To Export Your Soft Synth Tracks as Wave, MP3, or Other Type Files” on page 579, and “To Convert Your Soft Synth Tracks to New Audio Tracks” on page 579).
- If your MIDI tracks play back through your sound card’s synthesizer, see the procedure below.
- If your MIDI tracks play back through external MIDI modules, simply connect their analog outputs to the inputs on your sound card, and record to new audio tracks.

To Convert a Sound Card's Synth Tracks to a Stereo Audio Track

1. Pick a destination audio track and set the **Input** field to **Stereo-(name of your sound card)**.

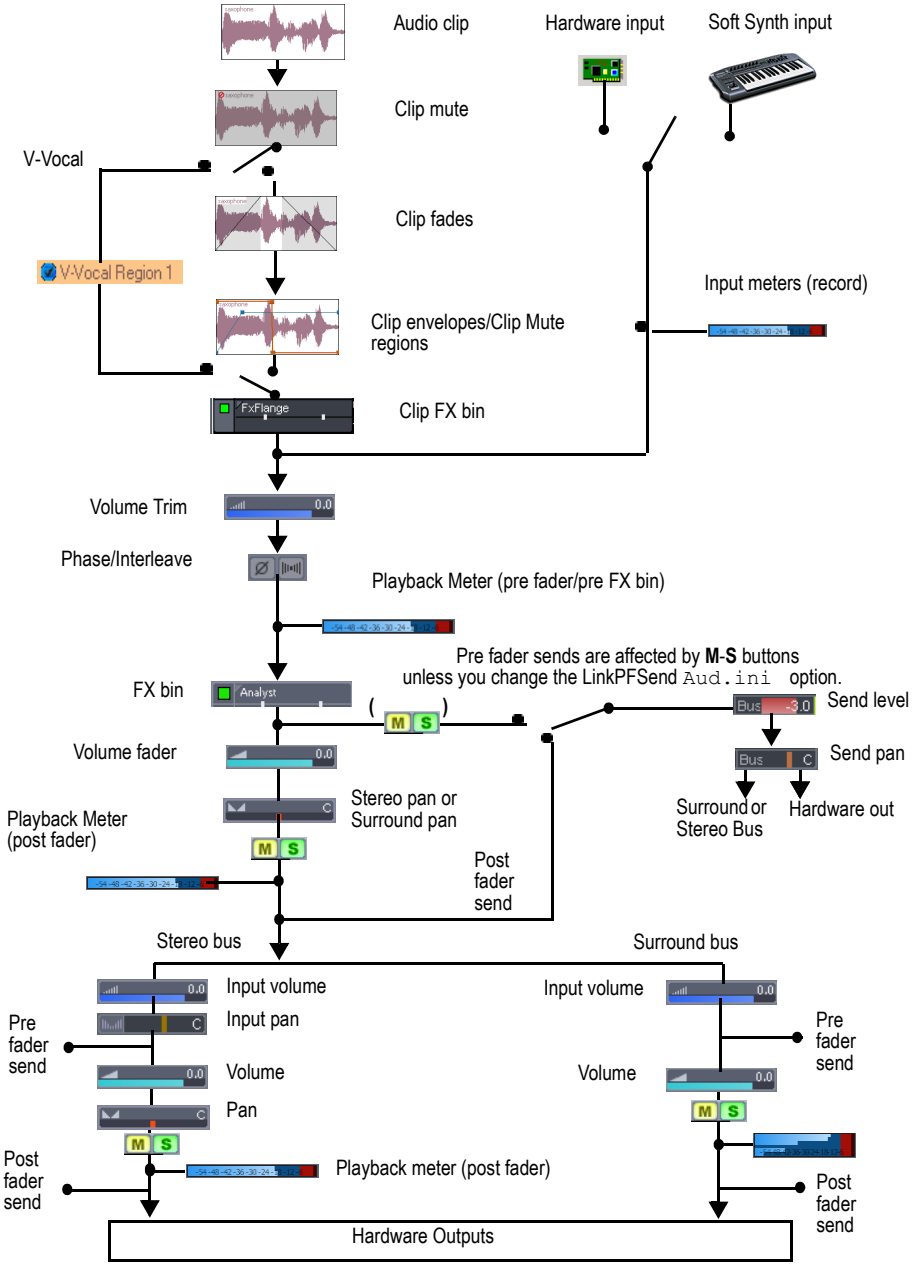
Note: *If you have more than one sound card installed, select the one that your synth uses as an output.*

2. Arm the destination track.
3. Mute or archive any tracks that you don't want to record to the destination track.
4. If SONAR's metronome is set to use any software synth to produce a click, disable the **Recording** option in the **Project Options** dialog box. To do this, select **Options > Project** to open the **Project Options** dialog box, select the **Metronome** tab and uncheck **Recording** in the **General** section.
5. Open your sound card's mixer device. This is normally done by double-clicking the speaker icon on the Windows taskbar, or by choosing **Start > Programs > Accessories > Multimedia > Volume Control > Options > Properties**.
6. Open the sound card's recording control window (the command is probably **Options > Properties > Adjust Volume For Recording**) and make sure all boxes below **Adjust Volume For Recording** are checked.
7. Click **OK**, and locate the slider marked **MIDI**, **Synth**, **Mixed Input**, or **What You Hear**. Check the **Select** box at the bottom, then close the window.
8. In SONAR, click the **Record** button.

SONAR records all the MIDI tracks that are assigned to the sound card synth as a stereo audio track.

After you finish recording, mute the MIDI tracks that you just recorded so you don't hear them and the new audio track at the same time.

Signal Flow


Audio clip
Hardware input
Soft Synth input
Clip mute
V-Vocal
Clip fades
V-Vocal Region 1
Input meters (record)
Clip envelopes/Clip Mute regions
FxFlange
Clip FX bin
Volume Trim
0.0
Phase/Interleave
Playback Meter (pre fader/pre FX bin)
Pre fader sends are affected by M-S buttons unless you change the LinkPFSend Aud.ini option.
FX bin
Analyst
(M S)
Send level
Bus -3.0
Volume fader
Send pan
Bus C
Stereo pan or Surround pan
Surround or Stereo Bus
Hardware out
Playback Meter (post fader)
M S
Post fader send
Stereo bus
Surround bus
Input volume
Input pan
Pre fader send
Volume
Pan
Post fader send
Playback meter (post fader)
Hardware Outputs

You control the mixing and playback of an audio track as follows:

To do this	Do this
Add a real-time audio effect to the track	Right-click in the FX bin and select an effect from the list (for more information, see “Using Real-Time Effects” on page 621“).
Remove an effect	Select the effect and press DELETE or right-click and select **Delete.**
Send audio data from the track to a bus	Insert a send in the track controls by right-clicking in the track controls and selecting **Insert > Send > [name of bus you want the data to go to]**. Click the **FX** tab at the bottom of the Track pane, and then click the track’s **Bus Enable** button so that it turns green, and set the **Bus Send Level** and **Bus Send Pan** (for more information, see “Stereo Buses” on page 607”).
Mute the track	Click the **Mute** button.
Solo the track	Click the **Solo** button.
Arm the track for recording	Click the **Arm** button.
Set the Pan level	Adjust the **Pan** control.
Set the Send Pan to be the same as the bus that the send feeds into	Right-click the **Send Pan** control and choose **Follow Track Pan** from the pop-up menu. This setting is only active when the send has the same interleave as the bus that the send feeds into, and is set to **Post Fader**. If enabled, the **Send Pan** control no longer affects the output.
Set the Volume level	Adjust the **Volume** fader.
Select the output	Click the drop-down arrow in the **Output** field and choose one from the list.
Select the input	Click the drop-down arrow in the **Input** field and choose one from the list.

Table 125.

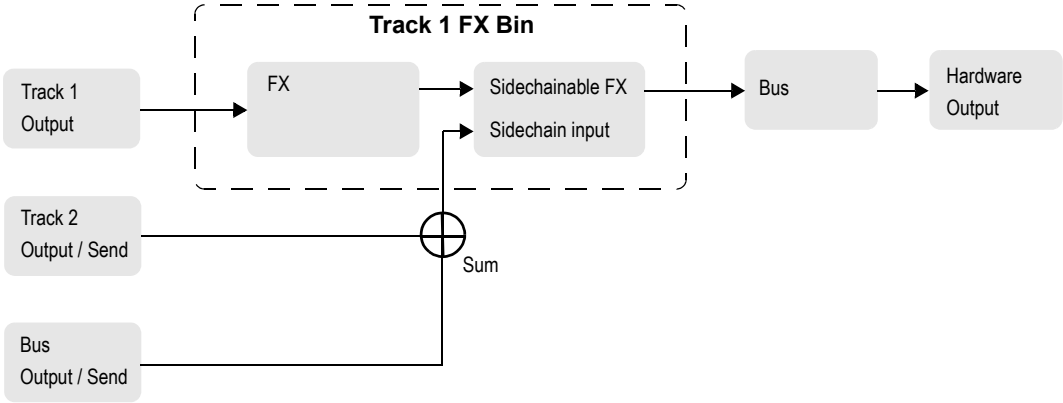
SONAR displays volume in dB (decibels). When adjusting the volume or bus send level controls, a value of 0 dB indicates full signal strength; positive values, up to 6 dB, indicate a signal gain; negative values indicate an attenuated signal. When you move the Pan control, the Value box displays the pan value on a scale that ranges from 100%L (hard left) 100%R (hard right).

See also:

Sidechaining Signal Flow

External Insert signal flow

Sidechaining Signal Flow



See also:

Sidechaining

Signal Flow

External Insert signal flow

Routing and Mixing Digital Audio

Any audio track can be tapped, before or after the track volume control, and sent to one or more buses. A bus can tap any number of audio tracks. Each track's data passes through the track's send level knob on its way to the bus. This is shown in the diagram below:

A. *Pre-fader: output level to Bus 2 is not affected by the track's volume fader* ***B.*** *This track is routed to Aux 1 and Aux 2* ***C.*** *Bus enable button: must be lit to send track data to bus* ***D.*** *Post-fader: track's volume fader controls output level to Bus 1*

The audio in each bus is processed by the input gain and pan controls (main output buses don't have these controls), then processed by any real-time effects you have patched, sent through the bus output level and pan controls, and then sent to the designated main out, in stereo. You can also insert a send control on a bus, and send the bus signal to another bus, or route the output of a bus to another bus.

At each main out, all audio data from audio tracks and buses that were routed to that main are mixed together. Finally, the data passes through each main's master volume fader.

See:

Main Outs

Signal Flow

Stereo Buses

Buses are useful for mixing together different audio tracks (in stereo) and applying effects to the mix. You can mix the tracks at different volume levels by adjusting each track's bus send level. Buses output to either other buses or to a main out.

You control the bus as follows:

To do this	Do this
Send audio data from an audio track to the bus	In an audio track, press the **Bus Send Enable** button corresponding to the bus, or choose the bus as an output for the track. If the track doesn't have a Send module, you can insert one by right-clicking the track and choosing **Insert > Send > [name of bus you want the data to go to]**.
Send audio data from a bus to another bus	If the bus doesn't have a Send module, you can insert one by right-clicking the bus and choosing **Insert > Send > [name of bus you want the data to go to]**. Then click the **Bus Send Enable** button so that it's green, and adjust the **Bus Send Level** and **Bus Send Pan**.
Set the level of the audio data sent to the bus	In an audio track, set the **Bus Send Level** corresponding to the bus, or volume fader if the output is to the bus
Set the pan of the audio data sent to the bus	Adjust the **Bus Send Pan** knob
Set the input level to the bus	Adjust the **Input gain** on the bus itself
Set the input panning to the bus	Adjust the **Input pan** on the bus itself
Display the waveform of the audio that's flowing through the bus	Enable the bus' **Waveform Preview** button
Add a real-time audio effect to the bus	Right-click in the FX bin and select an effect from the list (for more information, see "Using Real-Time Effects" on page 621)
Remove an effect	Select the effect and press DELETE, or right-click and choose **Delete**
Set the output level	Adjust the **Output volume**
Set the output panning	Adjust the **Pan** setting

Table 126.

To do this	Do this
Set the Send Pan to be the same as the bus that the bus feeds into	Right-click the **Send Pan** control and choose **Follow Bus Pan** from the pop-up menu. This setting is only active when the send has the same interleave as the bus it feeds into, and is set to **Post Fader**. If enabled, the **Send Pan** control no longer affects the output.
Select the output	Click the **Output** button and choose one from the list

Table 126.

Surround Buses (SONAR Producer Only)

Surround buses are useful for mixing and adding effects to create a surround mix.

To Patch a Track Through a Bus

1. Open the Console view (**Views > Console**) or the Track view (**Views > Track**).
2. If you want to add effects to the bus, right-click in the FX bin of a bus (if it is not in use already) and choose an effect from the effects pop-up menu. (If you are working in the Track view, you may first need to display the Bus pane by clicking the **Show/Hide Bus Pane** button located at the bottom of the Track view.)

   The name of the effect you have chosen appears in the bus FX bin.
3. Set the effect's parameters and close it.
4. Repeat steps 2 and 3 for any additional effects you want to use.
5. In a track module that you want to patch through the bus, do the following:
   - Drag the **Bus Send Level** control for the bus to the approximate level you want.
   - Drag the **Bus Send Pan** to the approximate setting you want.
   - Click the **Bus Enable** button for the appropriate bus.
6. Repeat step 5 for all the tracks you want to patch through the bus.
7. In the bus, adjust the **Input Gain** and **Output Volume** controls to the approximate level you want.
8. In the bus, drag the **Input Pan** and **Output Pan** controls to the approximate positions you want.
9. Play your tracks and adjust the **Send Level** controls, the **Pan** controls, etc.

To Mute or Solo a Bus

Each bus has a **Mute** button and a **Solo** button. These controls act like the **Mute** and **Solo** buttons in a track, but they affect all the signal routed through the bus.

1. Open the Track view or the Console view.
2. Click the **Mute** or **Solo button** in the bus you want to mute or solo.

To Display the Audio Waveform of a Bus

- Enable the bus' **Waveform Preview** button . This displays the waveform of the audio that is

flowing through the bus.

Main Outs

Each enabled hardware channel has a main out channel strip in the Console view. Main outs are the final destination for all of your audio in SONAR. Main outs accept input from both tracks and buses.

Main outs contains a left channel and a right channel, but only one volume fader. You control the left/right balance of each main out with the balance slider.

Here's what you can do in a main out module:

To do this	Do this
Set the output volume	Adjust the **Volume** control
Adjust the left/right balance	Adjust the **Pan** slider that's on that output module

Table 127.

Metering

The Console and Track views both have meters to measure playback level, record level, bus output level, and main output level. The Track view also has bus return meters. You can configure the meters differently in each view, if you want.

The responsiveness of your record meters (which also measure input monitoring) is dependent upon the latency setting in the **Audio Options** dialog and the settings in the **Audio Meter Settings** dialog. With higher latency settings the meters may appear sluggish.

There are three basic things you should know about meters:

- What the meters measure
- How to show or hide different kinds of meters
- How to choose display options for each kind of meter

Note: *Metering uses significant amounts of your computer's processing power, especially RMS metering. If you need to free up resources, turning off metering where you don't absolutely need it helps. Using peak metering on tracks and peak plus RMS metering on the main out is a good option. To* ***disable all metering****, turn off metering in* ***both*** *the Track view and Console view.*

See:

What the Meters Measure

Hiding and Showing Meters

What the Meters Measure

The following table summarizes what each kind of meter measures:

Kind of meter	What it measures
Record	The level of the instrument listed as an input for the track you are monitoring—the track must be armed to enable the meter
Playback	A playback meter measures the playback level of any pre-existing data in the track you are monitoring, either before or after the track faders, depending on what display options you choose
Main outs	The level of the signal output by each main out.
Buses	The level of the output signal the bus is sending back from the effects.

Table 128.

See also:

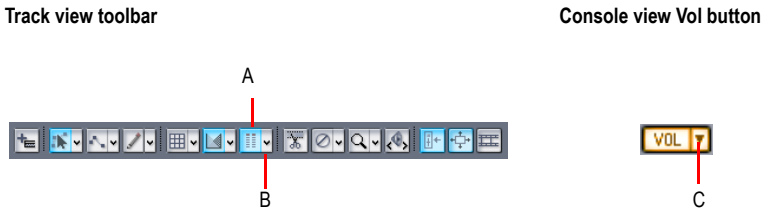
Hiding and Showing Meters

Changing the Meters' Display

Hiding and Showing Meters

The display and configuration of the meters in the Track view is independent of the meters in the Console view, and vice versa. The **Show/Hide Meters** button in the **Track view** toolbar hides or shows all the meters of each kind in the Track view. The drop-down arrow on the **Volume** button in the Console view displays the **Meter** menu in the Console view. To show or hide meters on individual tracks or buses, use the right-click pop-up menu that's available from the title bar of each track or bus.

Note: *If you want to conserve the maximum amount of your CPU's resources, turn off all metering in **both** the Track and Console views.*



A. *Show/Hide All Meters* ***B.*** *Meter Options menu* ***C.*** *Meter Options menu*

To Show or Hide all Meters of a Certain Type

- In the Console view, click the drop-down arrow on the **Volume** button, and check or uncheck the kind of meters you want to show or hide.
- In the Track view, click the arrow to the right of the **Show/Hide Meters** button and check or uncheck the kind of meters you want to show or hide. To hide all meters, click the **Show/Hide Meters** button so that it is not lit.

To Show or Hide Individual Meters on Tracks or Buses

- Right-click the track or bus to display the pop-up menu, and check or uncheck the appropriate show meter option.

See also:

What the Meters Measure

Changing the Meters' Display

Changing the Meters' Display

You control the range and kind of units that the various meters display in the Track and Console views. The display of meters in each of the two views is independent of the display in the other view. In the Track view, you can access all meter options from the **Show/Hide All Meters** button. In the Console view, you can access all meter options from the drop-down arrow on the **Volume** button.

You also have the option of using segmented or non-segmented meters in the Track and Console views. The **Audio Meter Settings** dialog (**Options > Audio Meter Settings** command) lets you choose segmented or non-segmented meters for the Track and/or Console views. Meter colors are also now customizable in the **Configure Colors** dialog—use the **Options > Colors** command, and choose **VU LO Level, VU HI Level**, or **VU Tick Marks**.

The drop-down menus give you the following display options:

Menu option	What it does
Horizontal Meters (Track view only)	Choose this option to display the Track view meters horizontally instead of vertically.
Vertical Meters (Track view only)	Choose this option to display the Track view meters vertically instead of horizontally.
Show Numeric Peak Values (Track view only)	Choose this option to display peak values in each track header next to the **Input Echo** button (see also “Peak Markers” on page 615)
Show Track Peak Markers (Track view only)	See “Peak Markers” on page 615)
Show Bus Peak Markers (Track view only)	See “Peak Markers” on page 615)
Reset All Meters	If a track clips, its meter shows a red clipping indicator. Click this button to reset the clipping indicator to its non-clipping state.
Peak	Choosing this option causes the meter to display the highest amplitude in the signal that occurs in a complete cycle of a frequency.
RMS	Choosing this option causes the meter to display more of an average of the amplitudes that occur in a complete cycle of a frequency. RMS, or Root-Mean-Square, is a little over seventy percent of peak level.
Peak + RMS	Choosing this option causes the meter to display both the RMS and peak levels. The RMS level is displayed by the solid bar on the left side of the meter, and the peak level is displayed as a small line that follows the RMS level just to the right of it.
Pre Fader/Post Fader (This option is for playback and bus meters only)	Choose Pre Fader or Post Fader to measure the playback level either before or after the track’s or bus’ volume fader.
Pre Fader/Post FX (This option is for the buses only)	Choose Pre Fader/Post FX to measure the bus volume before the fader, but after any real-time effects.
-12 dB....-90 dB	Choosing one of these numbers sets the scale of the meter to a certain range of dB. For example, choosing -90 dB sets the range of measurement of that meter to 90 dB. **Note:** You can also change the scale of a meter by right-clicking the meter to display a pop-up menu and choosing a new dB range.
Show Labels (Track view only)	Clicking this option hides or shows the dB markings on the meter. Hiding the markings shrinks the meter significantly, saving space.

Table 129.

Menu option	What it does
Hold Peaks	Choosing this option causes the meter to display a small vertical line (the peak marker) that shows the peak level and then decays until a new peak is reached.
Lock Peaks	Choosing this option causes the meter to lock the peak marker at the highest level, until a higher level occurs.

Table 129.

Enabling mono on a bus/Main will affect upstream meters

If you make a bus or main out mono by toggling its Mono/Stereo switch, any “upstream” meters—that is, meters on any tracks or buses that are assigned to the mono bus/main out—from the bus/main out will also display as mono.

Note: *This only affects the meter display, not any audio that is bounced or exported.*

See also:

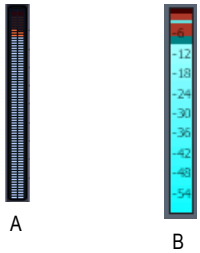
What the Meters Measure

Hiding and Showing Meters

Segmented and Non-segmented Meters

Segmented and Non-segmented Meters

You can display meters as segmented (the default) or non-segmented meters. Non-segmented meters have the advantage of taking up less room in a track strip.



A. *segmented meter* ***B.*** *non-segmented meter*

The **Audio Meter Settings** dialog (**Options > Audio Meter Settings** command) lets you choose segmented or non-segmented meters for the Track and/or Console views.

You can customize the colors of non-segmented meters in the **Configure Colors** dialog—use the **Options > Colors** command, and choose **VU LO Level**, **VU HI Level**, or **VU Tick Marks**.

For more information, see Configure Colors dialog.

Changing the Meters' Performance

There are two major factors that determine the performance of meters in SONAR. One is audio latency which you can adjust, within the limits of your audio hardware drivers, in the **General** tab of the **Audio Options** dialog. The second is the settings in the **Audio Meter Settings** dialog.

SONAR has configurable meter ballistics that allow you to adjust the rise and fall times of both the RMS and Peak Meters. Out of the box, SONAR ships with industry-standard settings that mimic meter ballistics for common hardware consoles.

The following table covers how to adjust your meter settings to meet your needs.

To do this	Do this
Increase or decrease meter refresh rates	In the **Audio Meter Settings** dialog (select **Options > Audio Meter Settings** to open), adjust the **Refresh rate** field. Valid values are from 25 to 250 milliseconds.
Change the decay rate (the amount of time the meter display stays at its peak)	In the **Audio Meter Settings** dialog, adjust the Decay Rate value. Valid values are from 1 to 150 milliseconds.
Increase or decrease the amount of time the meter displays a peak value	In the **Audio Meter Settings** dialog, adjust the Hold Time value. Valid values are from 0 to 5000 milliseconds.
Adjust rise and fall times	In the **Audio Meter Settings** dialog, adjust the Rise or Fall settings for RMS or Peak. Valid Rise values are from 0 to 1000 milliseconds. Valid Fall values are from 0 to 2500 milliseconds.

Table 130.

Here are the default values for the various settings:

- Refresh Rate = 40 msec
- Peak Hold – Decay Rate = 50 msec
- Peak Hold – Hold Time = 750 msec
- RMS Rise = 300 msec
- RMS Fall = 300 msec
- Peak Rise = 0 msec
- Peak Fall = 1000 msec

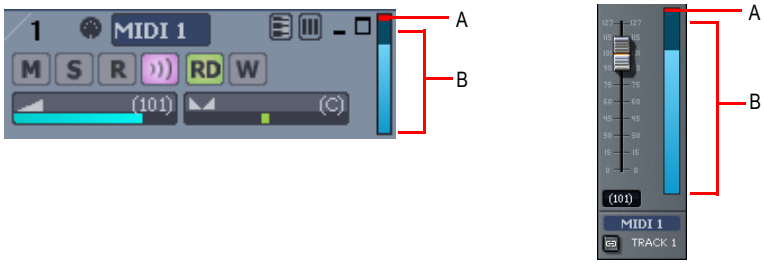
See also:

Audio Meter Settings dialog

MIDI Activity indicators

Each MIDI track displays a MIDI playback meter in the Track view and Console view. The MIDI meter consists of two sections:

- **MIDI Activity Indicator.** The MIDI Activity Indicator lights up whenever a MIDI event is encountered in the track.
- **MIDI Velocity Meter.** The MIDI Velocity Meter shows the greatest current note velocity encountered during playback.



A. *MIDI Activity Indicator* ***B.*** *MIDI Velocity Meter*

Audio and MIDI meters can be either vertical or horizontal. For more information, see “Changing the Meters’ Display” on page 611.

Peak Markers

Buses and audio tracks have a feature called Peak Markers. A Peak Marker in each audio track or bus moves along in the Clips pane just behind the Now Time cursor displaying the highest peak found during playback. Peak Markers appear in two different colors: one color if the peak is below 0 dB, and a different color if the peak is above 0dB. By default, peaks below 0dB will be green, and peaks above 0dB will be red. Colors for both Peak Markers and their text fields are configurable in the **Configure Colors** dialog (**Options > Colors** command).

A. *Peak marker*

To Hide or Show Peak Markers Globally

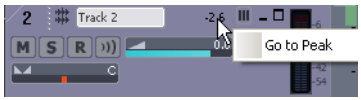
- Click the **Meter Options** drop-down arrow in the **Track view** toolbar, and choose **Show Track Peak Markers** and/or **Show Bus Peak Markers**.

To Hide or Show Peak Markers on an Individual Track or Bus

- Right-click the track or bus, and choose **Show Peak Marker** from the pop-up menu.

To Jump to a Peak Marker

- Right-click the numeric peak display in the track/bus header strip, and choose **Go To Peak** from the context menu (see picture below). Doing so will center the peak location and Now time in the Clips pane. This is useful because a Peak Marker may be offscreen.



To Hide or Show the Numeric Peak Display

- Click **Show Numeric Peak Values** in the **Meter Options** menu.

To Clear Peak Markers From a Track

- Double-click the meter.

Waveform Preview for Buses and Synth Tracks

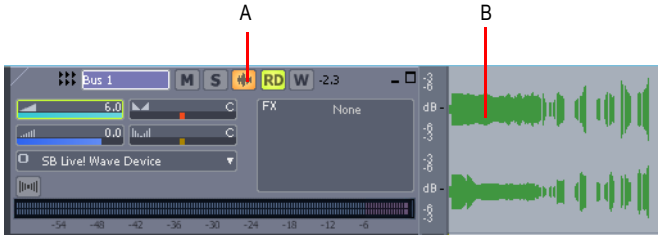
You can choose to display a waveform for the audio output of a bus or synth track. When you enable the display function, the amplitude of a bus's or synth track's audio signal is graphed in real time as a waveform. The waveform turns red wherever clipping is occurring. Waveform preview allows you to visualize a mix and verify levels over the duration of a project, easily detecting peaks and other level problems that may require attention. You can choose to display Peak Markers if you want to (see "Peak Markers" on page 615 for more information). If you change the volume of the audio signal and replay the project, the waveform changes to reflect the new bus or synth track volume.

Each bus or synth track has a **Waveform Preview** button, which allows you to enable/disable waveforms display on an individual basis. By default, each button is turned off.

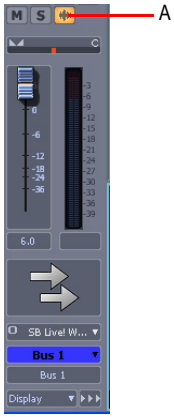
You can change the color of the waveform preview by choosing a color for Waveform Preview in the **Configure Colors** dialog (**Options > Colors** command).

To Enable/Disable Waveform Preview on a Bus or Synth Track

- For buses, find the desired bus in the Bus pane of the Track view, and click the bus' **Waveform Preview** button . This button is also in the Bus Inspector.
- For synth tracks, find the desired synth track in the Track view, and click the track's **Waveform Preview** button . This button is also in the Track Inspector.



A. *Waveform Preview button in Track view B. Waveform Preview*



A. *Waveform Preview button in Bus Inspector*

Freeze Tracks and Synths

The Freeze feature allows you to temporarily bounce your track, including soft synths and effects, to reduce the amount of CPU power needed. The Freeze feature also works for synths patched in the Synth Rack.

The following are the available commands for track freezing:

- **Freeze Track.** Bounces the audio in the track to a new audio clip or clips, applies any effects, and disables the FX bin.
- **Unfreeze Track.** Discards the bounced audio, restores the original audio to the way it was before the last **Freeze** or **Quick Freeze** command, and enables the FX bin.
- **Quick Unfreeze Track.** Hides and mutes the bounced audio, restores the original audio to the way it was before the last freeze or quick freeze command, and enables the FX bin. Bounced

audio is retained, however, and toggling between **Quick Freeze** and **Quick Unfreeze** should be instantaneous.

- **Quick Freeze Track.** Only available after a **Quick Unfreeze**, the **Quick Freeze** function redisplays and unmutes the bounced audio instantaneously and disables the FX bin.

The following are the available commands for synth freezing:

- **Freeze Synth.** Audio from a soft synth is bounced and placed on the synth's track. Output from the synth is disabled, as is the FX bin on the synth track.
- **Unfreeze Synth.** Discards bounced audio, enables the synth and track FX bin. Bounced audio is discarded, and will be re-bounced if you choose **Freeze** again.
- **Quick Unfreeze Synth.** Hides and mutes the bounced audio, enables the synth and track FX bin. Bounced audio is retained, and toggling between **Quick Freeze** and **Quick Unfreeze** should be instantaneous.
- **Quick Freeze Synth.** Only available after a **Quick Unfreeze**, the **Quick Freeze** function redisplays and unmutes the bounced audio instantaneously, disables the synth, and any effects on the synth track.

Note 1: *An **Unfreeze** or **Quick Unfreeze** command restores the audio on a track to the way it was before the last **Freeze** or **Quick Freeze** command. Any editing you do to a frozen track is discarded when you **Unfreeze** or **Quick Unfreeze** the track.*

Note 2: *You control the bit depth of all rendering operations (bouncing, freezing, applying effects) on the **Audio Data** tab of the **Global Options** dialog (**Options > Global** command) in the **Render Bit Depth** field. The default value of 32 is the best for most situations. See "Bit Depths for Rendering Audio" on page 849 for more information.*

To Freeze a Track

Do one of the following:

- In the Track view, click the track's **Freeze** button .
- Right-click on a track and select **Freeze > Freeze Track** from the menu that appears.

SONAR bounces the audio in the track to a new audio clip or clips, applies any effects, and disables the FX bin.

To Unfreeze a Track

Do one of the following:

- In the Track view, click the track's **Freeze** button .
- Right-click on a track and select **Freeze > Unfreeze Track** from the menu that appears.

SONAR discards the bounced audio, restores the original audio, and enables the FX bin. Audio will be re-bounced if **Freeze** is chosen again.

To Do a Quick Unfreeze of a Track

Do one of the following:

- Hold down the SHIFT key and click the track's **Freeze** button .
- Right-click on a frozen track and select **Freeze > Quick Unfreeze Track** from the menu that appears.

SONAR hides and mutes the bounced audio, restores the original audio, and enables the FX bin. Bounced audio is retained, however, and toggling between **Quick Freeze** and **Quick Unfreeze** should be instantaneous.

To Quick Freeze a Track

Do one of the following:

- Click the track's **Freeze** button .
- Right-click on a track that you did a **Quick Unfreeze** on and select **Freeze > Quick Freeze Track** from the menu that appears.

Only available after a **Quick Unfreeze**, the **Quick Freeze** function redisplays and unmutes the bounced audio instantaneously

To Freeze a Soft Synth

Do one of the following:

- In the Track view, click any associated track's **Freeze** button .
- Right-click a synth track or a synth's MIDI track, and choose **Freeze > Freeze Synth** from the menu that appears.
- In the Synth Rack view, click the **Freeze/Unfreeze** button .

SONAR bounces the synth's audio data to the synth track. SONAR disables the synth's output, and disables the FX bin on the synth track.

Note 1: *If a soft synth has been inserted to an audio track's FX bin, the **Freeze/Unfreeze** button is not present in the Synth Rack view for that synth. To freeze that synth, right-click the track or the synth's MIDI track and choose **Freeze > Freeze Synth** from the menu that appears.*

Note 2: *A MIDI track can only be frozen if it is routed to a software instrument.*

To Unfreeze a Synth

Do one of the following:

- In the Track view, click any associated track's **Freeze** button .
- Right-click a synth MIDI or audio track, and choose **Freeze > Unfreeze Synth** from the menu that appears.

- In the Synth Rack view, click the **Freeze/Unfreeze** button, and choose **Freeze > Unfreeze Synth** from the menu that appears.

SONAR discards bounced audio, enables the synth and the synth audio track's FX bin. SONAR will be re-bounce the audio if you choose Freeze again.

To Do a Quick Unfreeze of a Synth

Do one of the following:

- Hold down the SHIFT key and click any associated track's **Freeze** button.
- Right-click a frozen synth MIDI or audio track, and choose **Freeze > Quick Unfreeze Synth** from the menu that appears.
- In the Synth Rack view, click the **Freeze/Unfreeze** button, and choose **Freeze > Quick Unfreeze Synth** from the menu that appears.

SONAR hides and mutes the bounced audio, enables the synth and track FX bin. Bounced audio is retained, and toggling between **Quick Freeze** and **Quick Unfreeze** should be instantaneous.

To Quick Freeze a Synth

Do one of the following:

- Click any associated track's **Freeze** button.
- Right-click a quick unfrozen synth track or synth MIDI track, and choose **Freeze > Quick Freeze Synth** from the menu that appears.
- In the Synth Rack view, click the **Freeze/Unfreeze** button, and choose **Freeze > Quick Freeze Synth** from the menu that appears.

Only available after a **Quick Unfreeze**, the **Quick Freeze** command redisplays and unmutes the bounced audio instantaneously, disables the synth, and any effects on the synth track.

To Set Freeze Options

Do one of the following to open the **Freeze Options** dialog:

- In the Track view, right-click any track's **Freeze** button.
- Right-click an audio or synth track, and choose **Freeze > Freeze Options** from the menu that appears.
- In the Synth Rack view, click the **Freeze/Unfreeze** button, and choose **Freeze Options** from the menu that appears.

  Choose options in the **Freeze Options** dialog. For help choosing options, click the **Help** button in the dialog.

Tip: *All **Freeze** commands are also available in the **Track** menu.*

Tip: *To show/hide the **Archive** and **Freeze** buttons in the Track view, open the Widget Tab Manager and specify the visibility of the Track State group. For details, see Widget Tab Manager.*

Using Real-Time Effects

In the Console view and Track view, you can use plug-in effects non-destructively, in real time (to apply effects offline, see “Applying Audio Effects” on page 656). You can also hear your plug-in effects in real time on any live instruments you are recording—just make sure Input Monitoring is enabled (see “Input Monitoring” on page 258). You can also insert effects directly on clips (see “Effects on Clips” on page 626).

For example, suppose you want to add a reverb effect to an audio track containing a recorded violin solo. You could do it in two different ways:

- **Destructive.** The digital audio data itself is modified. Although this may be exactly what you want, it does limit your options. If you want to modify the effect parameters slightly or to remove the effect and try a different effect, you must use the **Undo** command, or revert to a saved copy of the original data.
- **Non-destructive (real-time).** The digital audio data in your track is not changed but simply altered on the fly during playback. This means you can experiment with effects parameters, bypass effects, or remove them entirely at any time. Since most effects require complex numeric calculations, real-time effects processing puts a heavy load on your computer’s CPU. If you use too many effects, the CPU will not be able to keep up and playback will sound choppy and disconnected.

You can also apply real-time audio effects to a submix in a bus. For example, rather than patching separate reverb effects in each of several guitar tracks, you can mix the guitar tracks together in a bus and apply a single reverb effect to the submix. This makes much more efficient use of CPU time. Patching effects on a bus also opens up new creative possibilities.

There are several reasons why you might want to apply effects offline (destructively):

- If you want to apply more effects than your CPU can handle, applying some of the effects offline will reduce CPU usage during playback.
- If you want to apply effects to an individual audio clip, rather than the whole track, it is simpler to do so using offline effects.

The **File > Export > Audio** command, allows you to apply real-time effects when you export, so you do not need to apply your effects destructively or use the **Edit > Bounce to Track(s)** command to prepare the tracks beforehand. For information about exporting audio, see “Preparing Audio for Distribution” on page 669.

All plug-in effects and soft synths have a Preset window you can use to save and recall your favorite settings for those plug-ins.

See:

Effects Parameters

How to Use Real-Time Effects

Applying Audio Effects

Applying MIDI Effects

Effects Parameters

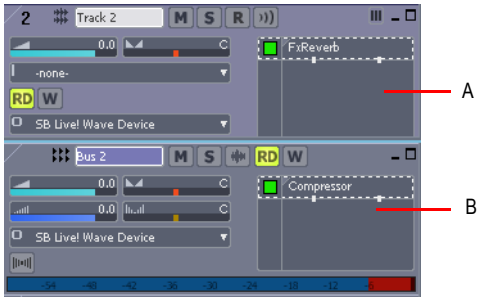
Each effect in an effects patch point has its own independent set of parameter values. For example, you can apply a short reverb in one track and a long reverb in another track. The dialog boxes for real-time effects contain the same parameters as the offline effects, though there are a few differences:

- You can adjust the parameters while playback is in progress, so there is no need for an **Audition** button.
- For Audio effects, because mixing is handled through the Track view or Console view, there is no Mixing tab.
- You do not need to click **OK** for the effect to be applied.

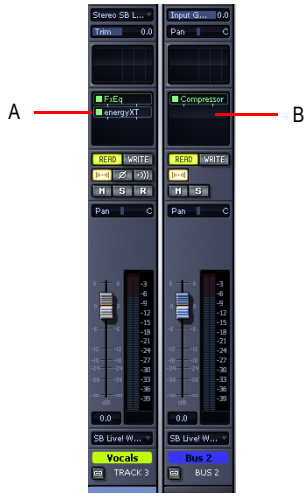
Refer to the sections “MIDI Effects (MIDI Plug-ins)” on page 519 and “Audio Effects (Audio Plug-ins)” on page 567 for descriptions of the effects and their parameters.

How to Use Real-Time Effects

You can patch effects into the tracks and buses in both the Track view and Console view. After you patch one or more effects into an FX bin, you can reorder the effects, delete them, or add new ones.



A. *An FX bin in a track in the Track view* ***B.*** *An FX bin in a bus in the Track view*



A. *An FX bin in a track in the Console view* ***B.*** *An FX bin in a bus in the Console view*

Here's how to insert and configure effects:

To do this	Do this
Add a real-time effect to a MIDI track, audio track, synth track or bus.	Right-click in the FX bin of the track or bus you want to add the effect to, and select an effect from the pop-up menu.
Change the order in which effects are used.	Drag an effect up or down in the FX bin.
Edit an effect's parameters.	Double-click on the effect to open the effect's dialog box.
Move an effect to a different bin.	Drag the effect to another effects bin.
Copy an effect to a different bin.	Hold down the CTRL key and drag the effect to another effects bin.
Delete an effect.	Right-click the name of the effect, and choose **Delete** from the pop-up menu.
Send all keystrokes to a plug-in that has focus	Enable the **Keystroke** button in the plug-in's property page
Use a preset.	See "Presets and Property Pages" on page 625 for more information.

Table 131.

When you place an effect in an FX bin, an abbreviated name is used to describe the effect. Sometimes the limited space makes it impossible to identify the effect. If this occurs, simply rest the cursor over the effect for a second or two, and a tooltip will pop up to display the full name of the effect.

Effects in FX bins display “ticks” that tell you whether the effect is outputting a mono, stereo, or surround signal:

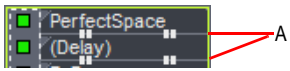
A. *Mono indicator*

A. Stereo indicator

A. *Surround indicator (in 5.1 mode)*

You can change the tick color by using the **Options > Colors** command, and choosing Track View Control Background (for the Track view), and Console Drop-down Controls (for the Console view).

If you’re using the double-precision audio engine, plug-ins that can send and receive 64-bit data display doubled ticks.



A. *Stereo indicator in 64-bit mode*

See also Using the Per-track EQ.

Look-ahead processing at high latencies

Some plug-ins, such as the Sonitus:fx Multiband and other dynamics processors, use a look-ahead buffer mechanism, which results in a short delay being introduced to the output signal when the plug-in is used in real-time. SONAR’s automatic delay compensation (ADC) takes care of any delays, but you may experience some anomalies when using such a plug-in to process the output of

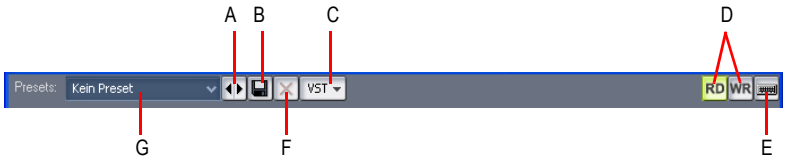
a DXi-especially if SONAR is configured to use a high mixing latency. The symptoms include audio that appears to drop out, and/or missed notes (from the MIDI track that is assigned to the DXi). Again, this is more prone to occur with higher latency settings.

This may happen if SONAR doesn't pump ahead enough MIDI data to compensate for ADC. To fix this problem, go to **Options > Global > MIDI** and increase the **Prepare Using [n] Millisecond Buffers** value.

Presets and Property Pages

Presets are a way to store property page settings so that you can recall the exact same group of settings again in the future. Effects and soft synths use presets, and so do some other functions you'll find in certain dialogs.

You manage presets with the **Presets** section that appears at the top of a plug-in property page, and the buttons next to the **Presets** box.



A. *Previous/Next button* ***B.*** *Save button* ***C.*** *The VST button preset controls appear only on VST plug-ins* ***D.*** *Automation read and write buttons* ***E.*** *Send all keystrokes to this plug-in button* ***F.*** *Delete button* ***G.*** *Presets menu displays the name of the current preset*

The **Presets** menu displays presets in the following order:

- **Most Recently Used presets.** These appear at the top of the **Presets** menu, up to 8 in number, and followed by a horizontal line to separate this section from the next section of the menu.
- **VST factory presets.** Any VST factory presets appear below the **Most Recently Used** section, and are also followed by a horizontal separator line.
- **Cakewalk and user presets.** These appear at the bottom of the **Presets** menu.

The following table tells you how to use presets:

To do this	Do this
Load a preset	Do either of the following: • Click the drop-down arrow on the right side of the **Presets** menu, and click the name of the preset in the drop-down menu. • Click the left or right side of the **Prev/Next** button to load the previous or next preset in the menu. You can click the button repeatedly to step through the menu.
Save the current settings as a preset	If you're using: • **A VST factory preset.** These can not be deleted or overwritten (the **Delete** button appears greyed-out). If you want to change one of these, double-click the name, enter a new name, and click the **Save** button. **Note**: VST presets can be stored by saving a .fxp file (see below for instructions). • **A Cakewalk or user preset.** Either save these under a new name: double-click the name, enter a new name, and click the **Save** button, or just click the **Save** button to overwrite the preset with current values.
Delete a preset	VST factory presets can not be deleted. If you're not using a VST factory preset, simply display the preset name in the Presets window, and then click the **Delete** button.
Load or save a .fxp file	Use the **Load Preset** or **Save Preset** commands, respectively, in the **VST** button drop-down menu
Load or save a .fxb file	Use the **Load Bank** or **Save Bank** commands, respectively, in the **VST** button drop-down menu

Table 132.

The Presets window also has a feature called Preset Dirty Flags. A Preset Dirty Flag is an asterisk that appears next to the name of the preset. The asterisk tells you that you changed and saved this particular preset in another project, and the settings in the current project are different from the saved version. If you re-save the preset in the current project with the current settings, the asterisk disappears, but will reappear in the other project, showing you that the displayed settings in that project are different from the last saved version of the preset. If you want to get rid of the asterisk in all projects, save the preset in each project with the exact same settings.

Plug-in property pages have a couple of other controls not related to presets:

- **Automation read and write buttons.** These buttons enable or disable automation playback and recording for the plug-in's parameters. See the online help topic "Automation," for more information.
- **Keystrokes button.** Enabling this button sends all keystrokes to a particular instance of a plug-in when the plug-in's property page has focus.

Effects on Clips

Both audio and MIDI clips now contain full-featured FX bins. You can insert real-time effects on clips, in both MIDI and audio tracks. Each clip that you insert an effect on displays its own FX bin, that you can use to manage the effects on that clip.

The characteristics of clip-based effects are:

- Splitting a clip copies the effect(s) onto both clips.
- You can copy or move clip-based effects from one clip to another, and to or from the FX bin on a track.
- A clip's FX bin also appears on the General tab of the clip's **Clip Properties** dialog (to open: right-click the clip and choose **Clip Properties** from the pop-up menu).

Note: *You cannot drag effects to or from the **Clip Properties** dialog.*

- You can patch an effect onto multiple clips at the same time by first selecting the clips.
- Audio effects can be automated by using clip envelopes.
- The **Edit > Bounce to Clip(s)** command follows clip boundaries—effects tails are cut off, unless you slip-edit the end of the clip to leave space.
- Freezing a track or synth will also freeze the per-clip FX bins.

To Insert an Effect on a Clip or Clips

1. If you want to insert an effect onto multiple clips, select the clips.
2. Right-clip a clip that you want to insert an effect onto.

   The Clips pane context menu appears.
3. Choose **Insert Effect >** [**Audio** or **MIDI**] > [**name of desired effect**].

The FX icon appears on the clip(s) after you insert the effect (see picture, below).

A. *FX icon*

To Open or Close the FX Bin on a Clip

- To open a clip's FX bin, click the **FX** icon, or right-click the **FX** icon and select **Open Clip Effects Bin** from the pop-up menu.
- To close a clip's FX bin, click the **X** icon that's in the upper left corner of the clip's FX bin, or click anywhere outside of the FX bin.

To Delete, Bypass, Move, Copy, or Re-order a Clip Effect

- To delete an effect, right-click the effect name and choose **Delete** from the pop-up menu.

- To bypass or un-bypass all the effects on a clip, right-click in the clips's FX bin and choose **Bypass Bin** from the pop-up menu.
- To enable or disable an individual effect, click the effect's green **on/off** switch.
- To move an effect to another FX bin (on a track or a clip), drag the name of the effect to the other FX bin.
- To copy an effect to another FX bin (on a track or a clip), hold the CTRL key down, and then drag the name of the effect to the other FX bin.
- To change the order of an effect in an FX bin, drag the name of the effect up or down to the desired place in the effects chain.

To Apply Inserted Clip Effects

1. If you want to apply the inserted effects on more than one clip, select them.
2. If you want to leave room at the end of any clips for effects tails, slip-edit the ends of the clips to leave some empty space.
3. Use the **Edit > Bounce to Clip(s)** command.

After the progress bar disappears, the bounced clips appear with new waveforms to reflect the effects processing. The inserted clip effects are removed from the bounced clips automatically.

Canceling changes made to real-time plug-ins

`EnablePluginCancelButton=<0 or 1>, default = 0`

In SONAR 4.0.2 and earlier, opening the property page of a VST plug-in during playback could result in a slight disruption in playback.

The cause for this problem has its roots in the little **Cancel** button that sits in the top right corner of the plug-in's property page. The purpose of this button is to allow the user to cancel out of any changes they might have made to the plug-in, restoring back to whatever state the plug-in was in before they opened the GUI window. To make this work, SONAR would need to take an initial snapshot of the plug-in's state, and some plug-ins with large amounts of preset data could cause an audio hiccup if the data was captured for the **Cancel** button.

To address this issue, SONAR 4.0.3 (and later) does not take a snapshot of the plug-in's state by default, and the **Cancel** button is not available. There is a new `Cakewalk.ini` variable to bring back the **Cancel** button if desired, but be aware that this may also result in hiccups when opening VST plug-ins during playback.

This variable should be set in the `[WinCake]` section. For example:

```
[WinCake]
EnablePluginCancelButton=1
```

Sidechaining

SONAR supports multi-input plug-ins, which are typically sidechain plug-ins that have two inputs: a primary input and a sidechain input.

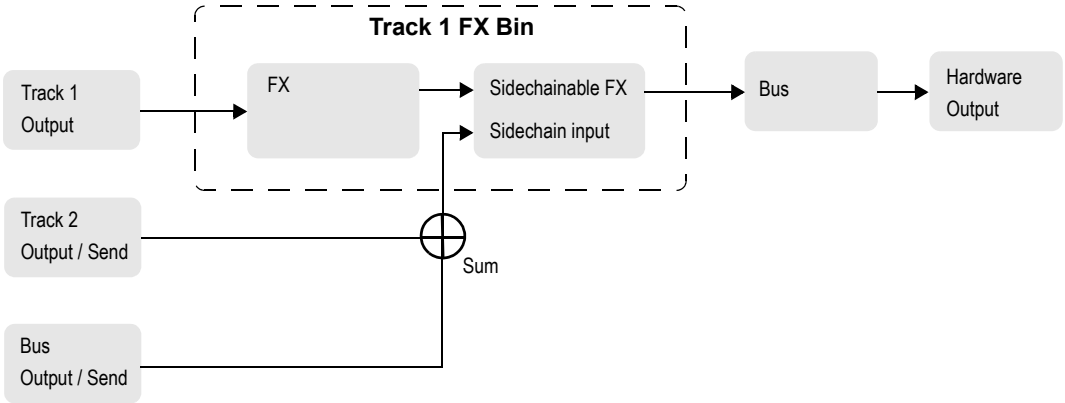
When SONAR detects such a plug-in in an FX bin, a virtual output port is created for each extra input exposed by the plug-in. Audio track, Bus and Send outputs can be routed to sidechain inputs.

Sidechaining is typically used with compressors to limit one signal depending on the signal level of another. Common applications are to reduce the level of a bass guitar when there is a kick drum, or to reduce the level of music whenever a speaker talks (often used for background music in radio- and television programs). There are of course many more applications that are not mentioned here.

SONAR includes the following plug-ins that support sidechaining:

- Sonitus Compressor
- Sonitus Gate
- Vintage Channel VC-64 (SONAR Producer only)

Sidechaining signal flow



See also:

Signal Flow

To assign a track/bus/send output to a sidechain input

1. Insert the sidechain-capable plug-in in a track or bus FX bin (see “Adding effects” on page 209).

   The sidechain input is exposed in the list of available output destinations in all Track/Bus/Send Output controls (except for outputs that would result in a feedback loop).

2. Assign the desired audio track, bus or Send output to the plug-in's sidechain input. For more information, see "Assigning Inputs & Outputs" on page 205.

Note: *All sources that are sent to a sidechain input will be mixed down prior to being sent to the sidechain.*

Sidechain plug-ins in clip FX bins and surround bus FX bins:

Sidechain inputs are not exposed by plug-ins that are inserted in clip FX bins and surround bus FX bins. You can insert any multi-input plug-in into a clip FX bin or surround bus FX bin, but the sidechain inputs on these plug-ins will not be active. The plug-in will function as a normal plug-in and only receive input on its primary input.

See:

Real-time bounce

Sidechainable Vintage Channel VC-64 plug-in

Signal Flow

Limit number of plug-in sidechain inputs

Bouncing audio with sidechain plug-ins

In order to render a sidechain input as part of a mix when bouncing audio, you must select *all* tracks that contribute to the sidechain input.

See:

Bouncing/freezing with sidechain plug-ins

Bouncing audio with sidechain plug-ins

Bouncing Tracks

Bouncing to Clips

Freeze and sidechain inputs

Freeze does not consider sidechain inputs because Freeze only works on a single audio track at a time. To mix down sidechain inputs, use standard bounce with all sidechain sources selected in the mix.

See:

Bouncing/freezing with sidechain plug-ins

Freeze and sidechain inputs

Freeze Tracks and Synths

Sidechainable Vintage Channel VC-64 plug-in

Note: *The Vintage Channel VC-64 plug-in is only available in SONAR Producer.*

The Vintage Channel VC-64 plug-in supports sidechaining (see “Sidechaining” on page 629). When an instance of Vintage Channel VC-64 is inserted in a project, you can assign audio track, bus and send outputs to its sidechain input.

Each Compressor and EQ can be configured to listen to the sidechain input. The sidechain signal is always applied to the last input(s) of the VC-64.

Sidechain controls

The VC-64 has three buttons that affect sidechaining:

Key (for each compressor). Enabling sidechaining on one of the compressors will send the sidechain input(s) to the level detector of that compressor. This function compresses the signal based on the sidechain level rather than the primary input level.

Listen. Enable to listen to the compressor’s sidechain signal instead of the ordinary output.

Key (for each EQ). Enabling sidechaining on one of the equalizers will replace its normal input (according to its routing) with the sidechain signal.

Note 1: *When you enable **Key** on one of the compressors, the internal compressor sidechain (detector chain) is fed from the external sidechain inputs. When you enable **Listen** you will hear what's on the compressor’s sidechain regardless if this comes from the external sidechain inputs or not. If you want to hear the external sidechain you must enable both **Key** and **Listen** on one of the compressors.*

Note 2: *If **Listen** is enabled on both compressors only the sidechain of Compressor 2 will be heard.*

Figure 112. *Vintage Channel VC-64*

A. *Sidechain Listen* ***B.*** *Enable/disable sidechaining for the current Compressor* ***C.*** *Enable/disable sidechaining for the current EQ*

For more information, see the Vintage Channel VC-64 online help.

External Insert plug-in

The purpose of the External Insert plug-in is to route audio to and from existing I/O ports in SONAR, allowing an external audio device to be effectively patched into any FX bin. This allows you to seamlessly incorporate your favorite outboard gear in a SONAR project.

The External Insert plug-in is able to measure and automatically compensate for the round-trip delay through your audio hardware (the time it takes for the audio to exit you computer, be processed by your external audio hardware and finally returned to the computer).

External Insert interface

The left-hand side contains the hardware/external Send controls and the right-hand side contains the hardware/external Return controls.

Send Stereo Mode buttons:

- **L (Left).** This toggle enables/disables the left channel send output (enabled by default).
- **R (Right).** This toggle enables/disables the right channel send output (enabled by default).
- **Mono.** This toggle sums the stereo signal to make it dual-mono so the send output has the same audio on the left and right channels.

Send Level. This is a +/- 24dB trim to the level that is passed to the external send. This parameter is automatable.

Send VU Meter. This meter shows the signal level being delivered to the external send. Since this is feeding a sound card output, it is important to avoid clipping at this stage.

Send Port Picker. This control lets you choose an audio output that currently has nothing routed to it. This is the port that you should connect to the input(s) of your external gear. All output ports that are already used in the project are excluded (except for master buses that have other instances of the External Insert plug-in routed to them).

Note: *Output ports that are used by the External Insert plug-in are excluded from all track and bus Output controls.*

Return Phase Control. This control flips the phase of the signal being returned to the external return input. This parameter is automatable.

Return Level. This is a +/- 24dB trim to the level that is passed from the external send. This parameter is automatable.

Return VU Meter. This meter shows the signal level entering the external return.

Return Port Picker. This control lets you choose any available hardware input. This is the port you that you should connect to the output(s) of your external gear. All input ports that are already used in the project are excluded

Note: *Input ports that are used by the External Insert plug-in are excluded from all track and bus Input controls.*

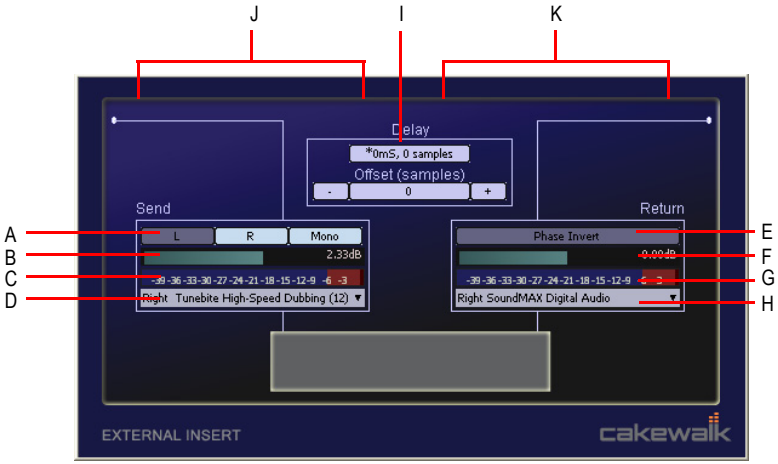
Delay Measurement. This control shows the last measured round-trip delay through your audio hardware. Click the control to initiate a new measurement.

Manual Delay Offset. The center control displays and resets the manual delay offset. The buttons to the left decrease the manual offset by 1 [-] or 10 [--] samples. The buttons to the right increase the manual offset by 1 [+] or 10 [++] samples. All delay buttons are disabled during playback.

Note 1: *Time-based effects such as reverb and delay can artificially increase the latency measurement. Before manually measuring the delay, you may want to bypass the external gear (if Bypass is supported by your external gear).*

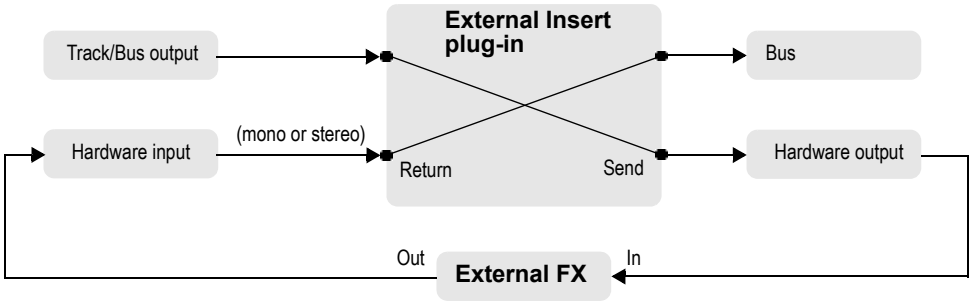
Note 2: *The delay is automatically re-measured if the Audio Buffer size is changed in the* ***Audio Options*** *dialog or if ports are changed.*

Figure 113. *External Insert*



A. *Send Stereo Mode (Left, Right, Mono)* ***B.*** *Send Level* ***C.*** *Send VU Meter* ***D.*** *Send Port* ***E.*** *Return Phase* ***F.*** *Return Level* ***G.*** *Return VU Meter* ***H.*** *Return Port* ***I.*** *Delay Measurement* ***J.*** *Send section* ***K.*** *Return section*

Figure 114. *External Insert signal flow*



Automatable parameters

The External Insert plug-in exposes the following automatable parameters:

- Send Gain
- Return Gain
- Phase Invert
- Left Mute
- Right Mute
- Mono

See:

Automating Effects

To use an external effect in a SONAR project

1. Make sure your external gear is connected to your audio interface and turned on.

   The external gear's audio input must be connected to one of your audio interface's output ports and the external gear's audio output must be connected to one of your audio interface's input ports.

2. Right-click an FX bin and select **External Insert** from the pop-up menu.

   The External Insert property page appears.

3. Click the **Send Port** control and choose the audio port that is connected to your external gear's audio input.

4. Click the **Return Port** control and choose the audio port that is connected to your external gear's audio output.

5. Click the **Delay Measurement** control to measure the round-trip delay through your audio hardware.

   The round-trip time for the signal to return is measured and displayed on the button. This is the delay that will be compensated for in SONAR to keep the track in sync with the rest of the project. For information about testing the delay measurement, see Testing the delay measurement and When to measure the delay.

Note: *Time-based effects such as reverb and delay can artificially increase the latency measurement. Before manually measuring the delay, you may want to bypass the external gear (if Bypass is supported by your external gear).*

6. Play back the project and adjust the Send and Return levels to obtain the desired mix. You may also need to adjust levels on your external gear.

Tip: *The **Send** and **Return** levels, **Phase** and **I/O port** settings can be saved as a preset. If you frequently use a specific external effect, save the settings as a preset that can be quickly recalled in other projects.*

Note: *If you bounce audio in a project that uses the External Insert plug-in, the bounce operation must be performed in real-time. For more information, see "Real-time bounce" on page 666.*

Testing the delay measurement

The External Insert plug-in's delay measurement is normally sample accurate. However, for some hardware configurations, it is possible that a manual adjustment of up to several samples may be required in order to be exactly sample-accurate. If you wish to test the accuracy of the delay measurement for your hardware, follow these steps:

1. Create an audio track and record or import some audio.
2. Clone the track (including the audio) to a new track.
3. Insert the External Insert plug-in on one of the tracks.
4. Assign the **Send** and **Return** to any available input and output on your audio hardware.
5. Patch an audio cable directly between the assigned input and output on your audio hardware.
6. Press **Play** in SONAR.

   You should hear both tracks out of time with each other.
7. Carefully match the levels of the two tracks.

Tip: *While adjusting levels, refer to the numeric peak indicators on the track strip. It is important for this test that the levels match as closely as possible.*

8. Click the **Phase** button on one of the tracks to invert the phase.
9. In the External Insert plug-in, click the **Delay Measurement** control to measure the round-trip delay through your audio hardware.

   The round-trip time for the signal to return is measured and displayed on the button.
10. Press **Play** in SONAR again.

    You should hear the track play significantly quieter and thinner sounding.
11. To confirm if the delay is measured as accurately as possible, adjust the manual offset by one sample in either direction. Press Play after each adjustment and note if the sound gets louder or quieter.

In almost all cases, the sound will be quietest with no manual offset. In some rare circumstances, you may have hardware that requires an offset of a sample or two. If this is the case, you will want to always add that offset when you use the External Insert plug-in.

If your hardware requires a manual offset, you will only need to adjust the offset once for any particular sound card.

Tip: *The manual offset can be saved in a preset for the External Insert plug-in.*

When to measure the delay

Several things can change the delay of the External Insert, including:

- Changing audio ports.
- Changing audio driver model.
- Changing audio device.
- Changing SONAR's buffer size.

When the current delay setting becomes invalid, an asterisk (*) is displayed next to the delay value. If you notice the asterisk, it means something has changed in your system and it's time to measure the delay again.

Loading a project that uses the External Insert plug-in

When you load a project with the External Insert plug-in (or select a preset in the External Insert interface), SONAR checks to see if the exact same ports are assigned as when the project was saved. SONAR's port assignments can change if you load the project on a different hardware configuration or change driver models. If there is any discrepancy between the port assignments that were saved and the ports that are used in the current configuration, the ports are set to "None". Doing so avoids accidentally loading projects and having audio routed in an unexpected way.

Bouncing or freezing audio that uses the External Insert plug-in

The External Insert is a simple way to use real outboard effects as if they are inside SONAR. However there are several good reasons why you should consider bouncing or freezing the audio that passes through the External Insert in order to capture the result of the external hardware processing:

- If the outboard effect's settings are changed between sessions, your project will sound different.
- If you change SONAR's buffer sizes often, you will need to re-measure the delay on all instances of the External Insert each time.
- If you collaborate with other SONAR users, it will be impossible for other users to get the same sound as you unless they have the exact same outboard gear with exactly the same settings.
- You may want to use that outboard gear for something else - either in an External Insert on another track, or for any other use in your studio.
- There is no way to use the same piece of outboard gear on different projects with different settings.

If you bounce or freeze audio in a project that uses the External Insert plug-in, the bounce operation must be performed in real-time.

When bouncing audio data, SONAR will automatically detect the presence of any External Insert plug-ins (see "External Insert plug-in" on page 632) in tracks or buses, and disallow the bounce operation if the **Fast Bounce** mix option is enabled.

If you need to bounce or freeze audio in a project that contains any External Insert plug-ins, you have two choices:

- Disable *Fast Bounce* in the mixdown settings.
- Bypass all active External Insert plug-in's before bouncing.

If you need to make a change later, you can always unfreeze the audio, change settings, then freeze again.

See:

Real-time bounce

Freeze Tracks and Synths

Organizing Plug-ins

Once you have more than a few plug-in effects and/or soft synths installed on your computer, you might want to organize the way they appear in the various plug-in and synth menus that you use. The Cakewalk Plug-in Manager is a powerful tool to organize your plug-in menus. Open the Plug-in Manager by using the **Tools > Cakewalk Plug-in Manager** command, and display the Plug-in Manager's help file by pressing F1.

Even if you don't use the Plug-in Manager, SONAR now automatically organizes all DX and VST plug-ins into a default plug-in menu layout called **Default – All Plug-ins**. If you select the **Plug-in Layouts > Manage Layouts** option from a plug-in menu, the Plug-in Manager opens and automatically populates the **Plug-in Layout** area with the **Default Layout**, which produces a solid starting point for customizing layouts.

VST plug-ins are organized in menus according to the file folder structure in which they reside on your hard disk.

VST Configuration

SONAR automatically scans your VST folders for new plug-ins on startup, registering any unscanned VST plug-ins so that they become available in SONAR's plug-in menus. You can turn off automatic scanning by using the **Options > Global** command, and unchecking the **Scan For VST Plug-ins On Startup** check box that is on the **VST Plug-ins** tab.

To configure your VST plug-ins manually, use either the VST Plug-ins tab of the **Global Options** dialog, or the Cakewalk Plug-in Manager. You can use the **Global Options** dialog to set general VST options, such as choosing which folders to scan, but not specific options on individual plug-ins. Use the Cakewalk Plug-in Manager to set options on individual plug-ins (use the **Tools > Cakewalk Plug-in Manager** command to open the Plug-in Manager). The following procedures explain how to use the VST Plug-ins tab of the **Global Options** dialog. The Cakewalk Plug-in Manager has its own help.

To Display the Global Options Dialog/VST Plug-ins Tab

- Use the **Options > Global** command to open the **Global Options** dialog, and click the **VST Plug-ins** tab.

To Add a Folder to Scan

1. On the **Global Options** dialog/**VST Plug-ins** tab, click the **Add** button to open the **Browse for Folder** dialog.
2. Choose the folder you want to add, and click **OK**.
3. Repeat steps 1 and 2 to add any additional folders you might want to scan.

The new folders appear in the **VST Scan Folder(s)** list, along with any folders that were already in the list.

To Remove a Folder from the VST Scan Folder(s) List

- On the **Global Options** dialog/**VST Plug-ins** tab, in the **VST Scan Folder(s)** list, select the folder you want to remove, and click the **Remove** button.

To Set Options for All Plug-ins in a Folder

1. On the **Global Options** dialog/**VST Plug-ins** tab, in the **VST Scan Folder(s)** list, select the folder you want to set options for, then click the **Folder Defaults** button.
2. In the dialog that appears, choose from the following options (options that control properties for individual plug-ins are greyed-out: use the Cakewalk Plug-in Manager to set those options):
   - **Enable as plug-in.** Enable this option if you want to use the plug-ins in this folder as audio effects.
   - **Configure as tempo-based effect.** If the effects in this folder are supposed to respond to tempo information (for example, a tempo-synced delay), and they are not responding, make sure this box is checked.
   - **Force stereo operation.** If you need to use mono plug-ins in situations that requires stereo, you can enable this option to run the plug-ins in stereo mode. This option simply creates two identical output streams from the plug-ins where only one existed.
   - **Do not intercept NRPNs.** SONAR uses NRPNs to run automation of your VST plug-ins. However, some instruments have their own implementation of this process, so checking this box passes the NRPNs directly to the instrument, allowing it to manage its own automation.
   - **Max used inputs.** This option controls the number of sidechain inputs that are exposed by SONAR for the plug-in. The default value is the maximum number of input channels that are exposed by the plug-in. If the value is set to 2, SONAR will not display any sidechainable inputs; if set to 4, SONAR will display 1 sidechainable input, etc.
   - **Load using jBridge wrapper.** This check box is only enabled on systems where jBridge is installed. jBridge allows you to use 32-bit VST effects and instruments when using the x64 version of SONAR, as well as use 64-bit plug-ins when using the x86 version of SONAR. jBridge can also bridge 32-bit plug-ins in the x86 version of SONAR, allowing your computer to overcome the memory limitations of a single 32bit process.
   - **Enable delay compensation.** Usually, you will leave this check box the way you found it. SONAR contains a delay compensator, which turns on and off automatically for each individual plug-in (only a few plug-ins need it). If your plug-in needs extra time to process the audio data, the plug-in sends a message to SONAR, so it can synchronize playback time to the delayed output from the plug-in.
   - **Serialize Host Access.** When **Serialize Host Access** is selected, communications with the plug-in are serialized as far as possible. The default behavior is OFF, which allows asynchronous calls to the plug-in.

     When **Serialize Host Access** is disabled, SONAR's audio engine runs more efficiently and allows the UI thread to interact independently with the plug-in GUI without impacting the audio engine.

     The only reason to enable **Serialize Host Access** would be for a plug-in that has thread safety problems leading to crashes or glitches when changing plug-in presets.

- **Enable mono processing.** When enabled, this option replicates the audio signal from the first channel to the left and right channel, effectively forcing the output of VST to be mono.
- **Translate Bank/Program Changes.** When enabled, this option translates MIDI program change messages into VST preset changes. This is only used for plug-ins that do not support MIDI program change messages.
- **Always suspend on stop.** When enabled the VST plug-in state will be set to suspended when the transport is stopped in SONAR. The default behavior is to keep VST's always in a resumed state. Enabling this option will prevent effects tails from being heard when the transport is stopped.
- **Always suspend on play.** When **Always suspend on Play** is selected, the plug-in will reset when playback starts. Select this option for any VST instruments that have problems with stuck notes when stopping the transport. The **Always suspend on Play** property is also useful for effects that generate a tail, such as delays and reverbs. The effect is that you will hear the tails when the transport stops, but not when the transport rolls again. **Always Suspend on Play** is disabled by default.

3. Click **OK** to close the dialog.

To Turn Automatic Scanning On or Off

- On the **Global Options** dialog/**VST Plug-ins** tab, in the **VST Scan Options** section, check or uncheck the **Scan For VST Options On Startup** option. The next time you launch SONAR, your VST folders will either be scanned or not, depending on the option you chose.

To Re-scan Failed Plug-ins

- On the **Global Options** dialog/**VST Plug-ins** tab, in the **VST Scan Options** section, enable the **Re-scan Failed Plug-ins** option. The next time you scan, any plug-ins that did not scan correctly during previous scans will be re-scanned.

To Re-scan Existing Plug-ins

- On the **Global Options dialog/VST Plug-ins** tab, in the **VST Scan Options** section, enable the **Re-scan Existing Plug-ins** option. The next time you scan, any plug-ins that have already been scanned will be re-scanned, and any new folder default options you have chosen will be implemented.

To Run a Scan

- On the **Global Options** dialog/**VST Plug-ins** tab, in the **VST Scan** section, click the **Scan VST Folders** button.

To Set All VST Plug-ins to Folder Defaults

- On the **Global Options** dialog/**VST Plug-ins** tab, in the **VST Scan** section, click the **Reset All VST Plug-ins** button. The next time you scan, SONAR will set all plug-ins in your **VST Scan** folders to your folder default settings.

To set options for individual VST plug-ins (DD2; new S8.5)

1. On the **Tools** menu, click **Cakewalk Plug-in Manager** to open the Cakewalk Plug-in Manager.

2. In the **Plug-in Categories** list, select **VST Audio Effects** or **VST Instruments**.
3. In the **Registered Plug-ins** list, select the desired plug-in.
4. Under **VST Configuration**, click **Plug-in Propertires** to open the **VST Plug-In Properties** dialog.
5. Select the desired options, then click **OK** to close the **VST Plug-In Properties** dialog.

Note: *For any of the VST properties to take effect, the plug-in must be re-instantiated. The simplest way to do that is to delete the plug-in from the FX bin or Synth Rack, then press CTRL+Z to undo.*

For more information about adjusting VST plug-in settings, see the Cakewalk Plug-in Manager online Help.

V-Vocal Clips

V-Vocal is a vocal processor that integrates Roland's VariPhrase technology into SONAR Producer. Designed for monophonic sounds, especially vocals, V-Vocal does pitch correction on notes and phrases, edits formants, adds vibrato if you want, and can also correct timing.

Access V-Vocal by selecting audio data, and then inserting an instance of V-Vocal. This creates a monophonic V-Vocal clip, which means that the selected audio data is copied to create the V-Vocal clip, while the original audio data is muted and left unchanged.

The following procedures explain how to manage V-Vocal clips. For information about using V-Vocal, see "Using V-Vocal" on page 642.

To Create a V-Vocal Clip

1. Select the audio data you want to use.
2. Use the **Edit > Create V-Vocal Region** command, or right-click the clip and choose **V-Vocal > Create V-Vocal Clip** from the Clips pane pop-up menu.

SONAR copies the selected audio data, inserts an instance of V-Vocal on the copied data, and displays the new V-Vocal clip (the copied audio data that contains an instance of V-Vocal) where the selected audio data was, and opens the V-Vocal interface. The V-Vocal icon V-Vocal Region 1 appears on the V-Vocal clip. The original audio data is muted. No track data is moved or otherwise modified by creating a V-Vocal clip. You can drag the V-Vocal clip away from the original audio data if you want.

To Open a V-Vocal Interface

- If the V-Vocal interface of the clip you want to edit is not open, right-click the V-Vocal clip and choose **V-Vocal > V-Vocal Editor** from the Clips pane pop-up menu. You can also double-click the V-Vocal clip, or create your own key binding to launch V-Vocal.

To Move, Edit, or Copy a V-Vocal Clip

- Use standard editing commands (nudge, drag-and-drop, slip-edit, etc.) to move, edit, or copy the clip. When you move a V-Vocal clip, the original audio clip is revealed underneath it. You can

unmute the original clip by using the Mute tool. You can also or create your own key binding to launch the V-Vocal editor.

Note: *Offline processing commands such as **Process > Normalize** and **Process > Gain** do not work on a V-Vocal clip.*

To Bypass or Unbypass a Single V-Vocal Clip

- Right-click the V-Vocal clip and choose **V-Vocal > Bypass/Unbypass** from the Clips pane pop-up menu.

When you bypass a V-Vocal clip, you hear the original audio data that makes up the V-Vocal clip without hearing any V-Vocal processing. When **Bypass** is enabled, the **Bypass** button in the V-Vocal interface appears red.

To Bypass or Unbypass All V-Vocal Clips in a Track

- Right-click a V-Vocal clip and choose **V-Vocal > Bypass All V-Vocal Clips** from the Clips pane pop-up menu.

To Delete a V-Vocal Clip

- Select a V-Vocal clip (the orange clip with the V-Vocal icon, not the original audio clip) and use the **Edit > Delete** command, or press DELETE on your keyboard.

Note: *V-Vocal commands can also be accessed by clicking the **V** icon in the V-Vocal clip*

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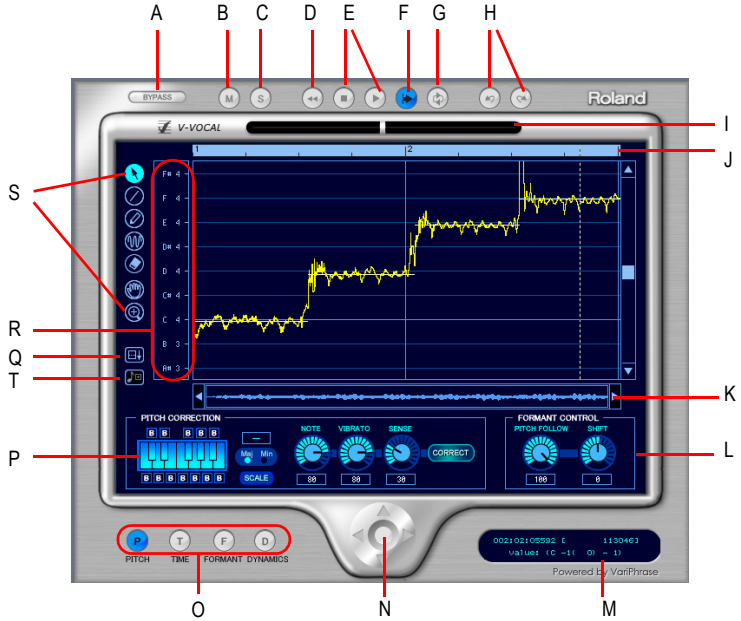
Using V-Vocal

V-Vocal is a vocal processor that does pitch correction on notes and phrases, corrects timing, edits formants and dynamics, and can add vibrato.

The following topics describe using the V-Vocal interface to process audio data. For information about inserting and managing V-Vocal in SONAR, see “V-Vocal Clips” on page 641.

Here’s a description of the interface:

Figure 115. *V-Vocal*



A. *Bypass* ***B.*** *Mute* ***C.*** *Solo* ***D.*** *Rewind* ***E.*** *Play/Stop* ***F.*** *AutoScroll* ***G.*** *LoopMode* ***H.*** *Undo/Redo* ***I.*** *Cent indicator* ***J.*** *Timeline* ***K.*** *Scroll* ***L.*** *Formant control* ***M.*** *Information view* ***N.*** *Zoom* ***O.*** *Edit mode* ***P.*** *Pitch correction* ***Q.*** *Spread editing area* ***R.*** *Select pitch correction key* ***S.*** *Tools* ***T.*** *Pitch to MIDI*

Description of Interface Components

- **Edit mode.** Select the parameter you want to edit: pitch, time, formant, or dynamics.
- **Zoom.** Continuous horizontal or vertical zooming by dragging the center vertically or horizontally. If you drag the center while pressing the SHIFT key, you can restrict the zoom direction to horizontal or vertical. Zoom in or out incrementally by clicking any of the four arrows. Double-clicking the center shows the overall clip.
- **AutoScroll.** The editing display scrolls when you turn on **AutoScroll**.
- **Formant control.** The **Pitch Follow** knob increases or decreases the formant according to pitch. The **Shift** knob increases or decreases the formant for the entire phrase.
- Pitch Correction
  - **Keyboard and Scale buttons.** Assign the target notes with the **Keyboard** button; each key has a **Bypass** button (B) located under or over the key. The **Scale** button lets you assign the target notes by scale: click the **Scale** button, click **Maj** or **Min**, and click a note on the **Keyboard** button to choose the root of the scale.
  - **Note button.** Use this button to set the rate of pitch correction. This function can adjust the pitch to the selected notes' grids by increasing or decreasing the pitch of the selected region.

  - **Vibrato.** Set the depth of the vibrato. If you choose 100%, vibrato depth is set to zero.
  - **Sense.** This is a sensitivity control for pitch correction for unstable pitch areas such as portamento. Pitch correction gets stronger if you increase the value.
- **Cent indicator.** This indicator shows the pitch correction amount by cents in realtime (+/- 100 cents).
- **Timeline.** This gives a graphical display of the playback time in beats.
- **Select pitch correction key.** Set the target notes for the pitch correction. Each time you click a note, the note's color is changed to red, grey, or blue in turn. Meaning of each color is as follows:
  - Blue: selected
  - Gray: not selected
  - Red: Bypassed
- **Arrow tool .** For selecting the editing region, and for increasing or decreasing the pitch of the selected region.
- **Line tool .** For drawing Pitch, Formant, and Dynamics with straight lines.
- **Pen tool .** For drawing Pitch, Formant, and Dynamics freehand.
- **Vibrato/LFO tool .** For adding and editing Vibrato or LFO at the selected region.
- **Eraser .** For resetting the selected region to its initial value.
- **Hand tool .** For scrolling the display. If you drag in the editing area while pressing the CTRL key, you can zoom.
- **Rectangle zoom .** For selecting an area to zoom in to. Drag a border around the area you want to zoom to. Overall area is displayed by double clicking.

See:

Playing Back V-Vocal Clips

Playing Back V-Vocal Clips

You can play back V-Vocal clips by clicking the buttons at the top of the V-Vocal interface. Besides playing the V-Vocal clip, you can mute it, solo it, loop it, and rewind it. Clicking in the time ruler at the top of the graph moves the playback time.

To Play a V-Vocal Clip

- To play a V-Vocal clip, click the **Play** button in the V-Vocal interface, or press the SPACEBAR.
- To stop playback, press the SPACEBAR, or click the **Stop** button.
- To mute the track that the V-Vocal clip is in, click the **M** button in the V-Vocal interface.

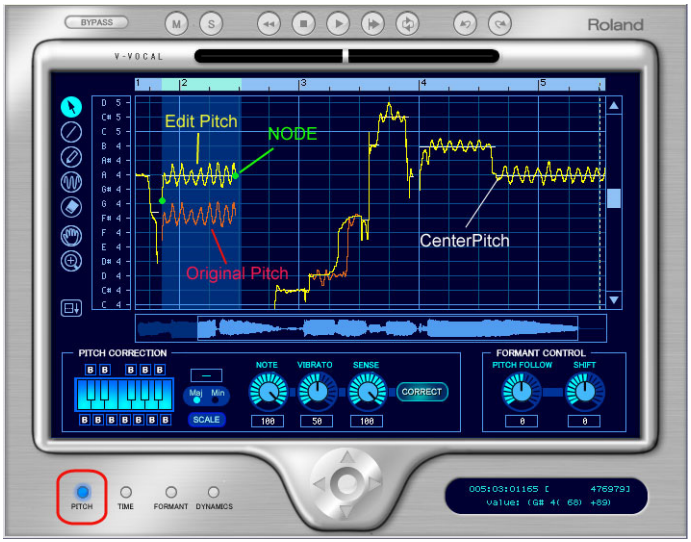
- To Solo the track that the V-Vocal clip is in, click the **S** button in the V-Vocal interface.
- To rewind the V-Vocal clip, click the **Rewind** button in the V-Vocal interface.
- To loop the V-Vocal clip, click the **Loop Mode** button in the V-Vocal interface.
- To set the playback time for the V-Vocal clip, click in the timeline that's at the top of the graph.

See:

Pitch Editing

Pitch Editing

Pitch editing requires that the **Pitch** button in the **Edit Mode** section is enabled. Here's a description of the interface in pitch editing mode:



- The yellow line is the edited Pitch curve and this line is the actual sounding pitch.
- The red line is the original Pitch curve and this line cannot be edited.
- The green dot is a Node. Nodes are automatically assigned to the start and end of the edited region. You can select the specific region between the nodes if you click the yellow line between the nodes.
- The white horizontal line is called Center Pitch. Center Pitch is used as a baseline for increasing or decreasing vibrato or for pitch correction.

To Change the Pitch of a Selected Region

1. Use the Arrow tool to select the part of the yellow line that you want to transpose (make sure that the **Pitch** button in the **Edit Mode** section is enabled).

   The selected region turns blue to show that it is selected.

2. Drag the yellow line up or down.

   Nodes appear automatically when you shift pitch.

Tips:

- CTRL-dragging snaps the pitch to the pitch correction grid. SHIFT dragging moves the pitch by 100 cent increments.
- You can also edit pitch by dragging a node up or down.
- You can undo each edit you do by pressing CTRL+Z. You can use this command repeatedly to undo multiple edits.

About Pitch Correction

The key for making manipulated sound more natural is using the parameters in the **Pitch Correction** section: **Note**, **Vibrato** and **Sense**. Functions for each parameter are as follows:

- **Note.** Controls the ratio of pitch shifting to the nearest scale note. With a value of 100, each section is completely shifting to the nearest scale note.
- **Vibrato.** As the value increases, the vibrato depth gets narrower. At a value of 100, Vibrato is completely eliminated.
- **Sense.** As the value increases, the range of affecting pitch correction gets wider.

If you set all of above parameters to a value of 100, you will get a "robot voice”-type sound.

Current default values are:

- Note: 100
- Vibrato: 50
- Sense: 100

This setup is a bit too artificial. If you want to make the sound more natural, we suggest the following setup:

- Note: 70-100; be careful of intonation.
- Vibrato: 0-20; try 0, if you'd like to keep the original.
- Sense: 20-30; adjust to fit the data.

The above suggestion is just one example. Different types of audio might require different settings.

In addition, try adjusting the **Pitch Follow** parameter in the **Formant Control** section as follows:

- Set the value close to 100 if you'd like to do subtle pitch correction.
- Set close to 0 if you'd like drastic rephrasing.

To Draw Freehand Pitch Changes

1. Click the Pen tool.
2. Draw a shape on the graph.

To Draw Straight Line Pitch Changes

1. Click the Line tool.
2. Draw a line on the graph.

To Correct Pitch

1. Select the region you want to correct by using the Arrow tool.
2. Select the notes that you want the selected region to become by clicking notes on the **Keyboard** button. The selected notes should be light blue. The deselected notes are dark blue. When you click the **Correct** button, the selected area conforms to the light blue notes on the keyboard. You can also click the note names in the **Select Pitch Correction** field to select notes. Note that light blue note names are selected, grey note names are not selected, and red note names are bypassed.

Note: *To display different octaves, drag the vertical scroll bar that is at the right side of the graph up or down.*

3. Set the amount of pitch correction you want by adjusting the Note knob. 100 cents is equal to a half-step. Between 70 and 100 is a good place to start.
4. If the selected region has any unstable pitch areas such as portamento, you can adjust the Sense knob, which adjusts pitch correction sensitivity. Pitch correction gets stronger if you increase the value. 30 is a good starting point. If the selection has vibrato, try 0 to 30.
5. Click the **Correct** button. The pitch in the selected region moves to the target pitches (the light blue notes on the keyboard).

To Conform Pitches to a Scale

1. Use the Arrow tool to select the region where you want to correct pitches.
2. Click the **Scale** button so that it is enabled (light blue).
3. Click a **Maj** or **Min** button to select a major or minor scale, respectively.
4. Click a note on the **Keyboard** button to select the root note of the scale.

   The notes of the scale you selected turn light blue on the **Keyboard** button.
5. Click the **Correct** button.

The selected area conforms to the light blue notes on the keyboard.

To Restore Original Pitch

- Use the Eraser tool to drag over a region. The region you drag over returns to original pitch.

To Add Vibrato

1. Click the Vibrato/LFO tool.
2. Move the cursor to the place where you want the vibrato to start.

   The cursor displays a vibrato icon when it is ready to add new vibrato: .
3. Drag to the right for the length of the vibrato segment that you want to add.

To Edit Vibrato

1. Move the Vibrato/LFO tool over the vibrato segment that you want to edit.

   The cursor displays a double-arrow icon when it is ready to edit vibrato: .
2. Drag the vibrato segment vertically to edit amplitude, or horizontally to edit frequency.

Tips:

- Holding the CTRL key down while you drag restricts vibrato editing to amplitude only.
- Holding the SHIFT key down while you drag restricts vibrato editing to frequency only.

To Fade-in Vibrato

1. Move the Vibrato/LFO tool over the beginning of a vibrato segment.

   The cursor displays a fade-in icon when it is ready to add a fade-in: .
2. Drag the vibrato segment to the right for the length of the fade-in that you want to add.

See:

V-Vocal pitch-to-MIDI.

Editing Time.

Editing Time

To edit timing with V-Vocal, the **Time** button in the **Edit Mode** section must be enabled.

To Edit Time

1. Make sure the **Time** button is enabled.
2. Move the Arrow tool near the vertical center of the graph until the cursor changes to the double arrow, and click at each point where you want to preserve the original timing. A vertical green line appears at each point that you click.
3. Now add new green lines between the existing ones.
4. Drag the new lines to the left or right to compress or expand each region.

Tips:

- Hold down the CTRL key while you move lines to move all the following lines by an equal amount.
- To erase lines, drag a region with the eraser. Timing reverts to its original condition in the areas where you erase lines.

See:

Editing Formants

Editing Formants

A rough definition of formants is that they are vowel sounds. To edit formants with V-Vocal, the **Formant** button in the **Edit Mode** section must be enabled.

Here's a picture of the V-Vocal interface in formant mode:

The red line in the graph is the formant line. The red dots on the line are nodes.

To Shift the Formant of a Region

1. Use the Arrow tool to select the region you want to shift.

2. Drag the red line in the region up or down.

When you drag the red line, nodes are automatically created at the start and end of the selected region. You can drag the nodes to create different shapes.

Tips:

- Double-clicking the red line in a selected region adds nodes to the place where you click, and also to the start and end of the selected region.
- You can do freehand editing with the Pen tool.

- You can add an LFO to a selected region by dragging the red line up or down with the Vibrato tool. Dragging left or right modifies the LFO frequency.
- You can reset segments of the red line by dragging with the Eraser.
- You can increase or decrease the formant for the entire phrase by adjusting the **Shift** knob.

To Link the Formant Line to the Pitch Line

- To increase or decrease the formant relative to pitch, adjust the **Pitch Follow** knob. You can view pitch at the same time as formants by right-clicking the graph, and choosing **Views > Pitch** from the context menu.

See:

Editing Dynamics

Editing Dynamics

The basic procedures for editing dynamics with V-Vocal are the same as for formant editing, except that dynamics are represented by a yellow line, and you must have the **Dynamics** button enabled in the **Edit Mode** section.

See:

Context Menu

Context Menu

If you right-click the graph, the V-Vocal context menu appears.

The menu has the following commands:

- **Undo.** Use this command to undo your last editing action. You can use this command repeatedly to undo a series of editing actions, starting with the latest.
- **Redo.** Use this command to redo an editing action that was just cancelled by an Undo command.
- **Select All.** Use this command to select the whole phrase. You can deselect a selection by clicking away from the waveform.
- **View.** Use this command and the options in its submenu to hide or show the phrase's waveform (**Wave** option on submenu), the pitch display (**Pitch**), the formant line (**Formant**), and the dynamics line (**Dynamics**).
- **Group Node.** Deletes nodes in the selected region.
- **Pitch Detect Mode.** Method for redetecting center pitch (the white horizontal line) of LFO or Vibrato. After you select the region you want to redetect, choose from these options the following submenus.
  - **Standard 1.** Generally, you do not need to select this option, because it is used to detect

pitch as soon as you create a V-Vocal clip. If you decide to use another method, but change your mind and want to use this method, you can select this method to recreate the original data.

- **Standard 2.** This is a general pitch detection setting that often performs better on styles with deeper vibratos.
- **Deep Vibrato.** Special purpose pitch detection method for phrases that contain very deep vibratos; this detection method tends to create longer center pitches, but may detect multiple notes as a single note.
- **Precision.** Special purpose pitch detection method for very high resolution pitch detection of phrases; this detection method will create more accurate center pitches for styles containing fast variations of pitch. This method, however, may divide a single vibrato section into multiple pitches.

- **LFO Pen Type.** Select the type of the waves of vibrato added by the vibrato tool.

See:

Keyboard Shortcuts

V-Vocal pitch-to-MIDI

V-Vocal is able to convert pitch to MIDI. V-Vocal data can be dragged from V-Vocal and dropped onto a MIDI track in SONAR's Clips pane.

Pitch to MIDI settings

To open the **Pitch to MIDI Settings** dialog, right-click in the V-Vocal Edit pane and select **Pitch to MIDI Settings** from the pop-up menu.

There are two parameters that affect the generated MIDI data.

Pitch Bend Range. This setting is used to specify the pitch bend range to use when converting fine pitch changes to MIDI. The Pitch Bend Range value is specified in semitones and the range is 1-24. The default value is 2 semitones.

Time Resolution (ticks). This setting is used to specify the tick interval between pitch bend events. The choices are 20, 40, 60, 80, 100 and 120, and the default value is 20 ticks.

Use Pitch Bend. This setting specifies whether or not the converted MIDI data will include Pitch Wheel events.

To convert pitch-to-MIDI

Click the **Pitch to MIDI** button and drag onto a MIDI track in SONAR's Clips pane.

A MIDI representation of the post-correction V-Vocal audio data is copied to the MIDI track.

Keyboard Shortcuts

The following table lists the V-Vocal keyboard shortcuts:

Command	Shortcut
Arrow tool	S
Line tool	L, or hold down SHIFT while using the Pen tool
Pen tool	D
Vibrato/LFO tool	V
Erase tool	E
Hand tool	H
Zoom tool	Z
Undo zoom	U
Redo zoom	SHIFT+U
Zoom vertically	CTRL+UP/DOWN ARROW keys
Zoom horizontally	CTRL+LEFT/RIGHT ARROW keys
Fit entire region into display	SHIFT+F
Fit content vertically	F
Pitch edit mode	1
Time edit mode	2
Formant edit mode	3
Dynamics edit mode	4
Cycle through all modes	SHIFT+LEFT/RIGHT ARROW keys
Play/Stop	SPACEBAR
Rewind	W
Bypass	B
AutoScroll	A
Loop on/off	\
Undo	CTRL+Z
Redo	CTRL+SHIFT+Z

Table 133.

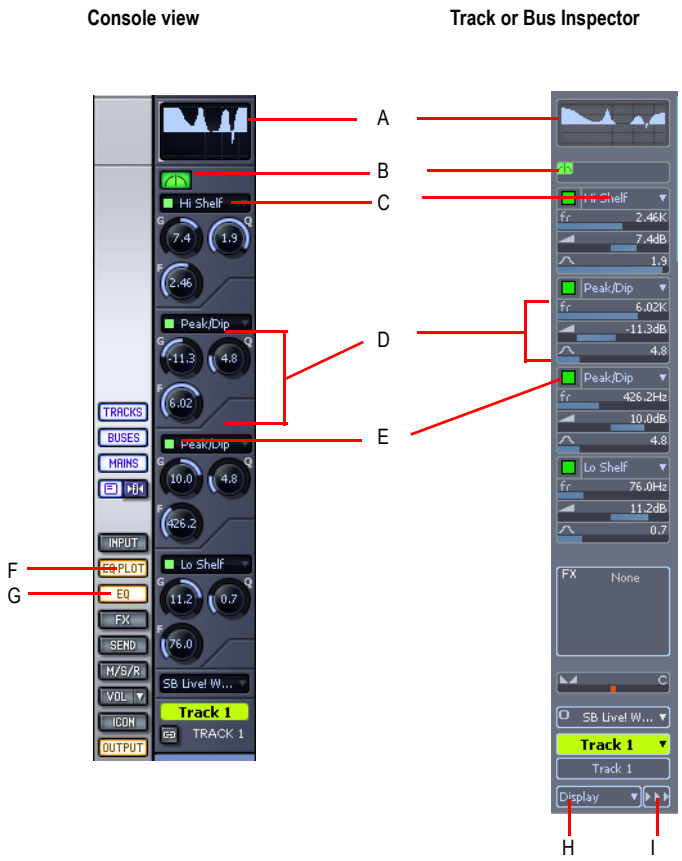
Command	Shortcut
Cancel drag gesture	ESC
Select All	CTRL+A
Select None	CTRL+SHIFT+A
Return selection to default settings	DELETE
Solo track	/
Show/hide waveform in Pitch edit mode	SHIFT+W
Go to/Center cursor	G
Scroll up/down	UP/DOWN ARROW keys; PAGE UP/PAGE DOWN
Scroll left/right	LEFT/RIGHT ARROW keys

Table 133.

Using the Per-track EQ

SONAR has a 4-band EQ patched into each audio track by default. You can adjust these EQ's in the Console view and the Track Inspector. You can hide the EQ, hide its graph (plot), display only one band, or display all four bands

Here's a graphic of the EQ and its controls:



***A.** Plot **B.** Enable EQ **C.** Choose type of filter, band 4 **D.** Frequency, Gain, and Q controls for band 3 **E.** Enable band 2 **F.** EQ Plot button **G.** EQ button **H.** Display button **I.** Module options*

Here's how to use it:

To Show or Hide the EQ in all Audio Tracks

- In the Console view, click the **EQ** button; in the Track or Bus Inspector, click the **Display** button and click **EQ**.

To Show Either One Band's Controls or Four Band's Controls

- In the Console view, right-click the **EQ** button and choose options; in the Track or Bus Inspector, click the **Module Options** button, choose **EQ and Plot**, and choose options.

To Enable or Disable the EQ in a Track or Bus

- Click the **EQ Enable** button.

To Enable or Disable a Band

- Click the **Enable/Disable Band** button that's at the top of each band's controls.

To Choose the Filter Type for Each Band

- Click the **Filter Type** menu, and choose a filter type.

To Set Frequency, Gain, and Q for Each Band

- In the Track or Bus Inspector, in the band that you want to configure, drag the frequency slider, gain slider, or Q slider, respectively, to the left or right. In the Console view, rotate the buttons that correspond to each parameter. There are tooltips for each control.

To Hide or Show the Plot (Graph)

- In the Console view, click the **Plot** button. In the Inspector, click the **Display** button, and click **Plot**.

To Change the Plot Resolution

- In the Console view, right-click the **Plot** button and choose options. In the Inspector, click the **Module Options** button, choose **EQ and Plot**, and choose options.

To Open the EQ Interface

- Double-click the Plot.

To Turn Off Bands 5 and 6

- If you are using bands 5 and/or 6, you can turn these bands off by right-clicking the Plot, and choosing **Reset Hidden EQ Parameters**.

To copy EQ settings

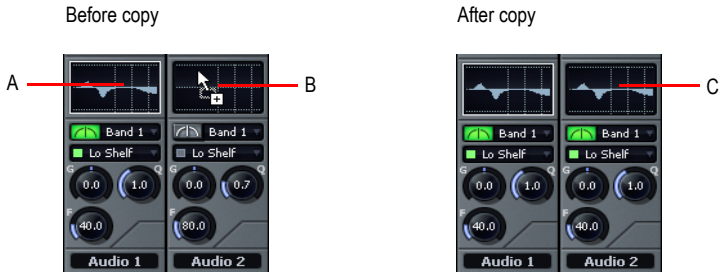
SONAR lets you easily copy EQ settings from one track/bus (source) to another track/bus (target) when using the integrated per-channel EQ in the Console View.

1. CTRL-click on the source EQ plot area and hold down the left mouse button.
2. While still holding down the CTRL key and left mouse button, drag the mouse cursor over the EQ plot area on the target track.
3. Release the left mouse button and CTRL key.

The EQ settings are copied from the source track/bus to the target track/bus. The target EQ will automatically be enabled if it was not already enabled.

This command is undoable, so you can quickly and easily revert to a track/bus' previous EQ settings.

Note: *You can only copy settings from an EQ that is enabled.*



***A.** Hold down the CTRL key and left-click in the source EQ plot **B.** While still holding down the CTRL key and left mouse button, drag the mouse cursor to the target EQ plot and release the mouse button **C.** The source EQ plot is copied to the target EQ plot*

Applying Audio Effects

You can destructively apply audio effects for one or more tracks. When you are pleased with the audio effects you have patched into a track, you can apply the effects to the track. Applying effects to a track saves resources, allowing you to include additional tracks and/or effects

Note: *When applied effects are undone, they are not re-patched in the FX bin(s).*

To Apply Multiple Audio Effects Offline

1. Add one or more audio effects to one or more tracks in either the Track view or the Console view.
2. In the Track view, select the tracks or clips you want to be affected.
3. Select **Process > Apply Audio Effects**.

   The **Apply Audio Effects** dialog appears.
4. If desired, select the option to delete the effects after applying them.
5. Click **OK**.

If you do not delete the effects after applying them, they remain active.

CPU Usage of Audio Effects

The number of real-time audio effects that your computer can handle depends on the number of audio tracks in your project, the number and type of effects you want to use, and the type and speed of your CPU. Certain effects are more CPU-intensive than others, and enabling certain settings (such as using equalization within the Stereo Reverb) increases CPU usage for those effects.

Applying MIDI Effects

You can destructively apply the MIDI effects in a track's patch point. This makes it easy for you to experiment with MIDI effects before you commit to them on a more permanent basis.

To Apply MIDI Effects Destructively

1. In the Track view, select the tracks or clips to be affected.
2. Select **Process > Apply MIDI Effects**.
3. If desired, select the option to delete the effects after applying them.
4. Click **OK**.

If you don't delete effects after applying them, they continue to be active during playback, even though they have already been applied.

Using Control Groups

SONAR lets you link faders, knobs, or buttons in the Track and Console views into **groups**. Groups are collections of controls whose movements are linked together. For example:

- Two **Volume** faders or controls can be grouped so that when you increase or decrease the volume of one track, the volume of the other track changes in exactly the same way.
- Four **Mute** buttons can be grouped so that when you click on the **Mute** button to mute track 1, tracks 1 and 2 are muted and tracks 3 and 4 are un-muted.

The Console view and Track view identify controls, knobs and faders that are grouped using a colored group indicator that is displayed on the controls in each group. The controls in group A are displayed with a red indicator, the controls in group B with a green indicator, and so on. Controls, faders and knobs can be grouped together.

When you group buttons together, the way they work is based on their position when you create the group:

- Buttons that are in the same position when grouped will turn on and off together at all times.
- Buttons that are in opposite positions when grouped will always remain in opposite positions.

When you group buttons with knobs or faders, the button turns on/off when the knob or fader reaches its halfway point.

You have several additional options. There are three general types of groups: absolute, relative, and custom. Here's how they work.

Absolute

The range of motion in all controls in the group is identical. When you move one control in the group, all other controls in the group move the same amount in the same direction. The controls do not necessarily need to start at the same level.

Relative

The range of motion for controls in the group is not the same. All controls in the group have the same value at one point—the lowest level for send, return, and volume levels, and zero for pan controls.

Custom

Sometimes you want to define a more complex relationship between the controls in a group. For example:

- You want two controls two operate in reverse—when one fader drops, the other increases (cross fade).
- You want two volume faders grouped so that they are locked together at maximum level, but drop at different rates.
- You want two faders to be locked together with the same range of motion, but a third fader grouped with them to have a different range of motion.

Custom groups let you set the range of motion for each control in the group by entering a starting and ending value. As any one control in the group is moved from its starting position to its ending position, the other controls in the group exercise their full range of motion.

When you have defined a custom group, you can adjust the starting and ending position of each control using the **Group Settings** dialog box or using pop-up menus on the controls in the group.

Note: *By default, the relative gain between grouped controls that affect gain is preserved. If you prefer the relative position of the controls to be preserved regardless of the relative gain, there is a check box in the **Group Properties** dialog that will toggle between these two behaviors.*

To Add a Control to a Group

1. Right-click on the control.
2. Choose a group from the **Group** submenu.

SONAR adds the control to the group. Controls, knobs and faders are highlighted with the group's color indicator.

To Remove a Control from Its Group

1. Right-click on the control.
2. Choose **Remove From Group** from the menu.

SONAR removes the control from the group and displays the control with the neutral color indicator.

To Remove All Controls from a Group

- Right-click a control in the group, and choose **Clear Group** from the pop-up menu.

To Override a Control's Grouping

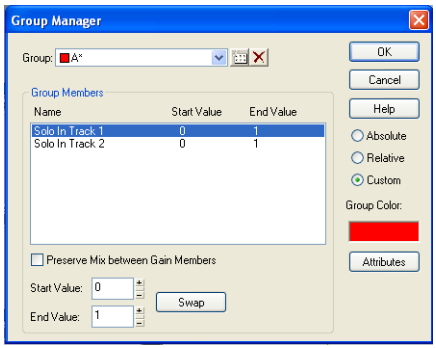
- Hold down the CTRL key while moving the control.

The control remains part of the group and functions as such once the CTRL key is lifted.

To Set the Group Type to Relative or Absolute

1. Right-click on any control in the group and choose **Group Manager** to display the **Group Manager** dialog.

Figure 116. *The **Group Manager** dialog*



2. Choose **Absolute** or **Relative** as the group type and click **OK**.

SONAR uses the type to determine the range of motion for the group's controls.

To Create a Custom Group

1. Right-click on any control in the group and choose **Group Manager** to display the **Group Manager** dialog.
2. Choose **Custom** as the group type. The starting and ending values for each control are displayed.
3. To change the starting or ending value for a control, click on the control in the list and enter new values in the **Start** and **End** box.
4. To swap the starting and ending value, click the **Swap** button.
5. Click **Close** when you are done.

SONAR uses the type to determine the range of motion for the group's controls.

To Adjust the Start Value of a Control

1. Set the control to the desired starting value.
2. Right-click on the control.

3. Choose **Set Start = Current**.

SONAR sets the start value of the control.

The **Set Start = Current** and **Set End = Current** commands set the range of motion that a grouped control moves through as the other members of the group move through their starting and ending values. You don't have to designate a group as a custom group to create a custom group—just group some controls and set their starting and ending values.

To Adjust the End Value of a Control

1. Set the control to the desired ending value.
2. Right click on the control.
3. Choose **Set End = Current**.

SONAR sets the end value of the control.

The **Set Start = Current** and **Set End = Current** commands set the range of motion that a grouped control moves through as the other members of the group move through their starting and ending values. You don't have to designate a group as a custom group to create a custom group—just group some controls and set their starting and ending values.

See also:

Quick Groups

Quick Groups

You can create a temporary group (a Quick Group) of track or bus controls by clicking the strip selector on each track or bus that you want to group. Similar or identical controls in the grouped tracks or buses will then move synchronously when you adjust them. For example, if you made a Quick Group of an audio track and a MIDI track, and then dragged the volume fader in the MIDI track, the volume fader in the audio track would move in similar fashion. If you dragged the Velocity Trim fader in the MIDI track, the Volume Trim fader in the audio track would move also.

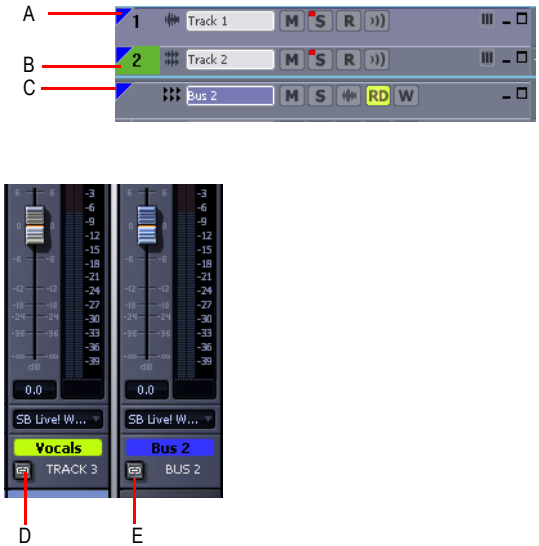
Note: *Not all controls can be Quick Grouped or Grouped. Controls such as Input, Output, and Effects Send Selector on Audio tracks as well as the Input, Output, Channel, Bank, Patch, Time+ and Key+ controls on MIDI tracks cannot be grouped (they can have identical values set though by using the **Tracks > Property > [name of property]** command).*

The additional attributes of Quick Groups are:

- Only one Quick Group can exist at a time.
- If a control is part of a Quick Group and a permanent group, the Quick Group takes precedence.
- Track and bus controls cannot be in the same Quick Group.

Strip selectors are located in the upper left corner of a track or bus number in the Track view, and are located in the upper left corner of a track or bus name in the Console view. Traditional track

selection (selecting a track and all its recorded MIDI or audio data) is still performed by clicking the track number, but not in the upper left corner.



A. *A track strip selector in the Track view* ***B.*** *A track selector in the Track view* ***C.*** *A bus strip selector in the Track view* ***D.*** *A track strip selector in the Console view* ***E.*** *A bus strip selector in the Console view*

You can make part of a Quick Group into a permanent group by right-clicking a grouped control, and using the **Group > Save** command from the pop-up menu. This creates a group of whatever kind of control you right-clicked from all the tracks or buses in the Quick Group. For example, if you have a Quick Group made of three audio tracks, you could right-click the **Volume** fader of one of the tracks, and save the group. This would create a permanent group of the volume faders in the three audio tracks.

To Create a Quick Group

- Highlight the track strip or bus strip selectors of the tracks or buses you want to group by using any of the following methods:
  - CTRL-click strip selectors if they are not adjacent.
  - Click one strip selector, then SHIFT-click another strip selector to select all tracks or buses that are between them.
  - CTRL-click any strip selector that you want to de-select.
  - Double-click a strip selector to select all tracks or buses.

To Remove all Controls from a Quick Group

- Click a strip selector that is in or out of the group.

  Or

- Right-click a control in the group, and choose **Clear Group** from the pop-up menu.

To Make a Quick Group a Permanent Group

1. In a pre-existing Quick Group, right-click the kind of control that you want to group (for example, volume) to open the pop-up menu.
2. Use the **Group > Save** command from the pop-up menu.

   The **Group Attributes** dialog appears.
3. Choose a Group name and color, and click **OK**.

If you right-click a control to display the pop-up menu again, the name of your new group appears in the **Group** menu. You can add other controls to the group by right-clicking a control, and choosing the group from the pop-up menu.

You can choose the default color for Quick Groups in the **Configure Colors** dialog (**Options > Colors** command).

See also:

To create a Quick Group for all tracks assigned to the same bus

Using Remote Control

This section explains how to assign knobs or sliders on a MIDI controller to control specific parameters on specific tracks. If you have a control surface with groups of faders such as a Tascam US-428 or CM Labs MotorMix, see the online help topic “Working with External Devices.”

SONAR‘s Remote Control function lets you use a MIDI device to remotely control knobs, buttons, and sliders in the Track and Console views. For example, you can:

- Use a key on your keyboard to temporarily mute a track
- Work the send level in a bus with your pitch bend wheel
- Set the main volume levels with NRPN messages
- Prevent SONAR from sending any controller messages to your MIDI device.
- Record automation from an external controller

If you set up remote control for a grouped control, the remote control works all controls in the group.

The type of MIDI message used to work a control is selected in the **Remote Control** dialog box. The options are as follows:

Message option	Message effect on buttons	Message effect on sliders and knobs
None	No remote control	No remote control
Note On	The button state is toggled	The slider/knob is alternately maximized and minimized
Note On/Off	The button state is toggled when Note On is received, and toggled again when Note Off is received	The slider/knob is maximized when Note On is received, and minimized when Note Off is received
Controller	n/a	The slider/knob value is set to the controller value
Wheel	n/a	The slider/knob value is set to the wheel value, with the values mapped from their original range of –8,192 to 8,191 to a range of 0 to 127
RPN	n/a	The slider/knob value is set to the RPN value, with the values mapped from their original range of 0 to 16,383 to a range of 0 to 127
NRPN	n/a	The slider/knob value is set to the NRPN value, with the values mapped from their original range of 0 to 16,383 to a range of 0 to 127

Table 134.

To Set Up Remote Control for a Knob, Button, or Fader

1. Right-click on the control and choose **Remote Control** from the pop-up menu.
2. Choose the remote control type, as described in the table above.
3. Set the note or controller number if applicable.
4. Set the **MIDI Channel** field to the channel that your controller sends out.
5. Click **OK**.

You can now work the control from your MIDI device. If you click the **Automation Write** button on the track strip of the track you are recording on, you can record your external controller's knob or fader movements. Make sure the **Automation Write** button in the **Automation** toolbar is enabled.

To Disable Remote Control

- Right-click on the control and choose **Disable Remote Control** from the pop-up menu.

To Prevent SONAR from Sending Controller Data to Your MIDI Device

- Right-click each knob or fader in SONAR that is sending unwanted controller data to your MIDI device and choose **Disable Control** from the pop-up menu.

See:

Using the Learn Option

Using the Learn Option

The **Learn** option in the **Remote Control** dialog allows you to bind a parameter in SONAR to a knob or fader on your controller.

To Bind a Control Using the Learn Option

1. Right-click on the parameter you want to arm in either the Track view or Console view and select **Remote Control** from the pop-up menu.
2. Move a knob or fader on your controller.
3. Click the **Learn** button in the **Remote Control** dialog and click **OK**.

The control in SONAR is now bound to the knob or fader on your controller.

Bouncing Tracks

The **Edit > Bounce to Track(s)** command lets you combine one or more audio tracks into a submix. A submix can be a mono track, a stereo track or several mono tracks that contain the mixture of the original tracks, preserving the volume, pan, and effects for each track. If you're bouncing tracks that are routed to a surround bus (SONAR Producer only), you can bounce them to as many mono tracks as you have surround channels, by choosing the **Split Mono** option in the **Channel Format** field of the **Bounce to Tracks** dialog, and also choosing a surround bus in the **Source Category** field. After their creation, the submix tracks are just like any other tracks—you can edit them, add effects, copy them to another project, etc. The original, unmixed audio tracks are not deleted, so you can archive them and recover them later, or continue using them as before.

Note: *You control the bit depth of all rendering operations (bouncing, freezing, applying effects) on the Audio Data tab of the **Global Options** dialog (**Options > Global** command) in the **Render Bit Depth** field. The default value of 32 is the best for most situations. See "Bit Depths for Rendering Audio" on page 849 for more information.*

The **Edit > Bounce to Track(s)** command operates completely offline, meaning you can mix down tracks that may be too complex for your machine to actually play in real time.

Here are some reasons to use **Edit > Bounce to Track(s)**:

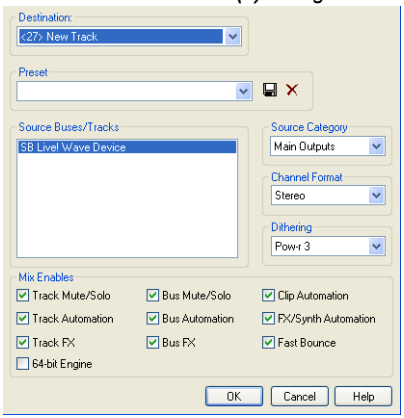
- Your mix is so complex that real-time playback is impossible. **Edit > Bounce to Track(s)** produces the correct mix, and store the result in a new track or tracks.
- You require more CPU time for your real-time effects. With **Edit > Bounce to Track(s)**, you can premix some of your tracks with real-time effects applied, saving CPU time during playback.

If you mix down to tracks that already have data, the new events are placed in the track, but do not overwrite existing material.

To Mix Down (Bounce) Audio Tracks

1. Set all volume, pan, effects, and automation settings just as you want them.
2. Select the tracks or clips you want to mix down.
3. If you are using effects on the tracks and want to mix the effects down at this time, select the whole length of the longest track or clip plus an extra measure for the reverb or effects “tail.”
4. Choose **Edit > Bounce to Track(s)** to open the **Bounce to Track(s)** dialog.

Figure 117. *The **Bounce to Track(s)** dialog*



5. Select the first destination track for the mixdown.
6. If you’ve saved a preset configuration for the **Bounce to Tracks(s)** dialog, select it now in the Preset window.
7. In the **Source Category** field, select the source you want to use for your bounced track(s) from the following options:
   - **Tracks.** Choosing this option creates new separate tracks for each track you highlight in the **Source Buses/Tracks** field. Each track you highlight will produce a new mono track, stereo track, or two new mono tracks (the **Split Mono** option), depending on what you choose in the **Channel Format** field.
   - **Buses.** Choosing this option creates new separate tracks for each bus you highlight in the **Source Buses/Tracks** field. Each bus you highlight will produce a new mono track, stereo track, or two to eight new mono tracks (the **Split Mono** option), depending on whether the bus is a stereo or surround bus, and depending on what you choose in the **Channel Format** field.
   - **Main Outputs.** Choosing this option creates new separate tracks for each main output you highlight in the **Source Buses/Tracks** field. Each main output you highlight will produce a new mono track, stereo track, or two to eight new mono tracks (the **Split Mono** option), depending on whether the output is a stereo output or the Surround Main, and depending on what you choose in the **Channel Format** field.

- **Entire Mix.** Choosing this option bounces your entire mix down to a new mono track, stereo track, or two to eight new mono tracks (the **Split Mono** option), depending on whether the output is a stereo output or the Surround Main, and depending on what you choose in the **Channel Format** field.

8. Select a channel format: the kind of track(s) you want to create with your bounce.
9. Select source buses or tracks.
10. Select the kind of dithering you want for your bounce, or select None.

- In the **Mix Enables** field, choose the elements you want to include in the mixdown. If you want to exclude muted tracks and/or include only soloed tracks, make sure **Track Mute/Solo** is checked. Make sure **Fast Bounce** is checked, otherwise the bounce process will take as long as it takes to play your selected track data in real time. Usually, you also want to check **64-bit Mix Engine**. This option lets you turn on the 64-bit mix engine temporarily while you bounce your tracks. This produces a higher-quality bounce without taxing your CPU during the rest of your session.

Note 1: *If you have patched a synth into a track or bus, make sure you check **Track FX** to include synths that are patched into tracks, and check **Bus FX** to include synths that are patched into buses.*

Note 2: *If you don't check **Track Automation**, any initial volume and pan settings in an exported track are ignored and the track's audio data will be exported at the level that exists in the track, with pan set to center. If you don't check **Clip Automation**, any trim settings are ignored during export.*

11. If you want to save your settings as a preset, type a name for them in the **Preset** box, and then click the floppy disk icon that's next to the **Preset** box.
12. Click **OK**.

SONAR mixes the audio data and a new track or tracks appear in your project.

Real-time bounce

When Fast Bounce is enabled

When **Fast Bounce** is enabled, the bounce operation is performed by streaming audio as fast as possible through all mixers and buses in the project. During a fast bounce operation, all hardware outputs are temporarily disabled and the bounce is performed silently.

Note: *There is no sonic degradation by performing a fast bounce since it uses the same operation that is performed during normal playback.*

There are a few limitations to the **Fast Bounce** operation:

- You cannot perform a fast bounce if the audio contains any External Insert plug-ins. Since the

External Insert plug-in is typically used to receive audio from external hardware, SONAR's audio output must be sent to the external hardware in real-time. SONAR will display an error message if you attempt to bounce audio that is routed to the External Insert plug-in.

- Certain software instruments, such as samplers, cannot process audio faster than real-time and will produce glitches when operated in fast bounce mode.
- Some hardware-based DSP effects have trouble with fast bounce.

When Fast Bounce is disabled

When **Fast Bounce** is disabled, the bounce is performed in real-time by actually playing back the project audibly in similar fashion to standard playback. In real-time bounce mode, all audio hardware inputs and outputs are active in order to allow I/O to external hardware inserts.

If you manually stop playback during the bounce operation, SONAR will prompt you if you want to keep or cancel the bounce.

Audible bounce

When **Fast Bounce** is disabled, the real-time bounce operation can be performed either silently or audibly.

The following dialogs have a new **Audible Bounce** option:

- Bounce to Track(s) dialog
- Export Audio dialog
- Export Video mix options
- Apply Audio Effects dialog
- Freeze Options dialog

When **Audible Bounce** is unchecked, no audio output will be heard during the bounce process. When in real-time bounce mode (**Fast Bounce** unchecked) and **Audible Bounce** is enabled, you can hear the output of the mixdown.

Note: *Depending on the gainstages used in the project and the mixdown options selected–such as bouncing with source category assigned to Tracks, or with mute/solo or automation disabled in the bounce settings or while freezing tracks–the output may be louder or softer than during normal playback. Please be sure to turn down the master output level before using real-time audible bounce under these scenarios to avoid the possibility of speaker damage.*

Improve real-time bounce performance

When performing a real-time bounce operation, you can use the **Pause** button as a toggle to temporarily reduce the frequency of GUI updates. This maximizes CPU resources for the audio engine and can be useful while playing projects that consume a lot of CPU, to help avoid dropouts.

For more information, see "The GUI is not Smooth During Playback" on page 917.

Bouncing/freezing with sidechain plug-ins

Sidechain inputs are not automatically included when you bounce a selection. If you want to bounce the output of a single track that contains a sidechain plug-in, the easiest solution is to also select *all* tracks that contribute to the plug-in's sidechain input, and do a bounce with Fast Bounce disabled and the Source Category set to "Tracks".

Note: *Freezing a track with sidechain inputs will not include the sidechain input. If you need to free up CPU on a track that includes a sidechain, use the bounce command with all sidechain sources explicitly selected in the mix.*

See:

Sidechaining

External Insert plug-in

Bouncing Tracks

Bouncing to Clips

Preparing to Create an Audio CD

You can create an audio CD from any wave file or files (extension .wav) of up to either 74 or 80 minutes (depending on the recordable CD media you have). If your projects are audio only, you can simply mix down to a stereo wave file. If your projects contain MIDI, you must first convert the MIDI tracks to audio tracks. Once you have all the stereo wave files you want to include on your CD, you are ready to burn a CD. Use the **Tools > Burn Audio CD** command to burn your tracks to an audio CD.

For step-by-step procedures:

To Export Audio to Wave File Format

Converting MIDI to Audio

To Burn Audio Tracks to an Audio CD

1. Make sure the tracks you wish to burn to CD have been saved as 16-bit, 44,100 Hz, stereo Wave (.wav) files.
2. Insert a blank CD-R disc in the destination drive.
3. Choose **Tools > Burn Audio CD** to open the **Audio CD Burner** dialog box.
4. Select a destination CD writing drive using the Target Drive drop-down list.
5. Click **Add Track** to locate and import the audio Wave files you wish to burn to CD.
6. Place the tracks in the desired order by using the **Move Up** and **Move Down** buttons.
7. Click **Burn CD**.

SONAR verifies, performs a layout of the tracks and writes the current track list to CD medium in the selected drive. After the disk is completed, the disk is ejected from the drive.

Preparing Audio for Distribution

The **File > Export Audio** command exports your project as a new file or files that you can burn to a CD, or distribute via the Web or email. In addition, SONAR Producer allows you to export surround-encoded files (see “Exporting Surround Mixes” on page 704). The following export formats are supported:

Format	Definition
Wave (surround files in Wave format are supported by SONAR Producer only)	The standard digital audio format used under Windows for burning CDs, with a file extension of .wav.
Sony Wave64	The Sony Wave64 file format is similar to the RIFF format, but is a true 64-bit file format designed to overcome the size limitations of the RIFF format.
Windows Media Advanced Streaming Format (includes Windows Media Pro; surround files are supported by SONAR Producer only)	Compressed digital audio for streaming over the Internet, with the file extension .wma.
MP3	Highly compressed digital audio designed for quick downloads via the Internet, with the file extension .mp3. The MP3 encoder that comes with SONAR is a trial version which will time-out. The full version is available for download at www.cakewalk.com.
Apple AIFF	Audio Interchange File Format, co-developed by Apple Inc., is most commonly used on Apple Macintosh computer systems. The file extension is .aif.
NeXT/Sun	Au is the standard audio file format used by Sun, Unix and Java. The audio in au files can be 8-bit or 16-bit PCM or compressed with the µLaw, alaw or G729 codecs. The file extension is .au.
FLAC	FLAC stands for Free Lossless Audio Codec, which is somewhat similar to MP3, but lossless. Audio in a FLAC file is compressed without any loss in quality.The file extension is .flac.
Sound Designer II	Sound Designer II is the native format of DigiDesign’s Sound Designer pro audio software and is also used natively by Macromedia DECK II and many applications. SD2 files be mono or interleaved stereo and the file extension is .sd2.

Table 135.

Format	Definition
Core Audio Format	Core Audio Format is a new 64-bit audio format supported natively in Mac OS X, and is also used by QuickTime 7. Audio in Core Audio Format files can be uncompressed PCM or compressed (such as AAC). The file extension is .caf.
RAW	Rarely used, a RAW file can contain audio in any codec but is usually used with PCM audio data.
OMF	The Open Media Format, created by AVID Technology, is designed to port a project to other applications or platforms. OMF files preserve tracks, clip positions, slip edits and some other project attributes depending on which application is writing or reading the OMF file.

Table 135.

If your audio hardware is configured for stereo playback, Wave files are created in stereo; if your audio hardware is configured for monophonic playback, the Wave file is created in mono.

Cakewalk External Encoder Config utility

SONAR supports external command-line encoders, such as LAME, Ogg Vorbis, Monkey's Audio, etc. If an external command-line encoder is installed on your machine, the 'Cakewalk External Encoder Config' utility allows you to add the encoder to SONAR's list of available file formats when exporting audio (**File > Export > Audio**).

To use the utility, start SONAR and go to **Tools > Cakewalk Ext Encoder Config**, then specify the proper settings or the encoder you wish to use.

Note: *The SONAR 8 DVD includes several pre-defined profiles for various encoders. These profiles can be found in the* `\Utilities\External Encoder Profiles` *folder. You can use these profiles as a starting point when creating your own profiles. Simply double-click the appropriate .reg file to add the information to the Windows registry, then use the 'Cakewalk External Encoder Config' utility to specify the correct install path of the encoder.*

To Export Audio to Wave File Format

1. Set all volume, pan, effects, and automation settings just as you want them.
2. If you only want to mix down parts of tracks, select those clips now. If you don't select anything, everything's selected.
3. If you are using effects on the tracks and want to mix the effects down at this time, select the whole length of the longest track or clip plus extra time for the reverb or effects "tail."
4. Choose **File > Export > Audio** to open the **Export Audio** dialog box.
5. Select a destination folder using the **Look In** field.
6. Enter a file name.
7. Choose one of the following from the **Files of type** drop-down list:
   - **Wave.** Choose this if you want to export a standard wave file, or if you're exporting a

surround project in wave format.

- **Broadcast Wave (time-stamped).** Choose this if you want to create a Broadcast Wave file (see description below).

8. In the **Source Category** field, select one of the following options:
   - **Tracks.** Choosing this option creates a separate file for each track that you select in the **Source Buses/Tracks** field.
   - **Buses.** Choosing this option creates a separate file for each bus that you select in the **Source Buses/Tracks** field.
   - **Main Outputs.** Choosing this option creates a separate file for each main output that you select in the **Source Buses/Tracks** field.
   - **Entire Mix.** Choosing this option creates one file for your entire mix, unless you're exporting a surround mix with **Split Mono** selected in the **Channel Format** field.
9. In the **Source Buses/Tracks** field, choose the buses or tracks you want to use as a source to create your mix. If you chose **Tracks in the Source Category** field, only tracks will show up as choices in this field.
10. In the **Channel Format** field, select one of the following options:
    - **Stereo.** All exported tracks and clips are mixed down to a stereo file or files.
    - **Mono.** All exported tracks and clips are mixed down to a mono file or files.
    - **Split Mono.** All exported tracks and clips are mixed down to separate mono files.
    - **Multichannel.** All exported tracks are mixed down to a multichannel wave file or files.
11. Choose the sample rate that you want your exported file to be.
12. Select the bit depth that you want the exported file to use. If your source file is 16 and you export to 24, you get more precision for any audio effects in the mix (and a larger file). If your source file is 24 and you export to 16, you lose some sound definition, but you get some of it back if the **Dithering** option is on in the **Audio Options** dialog box (see "Dithering" on page 679 for more information).
13. In the **Mix Enables** field, choose the elements you want to include in the mixdown. If you want to exclude muted tracks and/or include only soloed tracks, make sure **Track Mute/Solo** is checked.

Note 1: *If you have patched a synth into a track or bus, make sure you check Track FX to include synths that are patched into tracks, and check Bus Returns to include synths that are patched into buses.*

Note 2: *If you don't check Track Automation. any initial volume and pan settings in an exported track are ignored and the track's audio data will be exported at the level that exists in the track, with pan set to center. If you don't check Clip Automation, any trim settings are ignored during export. If you don't check Master Automation, any volume and balance settings at the main outs are ignored.*

14. If you want to save the settings you created in the **Export Audio** dialog, type a name for them in the Preset window and then click the floppy disk icon that's next to the window.

15. Click **Export**.

The audio is exported to the Wave file or files.

If you chose Broadcast Wave as the export format, the following information is stored in the file(s):

- **Description.** A brief description of the contents of the Broadcast wave. Limited to 256 characters.
- **Originator.** The author of the Broadcast wave. This information is taken from the **Author** field in the File Info dialog.
- **Originator Reference.** A unique reference identifier created by SONAR.
- **Origination Date.** The date the file was created.
- **Origination Time.** The time the file was created.
- **Time Reference.** The SMPTE time stamp for the beginning of broadcast wave.

To Export a Project in Windows Media Format

1. Set all volume, pan, effects, and automation settings just as you want them.
2. If you only want to mix down parts of tracks, select those clips now.
3. If you are using effects on the tracks and want to mix the effects down at this time, select the whole length of the longest track or clip plus extra time for the reverb or effects "tail."
4. Choose **File > Export > Audio** to open the **Export Audio** dialog box.
5. Select a destination folder using the **Look In** field.
6. Enter a file name.
7. Choose **Windows Media Advanced Streaming Format** from the **Files of type** drop-down list.
8. In the **Source Category** field, select one of the following options:
   - **Tracks.** Choosing this option creates a separate file for each track that you select in the **Source Buses/Tracks** field.
   - **Buses.** Choosing this option creates a separate file for each bus that you select in the **Source Buses/Tracks** field.
   - **Main Outputs.** Choosing this option creates a separate file for each main output that you select in the **Source Buses/Tracks** field.
   - **Entire Mix.** Choosing this option creates one file for your entire mix, unless you're exporting a surround mix with **Split Mono** selected in the **Channel Format** field.
9. In the **Source Buses/Tracks** field, choose the buses or tracks you want to use as a source to create your mix. If you chose **Tracks** in the **Source Category** field, only tracks will show up as choices in this field.
10. In the **Channel Format** field, select one of the following options:
    - **Stereo.** All exported tracks and clips are mixed down to a stereo file or files.

- **Mono.** All exported tracks and clips are mixed down to a mono file or files.
- **Split Mono.** All exported tracks and clips are mixed down to separate mono files.
- **Multichannel.** All exported tracks are mixed down to a multichannel WMA file or files.

11. Choose the sample rate that you want your exported file to be.

12. Select the bit depth that you want the exported file to use. If your source file is 16 and you export to 24, you get more precision for any audio effects in the mix (and a larger file). If your source file is 24 and you export to 16, you lose some sound definition, but you get some of it back if the **Dithering** option is on in the **Audio Options** dialog box (see "Dithering" on page 679 for more information).

13. In the **Mix Enables** field, choose the elements you want to include in the mixdown. If you want to exclude muted tracks and/or include only soloed tracks, make sure **Track Mute/Solo** is checked.

Note 1: *If you have patched a synth into a track or bus, make sure you check Track FX to include synths that are patched into tracks, and check Bus Returns to include synths that are patched into buses.*

Note 2: *If you don't check Track Automation. any initial volume and pan settings in an exported track are ignored and the track's audio data will be exported at the level that exists in the track, with pan set to center. If you don't check Clip Automation, any trim settings are ignored during export. If you don't check Master Automation, any volume and balance settings at the main outs are ignored.*

14. If you want to save the settings you created in the **Export Audio** dialog, type a name for them in the Preset window and then click the floppy disk icon that's next to the window.

15. Click **Export**.

The **Windows Media Format Encode Options** dialog appears.

16. Select options and click **OK**.

The audio is compacted and exported to a file or files with the extension .wma.

To Export a Project in MP3 Format

1. Set all volume, pan, effects, and automation settings just as you want them.
2. If you only want to mix down parts of tracks, select those clips now.
3. If you are using effects on the tracks and want to mix the effects down at this time, select the whole length of the longest track or clip plus an extra measure for the reverb or effects "tail."
4. Choose **File > Export > Audio** to open the **Export Audio** dialog box.
5. Select a destination folder using the **Look In** field.
6. Enter a file name.
7. Choose **MP3** from the **Files of type** drop-down list.
8. In the **Source Category** field, select one of the following options:

- **Tracks.** Choosing this option creates a separate file for each track that you select in the **Source Buses/Tracks** field.
- **Buses.** Choosing this option creates a separate file for each bus that you select in the **Source Buses/Tracks** field.
- **Main Outputs.** Choosing this option creates a separate file for each main output that you select in the **Source Buses/Tracks** field.
- **Entire Mix.** Choosing this option creates one file for your entire mix.

9. In the **Source Buses/Tracks** field, choose the buses or tracks you want to use as a source to create your mix. If you chose **Tracks** in the **Source Category** field, only tracks will show up as choices in this field.
10. In the **Channel Format** field, select one of the following options:
    - **Stereo.** All exported tracks and clips are mixed down to a stereo file or files.
    - **Mono.** All exported tracks and clips are mixed down to a mono file or files.
    - **Split Mono.** All exported tracks and clips are mixed down to separate mono files.
11. Choose the sample rate that you want your exported file to be.
12. In the **Bit Depth** field, select 16. If your source file is 24 and you export to 16, you lose some sound definition, but you get some of it back if the **Dithering** option is on in the **Audio Options** dialog box (see “Dithering” on page 679 for more information).
13. In the **Mix Enables** field, choose the elements you want to include in the mixdown. If you want to exclude muted tracks and/or include only soloed tracks, make sure Track Mute/Solo is checked.

Note 1: *If you have patched a synth into a track or bus, make sure you check Track FX to include synths that are patched into tracks, and check Bus Returns to include synths that are patched into buses.*

Note 2: *If you don’t check Track Automation. any initial volume and pan settings in an exported track are ignored and the track’s audio data will be exported at the level that exists in the track, with pan set to center. If you don’t check Clip Automation, any trim settings are ignored during export. If you don’t check Master Automation, any volume and balance settings at the main outs are ignored.*

14. If you want to save the settings you created in the **Export Audio** dialog, type a name for them in the Preset window and then click the floppy disk icon that’s next to the window.
15. Click **Export**.

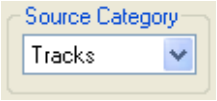
    The **Cakewalk MP3 Encoder** dialog appears.
16. Choose options and click **OK**.

The audio is compacted and exported to a file or files with the extension .mp3.

See also:

Exporting tracks with no selection

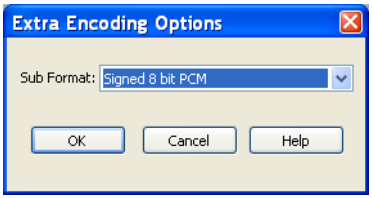
If the source category is Tracks when you bounce or export audio with no selection in, each wave file will be exactly the same duration as the original source track.



Encoding options

After clicking the **Export** button, an additional dialog will appear showing **Extra Encoding Options**. These options typically determine the bit depth, endian-ness (the byte ordering in memory used to represent the data), and an encoding type within the major file format.

Figure 118. *The **Extra Encoding Options** dialog*



Here is the master list of subformats supported in SONAR:

AIFF (Apple/SGI) (extension “aiff”)

- Signed 8 bit PCM
- Signed 16 bit PCM
- Signed 24 bit PCM
- Signed 32 bit PCM
- Unsigned 8 bit PCM
- 32 bit float
- 64 bit float
- U-Law
- A-Law
- IMA ADPCM
- GSM 6.10
- 12 bit DWVW
- 16 bit DWVW

- 24 bit DWVW

AIFF (Apple/SGI) (extension “aif”)

- Signed 8 bit PCM
- Signed 16 bit PCM
- Signed 24 bit PCM
- Signed 32 bit PCM
- Unsigned 8 bit PCM
- 32 bit float
- 64 bit float
- U-Law
- A-Law
- IMA ADPCM
- GSM 6.10
- 12 bit DWVW
- 16 bit DWVW
- 24 bit DWVW

AU (Sun/NeXT) (extension “au”)

- Signed 8 bit PCM
- Signed 16 bit PCM
- Signed 24 bit PCM
- Signed 32 bit PCM
- 32 bit float
- 64 bit float
- U-Law
- A-Law
- 32kbs G721 ADPCM
- 24kbs G723 ADPCM

CAF (Apple Core Audio File) (extension “caf”)

- Signed 8 bit PCM
- Signed 16 bit PCM
- Signed 24 bit PCM
- Signed 32 bit PCM
- 32 bit float

- 64 bit float
- U-Law
- A-Law

FLAC (FLAC Lossless Audio Codec) (extension “flac”)

- Signed 8 bit PCM
- Signed 16 bit PCM
- Signed 24 bit PCM

RAW (Headerless audio file) (extension “raw”)

- Signed 8 bit PCM
- Signed 16 bit PCM
- Signed 24 bit PCM
- Signed 32 bit PCM
- Unsigned 8 bit PCM
- 32 bit float
- 64 bit float
- U-Law
- A-Law

SD2 (Sound Designer II) (extension “sd2”)

- Signed 8 bit PCM
- Signed 16 bit PCM
- Signed 24 bit PCM

W64 (Sony Wave-64) (extension “w64”)

- Signed 16 bit PCM
- Signed 24 bit PCM
- Signed 32 bit PCM
- Unsigned 8 bit PCM
- 32 bit float
- 64 bit float
- U-Law
- A-Law
- IMA ADPCM
- Microsoft ADPCM
- GSM 6.10

WAV (Microsoft) (extension “wav”)

- Signed 16 bit PCM
- Signed 24 bit PCM
- Signed 32 bit PCM
- Unsigned 8 bit PCM
- 32 bit float
- 64 bit float
- U-Law
- A-Law
- IMA ADPCM
- Microsoft ADPCM
- GSM 6.10
- 32kbs G721 ADPCM

Exporting OMF Files

OMF (Open Media Format) files are designed for cross-platform compatibility. For more information about the OMF format, see “Importing OMF Projects” on page 279.

If you plan to export a SONAR project to another program that can read OMF files, it pays to consider three things before you start your SONAR project:

- Sample rate and audio bit depth of the target system
- Number of tracks the target system can handle
- SONAR and most other audio programs do not include video in the OMF file

To Export a Project as an OMF File

1. Select **File > Export > OMF**.

   The **Export OMF** dialog appears.
2. Enter a **File Name** (maximum 64 characters—SONAR limits name length for ISO CDR compatibility), and in the **Save As Type** field, choose **OMF Version 1** or **2**. Most applications expect Version 2, but check with your engineer.
3. Audio Packaging: usually you should choose **Embed Audio Within OMF**, which includes the audio data in the OMF file. But you should check with your engineer.
4. **Split Stereo Tracks Into Dual Mono.** See what your engineer wants. If exporting a 24-bit project to a Pro Tools system, enable **Split Stereo Tracks Into Dual Mono**, as some Pro Tools systems do not support 24-bit interleaved stereo files.
5. **Include Archived Tracks.** You can choose to include archived tracks in your exported file.
6. **Mix Each Groove Clip As A Separate Clip.** If you have several Groove Clips in a track SONAR exports them as one clip unless you check this option. If you check this option, SONAR

has to do a separate export operation for each Groove Clip in the track, which is very time-consuming. If you only have one Groove Clip in a track, and you have rolled out numerous repetitions of the clip, SONAR exports a single clip that is the length of the original clip and all the repetitions, which is not a time-consuming operation.

7. **Audio Format.** Ask your engineer what format the studio uses, Windows (RIFF Wave) or Mac (AIFC).
8. Click the **Save** button.
9. SONAR exports the project as an OMF file. In the **Save as Type** field, select the OMF version you want to save the project as. Version 1 is compatible with older applications. See your target application's documentation for information on which version it supports.

Note: *OMF files save the following:*

- Tracks
- Clip positions
- Slip edits
- Fades and crossfades (as destructive edits)
- The following information is discarded:
- Volume
- Pan
- Automation
- Effects

Dithering

Dithering. Whenever an audio signal is converted from a higher-bit resolution to a lower resolution, it is necessary to apply dither to avoid introducing undesirable quantization noise or harmonic distortion into the signal. The purpose of dither is to reduce the resulting distortion by adding low-level random noise or "dither" to the audio signal. Different mathematical calculations are used to generate dither, each method has advantages and disadvantages depending on the particular operation. SONAR features the Pow-r dithering process, short for Psycho-acoustically Optimized Wordlength Reduction, which can produce lower-bit files that sound indistinguishable from higher-bit source files. When this option is turned on, SONAR uses dithering when you export a higher-bit file at a lower resolution, or lower the bit depth of a project's audio files by using the **Tools > Change Audio Format** command, or when you "render" audio (bounce, freeze, or apply effects).

SONAR Producer offers five kinds of dithering:

- **Rectangular.** Essentially white noise, no noise shaping. Advantages: least CPU-intensive, lowest signal-to-noise ratio, preferable to shaped dither when successive dithering can occur (e.g. bouncing, freezing). Disadvantages: suffers from intermodulation distortion, higher perceived loudness than Pow-r dither.
- **Triangular.** Higher level than rectangular, no noise shaping. Advantages: low CPU-intensive dither, superior to Rectangular as it does not suffer from modulation noise effects. Preferable to shaped (Pow-r) dither when successive dithering can occur (e.g. bouncing, freezing). Disadvantages: higher perceived loudness than Pow-r dither.

- **Pow-r 1.** Noise-shaped dither. Advantages: less CPU-intensive than Pow-r types 2 and 3, lower perceived loudness than Rectangular or Triangular. Disadvantages: less noise shaping than Pow-r types 2 and 3, not recommended for operations where dither will be applied successively (e.g. bounce and freeze).
- **Pow-r 2.** Noise-shaped dither. Advantages: lowest perceived loudness, highest quality settings, recommended for audio export. Disadvantages: highest CPU-intensive settings, not recommended for operations where dither will be applied successively (e.g. bounce and freeze).
- **Pow-r 3.** Same as Pow-r 2 except most CPU-intensive and transparent of all choices.

To Choose Dithering Options

1. Open the **Audio Options** dialog (**Options > Audio** command).
2. On the **Advanced** tab, under **Playback and Recording**, choose the kind of dithering you want in the **Dithering** field.
3. Click **OK**.

Burning audio CDs

SONAR has integrated Audio CD burning, which allows you to write your audio tracks to an audio CD that can be played in any standard CD player.

The **Tools > Burn Audio CD** command lets you burn your tracks to an audio CD that you can play in any standard CD player.

For more information about the **Tools > Burn Audio CD** command, see Audio CD Burner dialog and the Cakewalk Publisher online Help

Cakewalk Publisher

You can use Publisher to create a customized streaming music player with a playlist of your music, upload the player to your personal or band's web site, and embed it in any other web site. You can also update your playlist with album art, links (URLs), and artist, track, & album information.

Publisher works by connecting to your web host's FTP account (usually provided when you sign up with a web hosting company and create a web site) and uploading files to a location of your choosing. Once these files are successfully transferred to your web site, Publisher generates a simple HTML tag that you can paste into any other web site to embed and display your audio player. For those familiar with it, the process is similar to selecting images that are originally hosted on one web site and displaying them on a different web site.

Figure 119. *Cakewalk Publisher*

To start Cakewalk Publisher

There are three ways to start Cakewalk Publisher:

- Click **Tools > Cakewalk Publisher**.
- When exporting audio as an MP3 file, enable the **Add to Cakewalk Publisher** check box in the **Export Audio** dialog.
- Click **Start > Programs > Cakewalk > Publisher > Cakewalk Publisher**.

For more information about Cakewalk Publisher, see the Cakewalk Publisher online help and “Add to Cakewalk Publisher” on page 1309.

Surround Mixing

SONAR Producer fully supports surround mixing (SONAR Studio can open surround projects created in Producer, converting them to stereo). SONAR (Producer) can create finished surround mixes in all popular surround formats, including Windows Media 9 Pro. You can use a joystick to control surround panning if you want.

Note: *It's always advisable to know the required sampling rate and audio driver bit depth for the target medium that your surround project will be used in. That way you can work in the correct format from the start, without having to convert later. You can set these parameters in the* ***Audio Options*** *dialog (****Options > Audio*** *command).*

To get a complete understanding of SONAR's surround functions, start with the "Surround Basics" on page 683.

See:

Surround Basics

Configuring SONAR for Surround Mixing

Panning in Surround

Surround Metering

Bass Management

Surround Effects

Importing Surround Mixes

Exporting Surround Mixes

Surround Basics

Surround sound is a common name for various techniques for positioning audio in reference to the listener. Whereas regular stereo is limited to left/right positioning, within a relatively narrow field, surround sound opens possibilities of positioning an audio source anywhere around the listener. Surround sound comes in many formats. The differences between the formats are in three areas:

- **The number of speakers.** This varies from 3.2 all the way to 8.1.
- **The angles of the speakers.**
- **The intended final coding format.** This depends on the media the audio will be "stored" on: film, broadcast video or DVD, for example.

The most common format is 5.1, which consists of five full-range channels and a low-frequency effects (LFE) channel (the ".1" in 5.1 is the LFE or sub channel). The five full-range channels are reproduced by left, right, and center speakers positioned in front of the listener (L, R, and C for short), and left and right surround speakers positioned behind the listener (Ls and Rs for short). The LFE channel can be routed to the main speakers or to a subwoofer that can be positioned almost anywhere.

The center channel is typically used to lock dialog or sounds to a video screen. The LFE channel is generally routed to a subwoofer to enhance low audio frequencies for effects such as explosions or crashes. Audio in this channel is limited to a range of approximately 25 Hz to 120 Hz.

See:

Configuring SONAR for Surround Mixing

Configuring SONAR for Surround Mixing

This section covers setting up SONAR for surround sound.

Using Surround Format Templates

Choosing a Surround Format

Surround Buses

Routing in Surround

Downmixing

Using Surround Format Templates

A Surround Format template specifies the number of speakers and the order in which the speakers are arranged.

There are several different surround formats, including LCRS, 5.1, 6.1, and 7.1, with 5.1 being most common. The number after the decimal point refers to the number of Low Frequency Effect (LFE)

speakers. However, there are even different flavors of 5.1. The different flavors specify in which order the speakers are arranged, and the speaker angles. For example:

Surround Format	Speaker Order
5.1 SMPTE/ITU	L, R, C, LFE, Ls, Rs
5.1 Music Alternative	L, R, Ls, Rs, C, LFE
5.1 Film Alternative	L, C, R, Ls, Rs, LFE

Table 136.

The speaker positions, moving clockwise from center, are identified as:

Label	Speaker
C	Center (directly in front of listener)
Rc	Right of Center
R	Right (standard Stereo placement)
Sr	Side right—directly to the right of the listener
Rs	Right Surround
Cs	Surround (rear center)
Ls	Left Surround
Sl	Side Left—directly to the left of the listener
L	Left (standard Stereo placement)
Lc	Left of center
LFE	Low Frequency Effect speaker(s)—placed according to room acoustics

Table 137.

To mix in surround sound in SONAR, you must insert at least one surround bus.

A project can include multiple surround buses, but all surround buses in a project use the same surround format (5.1, 7.1, etc.).

The project's surround format is based on one of the following Surround Format templates:

- 2.0
- 2.1
- LCR
- LRC+LFE

- LRS
- LFS+LFE
- Matrix UHJ
- QUAD
- 4.1 (SMPTE/ITU)
- Quad+LFE
- PanAmbio 4.1
- LCRS
- Surround (SMPTE/ITU)
- Surround Media
- LCRS+LFE
- 5.1 (Standard 3/2)
- 5.1 (Film/Alternative)
- 5.1 (Music/Alternative)
- 5.1 (SMPTE/ITU)
- 6.0 (Hexagon)
- 6.0 (Film/Alternative)
- 6.0 (Music/Alternative)
- 6.1 (Film/Alternative)
- 6.1 (Music/Alternative)
- 6.1 (SMPTE/ITU)
- 7.0 (Heptagon)
- 7.0 (Film/Alternative)
- 7.0 (Music/Alternative)
- 7.1 (Film/Alternative)
- 7.1 (Music/Alternative)
- 7.1 (SMPTE/ITU)
- 8.0 (Octagon)
- 8.0 (Film/Alternative)
- 8.0 (Music/Alternative)
- 8.1 (Film/Alternative)
- 8.1 (Music/Alternative)
- 8.1 (SMPTE/ITU)

5.1 (SMPTE/ITU) is the default template.

The Surround Format templates are hard-coded, and cannot be deleted. However, you can freely assign any enabled audio output port to any surround channel, and save the configuration as a preset.

Surround settings are per project. Surround speaker assignments default to unique audio output channels when you choose a new template.

You configure your surround settings in the **Project Options** dialog on the **Surround** tab (use the **Options > Project** command and click the **Surround** tab).

See:

Choosing a Surround Format

Choosing a Surround Format

Using the **Options > Project** command and clicking the **Surround** tab displays several fields of surround options. Choosing a surround format sets the number of speakers your project is using, and lets you choose a specific sound card output for each speaker. Here you can also choose parameters for bass management, and for downmixing, which means converting a surround mix into a stereo mix.

The group of sound card outputs that you choose on the **Surround** tab of the **Project Options** dialog make up the “Surround Main.” The **Surround Main** becomes a choice on the **Outputs** menus of tracks and buses as soon as you insert a surround bus into your project. You won’t see a “Surround Main” output module in the output modules section of the Console view, because it’s just a term for the group of sound card outputs you choose for surround mixing. The pan control on any track or bus that outputs to the “Surround Main” controls which hardware outputs receive the signal that the track or bus sends to the “Surround Main.”

SONAR saves the surround settings you choose on the Surround tab of the **Project Options** dialog with your project, including your downmixing parameters. If you have some particular settings you might use again, you can save a group of settings as a preset (except for downmixing parameters—you can change these, but they aren’t saved in presets). To save a group of settings as a preset, type a name in the **Presets** field and then click the **Disk** icon that’s to the right of the field. When you want to use this preset in a project, just choose it from the **Presets** drop-down menu.

To Choose a Surround Format and Set Sound Card Outputs

1. Use the **Options > Project** command.

   The **Project Options** dialog appears.

2. Click the **Surround** tab.

3. Select a format from the **Surround Format** drop-down.

   The diagram to the right of the **Surround Format** menu changes to illustrate the speaker placement of the format that you chose.

4. In the Output column, assign each channel to a sound card output.

Note: *Consumer-grade sound cards, such as Audigy or SoundBlaster, typically reserve output 4 for the LFE channel. Check your sound card manual for details.*

5. Click **OK**.

Note: *Take a moment to make sure your speakers are correctly hooked up to the corresponding outputs before you attempt any playback. See the diagram in the* ***Project Options*** *dialog for the speaker setup. If you are not sure what the abbreviations for the speaker names are, see "Surround Basics" on page 683.*

See:

Surround Buses

Surround Buses

You have to have at least one surround bus in your project to use surround sound. A surround bus differs from a stereo bus in that it simply has more channels. For example, if a project is set to 7.1, then the bus has 8 channels: 7 directional channels and one LFE channel.

To Insert a Surround Bus

1. In the Bus Pane of the Track view or the Console view, right-click to display a pop-up menu of bus options.
2. Select **Insert Surround Bus** from the pop-up menu.

   Or

- Use the **Insert > Surround Bus** menu command.

See:

Routing in Surround

Routing in Surround

Tracks can send output to a surround bus, the Surround Main, or a hardware output. If a track is routed to a surround bus or the Surround Main, it has surround meters and a surround panner. You can route any track or bus to another bus, the Surround Main or a hardware out. However, you are

prevented from creating a signal loop by routing the signal back into a bus that is already in the signal flow. The following table lists how each of these routing options affects the signal:

Signal Flow	Result
Track to stereo bus	No change
Mono track to surround bus	Mono signal is routed to both Left and Right channels of surround format. You can change the routing to other surround channels by using the surround panner on the track.
Stereo track to surround bus	Stereo left channel is routed to Left channel of surround format; stereo right channel is routed to Right channel of surround format. You can change the routing to other surround channels by using the surround panner on the track.
Track to hardware output	No change
Stereo bus to stereo bus	No change
Stereo bus to surround bus or the Surround Main	Stereo left channel is routed to Left channel of surround format; stereo right channel is routed to Right channel of surround format. You can change the routing to other surround channels by using the surround panner on the stereo bus.
Stereo bus to hardware output	No change
Surround bus to stereo bus	Surround channels are downmixed to stereo
Surround bus to surround bus or the Surround Main	No change

Table 138.

To Assign a Track to a Surround Bus or Surround Main

- Click in the track's **Output** field and select a surround bus, the **Surround Main**, or **New Surround Bus** as an output.

See:

Downmixing

Downmixing

Downmixing is a way of previewing your surround project in stereo only. There are various cases where surround is not available and it may be that someone plays your project in stereo only. A radio broadcast is a good example. Downmixing is a valuable tool for determining if your project will sound good in stereo. However, you can export your project in stereo, and SONAR uses your downmix settings to create your exported file.

The following table lists the downmixing settings in the Surround tab of the **Project Options** dialog and gives a brief description of what the setting does. You can also manually enter other values besides these preset ones:

Downmixing Setting	Options
Center Downmix Level (dB)	These options determine how much of the center is mixed to the left and right. • **-3 dB.** Maintains the same level of center channel sound when you listen in a typically reverberant room • **-4.5 dB.** A compromise level between -3dB and -6 dB • **-6 dB.** Maintains the same level of center channel sound when you listen to direct sound without typical room reverberations • **-INF.** Eliminates all of the Center channel signal
Surround Downmix Level (dB)	The amount of Left Surround and Right Surround mixed into the Left and Right channels respectively. • **-3 dB.** Maintains the same level of surround • **-6 dB.** Reduces the level of surround so that it doesn't compete with center channel sound such as dialog • **-INF.** Eliminates all of the Surround channel signal
LFE Level (dB)	The amount of the LFE channel mixed into the Left and Right channels respectively. • **-12 (or type in a value).** Lets you choose the level of LFE in the stereo mix • **-INF.** Eliminates all LFE

Table 139.

To Downmix a Project

1. If you do not have a stereo bus in your project, create one by right-clicking in the Bus pane in the Track view or Console view and selecting **Insert Stereo Bus** from the menu that appears.
2. Open the **Project Options** dialog (**Options > Project** command), select a center downmix level and a surround downmix level in the **Surround** tab, and click **OK**.
3. In each of the surround buses, assign the output to a stereo bus.
4. Listen to your project through the stereo bus, and make any final adjustments to the stereo mix by changing the values in the **Surround** tab of the **Project Options** dialog.
5. If you want to export your stereo mix, use the **File > Export > Audio** command. This command obeys your downmix settings.

See:

Panning in Surround

Panning in Surround

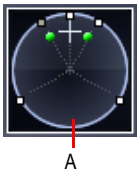
Unlike stereo panning which sends sound to left and right speakers, surround panning means sending sound to multiple speakers at points along a circle.

When a track/bus/send is assigned to a surround bus, the Pan control turns into a multi-dimensional surround panner. The surround panner comes in four sizes:

- **Micro.** This is found in the Track view.
- **Small.** This is found on sends.
- **Medium.** This is the surround panner which is displayed in the Track Inspector and Console view.
- **Large.** This is a large surround panner (see “Controlling Surround Panning” on page 692 for a picture) which has additional controls, and appears when you right-click a surround panner and choose **Open Surround Panner** from the pop-up menu, or double-click outside the surround panner circle, or press ENTER when the panner has focus.

***A.** MIcro surround panner in Track view **B.** Six channel output meter*

Figure 120. *Console view surround panner*



***A.** Medium surround panner in Console view*

The small and large panners are always synchronized; the large panner simply provides increased resolution when you adjust the surround pan position.

Note 1: *Surround panning is not available for tracks/sends that are routed to non-surround buses.*

Note 2: *If the track/bus/send is reassigned to a stereo bus, any surround automation will be orphaned, but will automatically reconnect if the track/bus/send is later assigned back to a surround bus.*

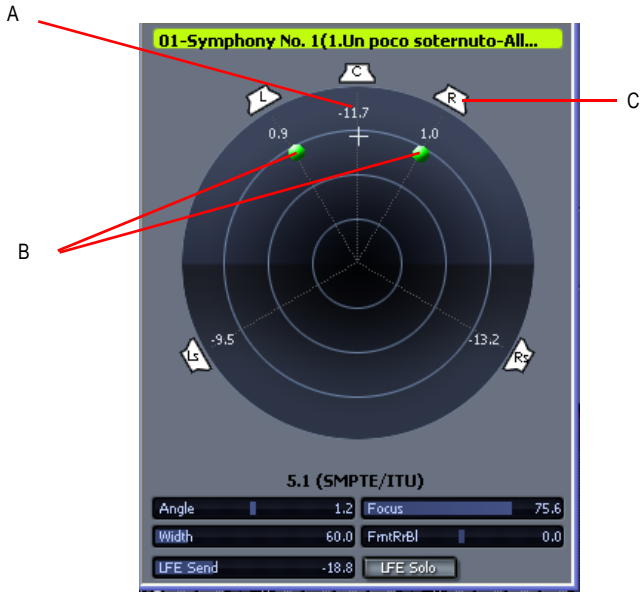
See:

Controlling Surround Panning

Controlling Surround Panning

Here are pictures of the large surround panner and medium surround panner:

Figure 121. *Large Surround Panner*



A. *Angle and focus marker* ***B.*** *Width markers* ***C.*** *Right speaker icon*

Figure 122. *Medium Surround Panner*

The large surround panner has some sliders at the bottom that the medium surround panner doesn't have, except for the LFE Send slider, which the medium panner has. Except for the sliders, the large and medium surround panners have the following controls:

- **Angle and Focus marker.** A small sphere that you can drag in any direction to both control and display the following two parameters:
  - **Angle.** This is the perceived angle of the sound source as it differs from the position directly in front of the listener. The scale is 0 to 180 degrees on the listener's right, and 0 to -180 degrees on the listener's left. 0 means the sound is coming from directly in front of the listener, and plus or minus 180 degrees means that the sound is coming from directly behind the listener.
  - **Focus.** This is the perceived distance of the sound source from the center of the circle on a scale of 0 to 100, 0 meaning the center of the circle, and 100 meaning the perimeter.
- **Width markers.** These are two smaller spheres equidistant from the Angle and Focus marker. Their distance from each other and from the front of the circle shows the Width value (see definition below). You can also drag the Width markers to control Angle and Focus.
- **Speaker icons/squares.** Each surround channel is represented by a speaker icon in the large panner, and a white square in the small panner. The large panner also has a corresponding volume level in dB directly in front of each icon. The position of each speaker icon shows you each speaker's position in the surround mix. Clicking a speaker icon or square *mutes* the corresponding channel, causing the icon or square to become grey. Double-clicking the icon *solos* its channel, turning the icon green.
- **Angle slider (large panner only).** This slider both displays and controls the angle value.
- **Focus slider (large panner only).** This slider both displays and controls the focus value.
- **Width slider (large panner only).** This slider both displays and controls the width value. *Width* is a measure of how wide an area the sound seems to be coming from on a scale of 0 to 360 degrees. At 0 and 360 degrees, the sound seems to all come from a single speaker. At 180 degrees the sound seems to come from directly opposite sides. The default angle matches the project's left and right channel angle. For example, in 5.1 SMPTE/ITU surround, the default width is 60 degrees.
- **Front/Rear Balance slider (large panner only).** Abbreviated as **FrntRrBl**, this slider adjusts the front and rear balance. Drag it to the left to reduce the level from the front speakers, or drag it to the right to reduce rear level.
- **LFE slider.** This slider both displays and controls the level of sound sent to the LFE channel.
- **LFE Only button (large panner only).** This button mutes all channels except the LFE channel.

To Open the Large Surround Panner

- Right-click the small surround panner or the pan control in a track, and choose **Open Surround Panner** from the pop-up menu.

  Or
- Select a track, and either use the **Views > Surround Panner** command, or click the **Surround Panner** button in the **Views** toolbar.

  Or
- Double-click outside the **Surround Panner** circle.

  Or

- Press ENTER when the panner has focus.

To Change the Angle

- In either the large or small surround panner, drag the **Angle** and **Focus** marker to the left or right.

  Or

- In the large surround panner, drag the **Angle** slider.

To Change the Focus

- In either the large or small surround panner, drag the **Angle** and **Focus** marker toward or away from the center.

  Or

- In the large surround panner, drag the **Focus** slider.

To Mute a Surround Speaker

- In the large surround panner, click a speaker icon to mute its output. The speaker icon turns grey when the speaker is muted.

  Or

- In the small surround panner, click a white square to mute a speaker's output. The square turns grey when the speaker is muted.

To Solo a Surround Speaker

- In the large surround panner, double-click a speaker icon to solo its output. The speaker icon turns green when the speaker is soloed.

  Or

- In the small surround panner, double-click a white square to solo a speaker's output. The square turns green when the speaker is soloed.

To Change the Width

- In the large surround panner, drag the **Width** slider.

To Change the Front/Rear Balance

- In the large surround panner, drag the FrntRrBl slider left to reduce front level, or right to reduce rear level.

To Change the LFE Send Level

- In either the large or small surround panner, drag the LFE slider.

Note: *Double-clicking any surround panner control will reset the control to its default value, which for the **LFE** control is **-INF**.*

To Solo or Unsolo the LFE Channel

- In the large surround panner, click the **LFE Solo** button.

To Isolate a Signal in One Speaker

- In the large surround panner, drag the **Width** slider to **0**, the **Focus** slider to **100**, and then drag the **Angle** slider until the sphere icon is directly in front of the correct speaker.

  Or

- Press the desired Numeric Keypad key that represents the speaker position (7=L, 8=C, 9=R, see “Keyboard Shortcuts” on page 695).

To Group Panner Controls

- In the large surround panner, right-click each slider that you want to add to the group, and choose **Group-”n”** from the pop-up menu.

Now you can move a single slider, and all sliders in that same group move synchronously.

Note: *If you group sliders that are in the same surround panner, you can no longer move the markers that represent those sliders’ values. You can only move a grouped marker by moving its associated slider.*

Keyboard Shortcuts

The following shortcuts allow you to control a surround panner from the keyboard:

Shortcut	Function
ALT+drag	Constrains to angle
ALT+SHIFT+drag	Constrains to angle at 100% focus
CTRL+SHIFT+drag	Constrains to focus only
SHIFT+click	Sets panner point to the point that you click (large and medium panners only)
SHIFT+drag controls (Angle, Width, etc.)	Fine resolution
Up/Down cursor keys	Move to next/previous widget in surround panner
Left/Right cursor keys	Move to next/previous panner in same track
CTRL+up/down	Move to surround panner in another track
CTRL+NumPad 0-9	Speaker mutes
NumPad 0-9	Jump to speaker angle at 100% focus

Table 140.

NumPad assignments:

- 0 = n/a
- 1 = Ls
- 2 = Cs
- 3 = Rs
- 4 = Sl
- 5 = centers the panner
- 6 = Sr
- 7 = L
- 8 = C
- 9 = R
- / = Lc
- * = Rc

See also:

Automating Surround Panning

Automating Surround Panning

You can arm or disarm for automation all the controls in a surround panner by clicking any control in the surround panner (except **LFE Solo**), and choosing **Write Enable** from the pop-up menu.

Potential 'pops' when using surround automation (SONAR Producer Only)

If you record **Angle** surround pan automation, please note that a pop may occur as the angle parameter jumps from 0 degrees to 180 degrees. This may occur if the jump is not instantaneous, and can be easily solved by zooming in the envelope automation and moving the top and bottom nodes so they are aligned in time.

Tip: *Enable Snap to make it easier to align the envelope nodes.*

See:

Surround Metering

Joystick Support

SONARSONAR allows you to use a joystick to control surround panning. A force-feedback joystick such as the Microsoft® SideWinder® Force Feedback 2 joystick can add a tactile element to mixing sessions, and add button control to some SONAR transport and/or menu commands with the extra buttons on the joystick module.

The joystick will grab the current pan position/sphere anytime you pull the trigger button (the "firing" button under your index finger). When recording automation, you write new automation every time you pull the trigger button.

Various joystick buttons can be used to:

- Control SONAR's transport
- Switch focus to adjacent tracks/sends
- Solo/unsolo current channel
- Open/close the large surround panner window

To Connect the Joystick to SONAR

1. Use the **Options > Controller/Surfaces** command.
2. In the **Controller/Surfaces** dialog, click the **Add** button , and choose **Joystick Panner** in the **Controller/Surface** field of the **Controller/Surface Settings** dialog; click **OK**.
3. Close the **Controller/Surfaces** dialog, and display the **Controller/Surfaces** toolbar (**Views > Toolbars > Controller/Surfaces** command).
4. On the left side of the toolbar, choose **Joystick Panner** in the drop-down menu, and then click the **Properties** button that's on the right side of the toolbar.
5. In the **Joystick Panner** dialog, select button **1** in the **Buttons** field, and then select **Engage Pan Mode** in the **Button Actions** field.
6. Now select Button **2**, and select **Engage Pan Nav Mode** in the **Button Actions** field.
7. Select any other buttons your joystick has (one at a time), and connect them to any transport or menu commands you want in the **Button Actions** field; close the **Joystick Panner** dialog.

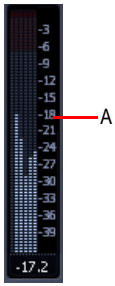
Now when you hold down button **1** (the "trigger button"), the joystick controls the surround panner on the current track or send. When the pan/sphere is in the desired position, let button **1** up to hold the position. When you hold down button **2**, move the joystick vertically to change the current track, and horizontally to change to a different send control. The window on the right side of the **Controller/Surfaces** toolbar displays the names of the current track and send. Use any other buttons you configured to control other SONAR Producer functions.

You can save your button assignments as a preset by typing a name for the current group of settings in the Presets window in the **Joystick Panner** dialog, and then clicking the floppy disk icon that's next to the **Presets** field. Whenever you want to load a preset, just select it in the Presets window.

Surround Metering

Meters in tracks routed to surround buses or the Surround Main, and meters in surround buses work the same as stereo meters (see “Metering” on page 609), however, surround meters display more channels. For example, a project in 5.1 would have a six-channel meter.

Figure 123. *Multi-channel meter*



A. *Six-channel meter*

Each pair of hardware outputs still uses a stereo meter, but you will see the meters on several pairs of outputs displaying levels, depending on how many surround channels your project uses.

See:

Bass Management

Bass Management

A bass management system takes all the frequencies below a certain frequency (normally 80Hz) from the main channels, and the signal from the LFE channel, and mixes them together into the speaker that is best equipped to handle them. This is usually a subwoofer, but sometimes the left and right front speakers are used if a subwoofer isn’t available. The reason why this is done is to make use of the subwoofer for more than the occasional low frequency effect, since the subwoofer is there anyway, and to lower the effective response of the system to about 25 Hz.

When you encode to Dolby Digital, the LFE channel gets a +10dB gain on playback from Dolby's decoder. This gives you the option of delivering some really powerful deep bass during playback, like in that earthquake sound effect in your recording. Consider also that this +10 dB of low bass can be added to any low bass that came out of the other 5 channels from redirection, so you realistically can deliver a sound from the subwoofer that is more than +20dB above the sound from any other speaker.

What this means during mixing is that you would have to turn the analog gain to your subwoofer up 10 dB relative to the other 5 speakers, so that you hear the sound as it will be played back in home theater systems that use bass management, and you will get your levels set right in the mix.

SONAR's bass management system allows you to monitor how a surround project will sound with bass management, so you don't have to change the gain to your subwoofer during mixing. SONAR's bass management system only applies to monitoring, and is ignored when you export your file.

To Monitor With Bass Management

1. If necessary, open the project you want to use bass management with.
2. Select **Options > Project** from the SONAR menu.

   The **Project Options** dialog appears.
3. Click the **Surround** tab.
4. Check the **Monitor with Bass Management** option.
5. Select an option in the **Low Pass Cutoff (Hz)** drop-down, and click **OK**.

See:

Surround Effects

Surround Effects

SONAR lets you use your existing stereo or mono effects as surround effects. SONAR does this through the SurroundBridge, which automatically sets up your existing mono & stereo plug-ins so you can patch them into surround buses (buses, **not tracks**).

See:

The SurroundBridge

Effect Property Pages

Effect Presets

How to Patch and Configure Surround Effects

The SurroundBridge

The SurroundBridge automatically loads enough instances of a plug-in to handle all your surround channels. For example, if you patch a *stereo* effect into a surround bus that uses 5.1 SMPTE/ITU panning, the SurroundBridge automatically assigns the Left and Right channels of the bus to instance 1 of the plug-in, assigns the Left Surround and Right Surround channels to instance 2, the Center channel to instance 3, and the LFE channel to instance 4. If you patch a mono effect into a surround bus, the SurroundBridge assigns each channel to a single instance of the mono effect, which would create six instances of the effect on a 5.1 surround bus. You can view and edit these

assignments on the **SurroundBridge** tab that's in the property page of every effect that's patched into a surround bus. For example, if you want a certain effect on the Left Surround channel of a surround bus, but not on the Right Surround channel, you can assign these two channels to different instances of the effect you're patching by choosing options on the **SurroundBridge** tab of the effect's property page.

The SurroundBridge also links the automatable parameters of each instance so that when you change a parameter in one instance, you automatically change the same parameter in all the other instances. You can unlink parameters individually, or per-instance (see "How to Patch and Configure Surround Effects" on page 701).

See:

Effect Property Pages

Effect Presets

How to Patch and Configure Surround Effects

Effect Property Pages

A single property page controls all instances of an effect that is patched into a surround bus. The effect's property page displays a different tab for each instance of the effect. By default, when you change an automatable parameter on one tab of the property page, that change is duplicated on all the tabs of the property page. However, you can "unlink" individual parameters from the other tabs by clicking the **Unlink Controls** button in the effect property page, and while the button is enabled (red), move the parameter you want to unlink, and then click the **Unlink Controls** button again to disable it. Now you can change that parameter on one tab without changing the same parameter on the other tabs. You can also link or unlink all of an instance's parameters by using the controls on the **SurroundBridge** tab.

See:

Effect Presets

The SurroundBridge

Effect Presets

You can use existing (non-surround) effects presets when you patch an effect to a surround bus—selecting a non-surround preset sets all of a plug-in's instances to the settings of the preset; selecting a surround preset sets each instance's parameters individually, according to the information stored in the preset.

See:

How to Patch and Configure Surround Effects

The SurroundBridge

How to Patch and Configure Surround Effects

For step-by-step instructions, see the following procedures.

To Patch an Effect Into a Surround Bus

- Right-click the FX bin of a surround bus and choose a mono or stereo effect from the pop-up menu.

The SurroundBridge patches multiple instances of the effect you chose into the bus's FX bin (however, only one effect appears in the bin), with default assignments of surround channels to plug-in instances.

Note: *Mono plug-ins may not work properly when inserted in a Surround bus effect bin. A common symptom is a Runtime error message.*

To Change Channel Assignments for a Patched Effect

1. If the effect's property page is not open, display it by double-clicking the name of the effect in the surround bus's FX bin.
2. On the **SurroundBridge** tab of the effect's property page, use the drop-down menus in the Left Input and Right Input columns to assign individual surround channels to instances of the effect.

Your assignments take effect immediately, and the names of the tabs in the property page change to reflect the new assignments.

To Unlink Individual Effect Parameters from Other Effect Instances

1. In the property page of an effect that's patched into a surround bus, click the **Unlink Controls** button so that it turns red.
2. Make some adjustments to the automatable parameters you want to unlink (non-automatable parameters are not linked together). You can select parameters on any tab. SONAR will automatically capture which controls you change and unlink them from the corresponding controls for the other surround channels.
3. When you're finished adjusting parameters, click the **Unlink Controls** button again so that it's not red.

Now you can adjust the parameters you adjusted, without automatically adjusting the same parameters that are on other tabs of the effect's property page. As long as the **Unlink Controls** button is not red, all other controls will remain linked.

A list of the parameters that you unlinked appears in the **Unlinked Controls** field on the **SurroundBridge** tab, with the instance number listed in the **Plug-in #** column of the **Unlinked Controls** field.

If you unlinked some but not all of an instance's parameters, the instance's check box in the **Controls Linked to Group** column appears **grey**, with a check.

To view a list of the automatable parameters in a particular effect, uncheck one of the **Controls Linked to Group** check boxes on the **SurroundBridge** tab, and read the list in the **Unlinked Controls** field.

To Relink Individual Effect Parameters to Other Effect Instances

1. In the **Unlinked Controls** field on the **SurroundBridge** tab, select the parameters you want to relink—if the parameters you want to select are adjacent, you can SHIFT-click the first and last ones in the group. If they're not adjacent, you can CTRL-click them individually.
2. Click the **Relink Controls** button.

The parameters you relinked are removed from the list.

To Unlink All of an Instance's Parameters from Other Instances

1. In the property page of an effect that's patched into a surround bus, click the **SurroundBridge** tab.
2. Find the instance you want to unlink in the **Plug-in #** column, and uncheck its **Controls Linked to Group** check box.

The parameters you unlinked appear in the **Unlinked Controls** field, with the instance number listed in the **Plug-in #** column of the **Unlinked Controls** field.

Note: *To relink all of an instance's parameters, recheck its **Controls Linked to Group** check box.*

To Disable an Instance

- On the **SurroundBridge** tab of the effect's property page, uncheck the **Enable** check box of the plug-in you want to disable. The instance's tab becomes greyed-out when you do this. You can re-enable the instance by rechecking the check box.

The **Enable** check box is a separate bypass system from the **Bypass** button that is on the instance's individual property tab. Disabling an instance by using the **Enable** check box lightens the CPU load by taking the instance out of the processing path. The **Bypass** button on the instance's property tab does not change color when you click the **Enable** check box, because it is a separate system. The **Bypass** button is automatable in some plug-ins.

To Save a Preset

1. Set the effect's parameters the way you want them.
2. In the **Presets** field of the effect's property page, type a name for the preset, and click the floppy disk icon that's just right of the **Presets** field.

Saving a preset of an effect that's patched into a surround bus creates a surround preset, which includes channel assignments and parameter linkage settings.

Importing Surround Mixes

SONAR imports multi-channel (surround) files as a group of mono files. If the files contain information that labels the speaker location of each channel in the file, SONAR copies these labels to the clips in your audio tracks, but does not pan the tracks according to these labels. This is because you may not have your SONAR project set to the same multi-channel format as the imported project.

You can import the following types of multi-channel files:

- Multi-channel PCM wave files (.wav)
- Dolby AC3 encoded files. (.ac3)—these are encoded for Dolby surround. You will need to install an AC3 decoder filter such as this one: http://ac3filter.sourceforge.net in order to be able to decode these files in SONAR.

Important: *After installing the above AC3 codec, go to Control Panel and launch the "AC3 Filter" control panel applet. From there you can set up the default speaker output for this filter to 5.1 channels. Until you do this it will only stream in stereo. Also check the sample rate of the imported file. It's recommended that you set your project sample rate to whatever the file uses before importing. Otherwise the import process will go through a time consuming resampling pass for each channel.*

- Windows Media Pro

To Import a Surround Multi-channel File

1. Use the **File > Import > Audio** command to open the **Import Audio** dialog.
2. Select a file of a supported file type.
3. Check **Import As Mono Tracks**.
4. Click **Open**.

SONAR imports each channel to a separate mono track.

Tip: *You can also rip the soundtrack from a video file by opening the video file directly from the* ***Import Audio*** *dialog.*

See:

Exporting Surround Mixes

Exporting Surround Mixes

You can export your surround mixes as multi-channel PCM wave files, or as Windows Media Pro files.

To Export a Surround Multi-channel File

1. Use the **File > Export > Audio** command to open the **Export Audio** dialog.
2. Type a name for your file.
3. In the **Files of Type** field, choose one of the following:
   - If you want to create a multi-channel wave file, choose **RIFF Wave**.
   - If you want to create a multi-channel Windows Media file, choose **Windows Media Advanced Streaming Format**.
4. In the **Source Category** field, choose **Buses**, **Main Outputs**, or **Entire Mix**.
5. Choose the bus or buses in the **Source Buses/Tracks** field that you want to export your mix from.
6. Choose **Multichannel** in the **Channel Format** field.
7. Choose any other options you want such as **Sample Rate** and **Bit Depth**.
8. If you want to save the settings you created in the **Export Audio** dialog, type a name for them in the Preset window and then click the floppy disk icon that's next to the window.
9. Click **Export**.

SONAR exports your project in the file format you selected.

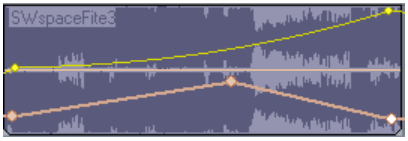
Standard AVI audio codecs do not support multichannel audio

None of the standard AVI audio codecs support multichannel audio. When exporting multichannel audio to an AVI video file, do not select an audio codec (no compression), or use a codec that is known to support multichannel audio.

Automation

Automation means to record the movement of a fader, knob, or other control so that the next time you play your project, that control moves automatically. SONAR allows you to graphically automatey of SONARmuch more than just volume and pan controls—you can automate individual controls, faders, and knobs that control the main outs, individual tracks, buses, individual effects' parameters (including some plug-in synths), and even individual clips. Easy to use read and write controls are featured on each automatable component of SONAR.

You can also group several controls together and automate them all by recording only a single control's movements. You can draw freehand and geometric automation curves with the Envelope Draw tool. All automatable controls are in the Console view and the Track view (including the Clips pane), however, you can also graphically automate MIDI controllers from the Piano Roll view in addition to the Console and Track views. You can enable or disable all automation by clicking the **Enable/Disable Automation Playback** button in the **Automation** toolbar. You can also enable or disable automation by track or by parameter using the **Automation Read** button on track strips, buses, effects bins and soft synths. This is a handy way to turn off automation for a particular section of parameters while mixing. Display the **Automation** toolbar by using the **Views > Toolbars** command and making sure that the **Automation** check box is checked in the **Toolbars** dialog box.



See:

Quick Automation Guide

The Automation Toolbar

Automation Methods

Automating Effects

Reassigning envelopes

The Envelope Editing and Node Editing menus

Quick Automation Guide

The following table summarizes Console and Track view automation:

What you can automate	Parameters you can automate	How you can automate them
Individual tracks	Gain, pan, mute, bus send gain, bus send balance, MIDI controllers, MIDI chorus and reverb, pitch wheel, channel aftertouch, RPN and NRPN	Draw envelopes in the Clips pane, record the fader movements, or take a snapshot
Buses	Input gain and pan, output gain and pan	Draw envelopes in the Clips pane, record the fader movements, or take a snapshot
Individual effects	Varies with the effect	Draw envelopes in the Clips pane, record the fader movements, or take a snapshot
Soft Synth controls	Varies with the synth	See “Drawing Soft Synth Automation in the Clips Pane” on page 583 and “Automating Controls from the Synth Rack” on page 582.
Groups of faders or other controls	Whatever the faders or other controls in the group control	Record fader movements
Individual clips	Gain and pan for audio clips, velocity for MIDI clips	Draw envelopes in the Clips pane

Table 141.

In addition, SONAR allows you to copy and paste envelopes between tracks. The *only* controls that you *can't automate* are the **Arm**, **Solo**, **Pre/Post**, **Interleave** (Mono/Stereo selector), **Bus Enable**, and **Phase** buttons; and the **Trim** fader.

For step-by-step instructions, see:

The Automation Toolbar

Automation Methods

Recording Individual Fader or Knob Movements

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Drawing Envelopes on Clips

Showing or Hiding Envelopes

Deleting Envelopes

Copying and Pasting Envelopes

Snapshots

The Automation Toolbar

***A.** Punch-in time **B.** Punch-out time **C.** Set Punch to Selection **D.** Current record mode **E.** Automation record options **F.** Snapshot **G.** Disarm all controls **H.** Enable Automation Playback*

Display the **Automation** toolbar by using the **Views > Toolbars** command to open the **Toolbars** dialog box, and making sure that the Automation check box is checked. If you slide the cursor over each button or field in the toolbar, tooltips pop up to tell you each function. The **Automation** toolbar gives you quick access to some powerful automation controls:

- **Enable/Disable Automation Playback.** Click this button to either enable or disable any automation data the project contains.
- **Enable/Disable Automation Recording.** Click this button to globally turn on/off the ability to record automation.
- **Snapshot.** Click this button to take a snapshot of all controls at a particular Now time. When you play back your project, when your project reaches the Now time where you took the snapshot, all controls snap to the positions they held when you took the snapshot.
- **Clear All Automation Write Enables.** Click this button to disarm every control that is armed for automation recording.
- **Envelope/Offset mode.** Click this button to toggle between Envelope mode and Offset mode. For more information about the Envelope and Offset modes, see Envelope Mode and Offset Mode.

See also:

Automation Methods

Automation Methods

There are several ways to automate controls in the Track and Console views:

- **Recording the movements of individual faders, knobs, or controls.** This method includes any knob, slider, or control except the **Solo**, **Arm**, **Phase**, **Interleave**, **Vol Trim**, **Bus Enable**, **Pre/Post** buttons, **Bank**, **Patch**, **Channel**, **Key+**, **Time+**, **Input** and **Output**.
- **Drawing envelopes in the Clips pane for audio and/or MIDI data.** An envelope is a graph of the change in level of a particular parameter over time.
- **Recording automation data from an external controller.**

- **Snapshots.**

For step-by-step instructions, see:
Automation Read and Automation Write Buttons
Recording Individual Fader or Knob Movements
Creating and Editing Audio Envelopes
Creating and Editing MIDI Envelopes
Using the Envelope Draw Tool
Drawing Envelopes on Clips
Showing or Hiding Envelopes
Deleting Envelopes
Copying and Pasting Envelopes
Snapshots
Automating Individual Effects Parameters

For step-by-step instructions, see:
Recording Individual Fader or Knob Movements
Creating and Editing Audio Envelopes
Creating and Editing MIDI Envelopes
Using the Envelope Draw Tool
Drawing Envelopes on Clips
Showing or Hiding Envelopes
Deleting Envelopes
Copying and Pasting Envelopes
Snapshots
Automating Individual Effects Parameters

Automation Read and Automation Write Buttons

SONAR now has buttons to enable/disable automation playback (the **Automation Read** buttons) and automation recording (the **Automation Write** buttons) on the following modules:

- Tracks
- Buses
- Plug-in property pages
- Clip effects property pages (**Automation Read** button only)

In addition, SONAR has right-click commands to enable/disable automation playback and recording for individual parameters. The **Automation Read/Write** buttons enable or disable automation playback and recording respectively on all the parameters on an individual track, bus, or plug-in at once. The **Automation Read/Write** commands enable or disable automation playback and recording respectively on individual parameters of tracks, buses, or plug-ins.

The **Automation Read** button enables playback of automation envelopes for all automatable parameters in the track, bus, or plug-in that the button is on, and is a handy way to temporarily turn off envelopes for a particular track or bus while mixing.

The **Automation Write** button replaces the old pre SONAR 6 “automation arm” property and enables all automatable parameters on a specific audio track, bus, or plug-in to be recorded.

The **Automation Read** and the **Automation Write** buttons are located by default next to the **Mute**/**Solo**/**Arm** buttons on track and bus strips in the Track View, on the console strip in the Console View, and below the **Mute** and **Solo** buttons in the Synth Rack. They are also available in Cakewalk Soft Synth and Cakewalk effects plug-ins. **Automation Read** and **Automation Write** buttons have three states; enabled, disabled, and dim. Enabled buttons indicate that all associated parameters are read/write enabled. A dim button indicates that some parameters in the track strip or plug-in are read or write enabled, while others are not. During automation recording, you will see the automation preview envelope being drawn in real time alongside the normal waveform or MIDI preview.

A. *Automation Read button* ***B.*** *Automation Write button*

Enabling Individual Parameters

You can read-enable or write-enable individual parameters on tracks and buses by right-clicking them and choosing **Automation Read Enable** or **Automation Write Enable** from the pop-up menu.

If you right-click an effect in an effect bin, the **Read Enable Parameter** and **Write Enable Parameter** menu choices open dialogs that allow you to select which parameters you want to enable.

See Recording Individual Fader or Knob Movements for more information.

Recording Individual Fader or Knob Movements

Recording automation for knobs and faders works in the Track view, the Console view, and Synth Rack. You can record automation during both playback and recording operations.

To Record Individual Fader or Knob Movements

1. Do one of the following:

- To write-enable an individual track or bus control, right-click the fader or control you want to automate and choose **Automation Write Enable** from the pop-up menu.
- To write-enable individual plug-in parameters, right-click the name of the plug-in in the FX bin, and choose **Write Enable Parameter** from the pop-up menu. This opens a dialog that allows you to choose which parameters to write-enable.
- To write-enable individual synth parameters, right-click the synth's **Automation Write** button in the Synth Rack, and choose **Write Enable Parameter** from the pop-up menu. This opens a dialog that allows you to choose which parameters to write-enable.
- To write-enable all parameters in an audio track, bus, synth, or effect, enable the **Automation Write** button W on the track, bus, Synth Rack strip, or plug-in property page you are recording automation for. Enabling the **Automation Write** button on a track or bus also write-enables all parameters of any effects on the track or bus.

2. Start playback or recording.

3. Move the armed parameter control(s).

4. Stop playback or recording.

After you record the automation data, SONAR draws a graph of it (an envelope) in the Clips pane, which you can edit with the mouse by adding and dragging nodes. Once you record automation data in a track, the widget that you automated displays an indicator to show that automation has been applied. You can also group controls, so that automating one control automates all the controls in the group.

See also:

The Automation Toolbar

Automated Muting

Using Control Groups

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Showing or Hiding Envelopes

Deleting Envelopes

Snapshots

Creating and Editing Audio Envelopes

You can create audio envelopes for both audio tracks and buses. Drawing an envelope for audio data overwrites any preexisting envelope for the same parameter that occurs at the same time in the same track or bus.

After you create an envelope, you can edit it with the following procedure, but you can also edit by using the Envelope Draw tool to draw freehand or preset shapes. See "Using the Envelope Draw Tool" on page 715 for more information.

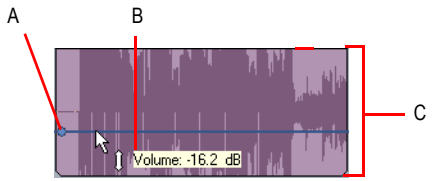
To Create and Edit Audio Envelopes with the Select or Envelope Tools

1. Right-click in the Clips pane in the track (or bus) you want to automate.

   The Clips pane pop-up menu appears.

2. From the menu, choose **Envelopes > Create Track Envelope > (name of the control you want to automate)**. Notice the envelope's color at the right side of the menu.

   The envelope appears in the Clips pane as a straight, dotted line in the envelope's individual color, with a node (very small circle) at the beginning. When you move the cursor over the envelope, a vertical, double-ended arrow appears under it with the name and current value of the envelope in a box next to the cursor. The envelope's vertical position reflects the current value of the parameter you are editing.



A. *Node* ***B.*** *Envelope name and current value* ***C.*** *Envelope value range*

Note: *An automated mute envelope changes the track's mute status whenever the envelope crosses the middle of its value range.*

3. Using either the Select or Envelope tools, move the cursor over the envelope until a vertical, double-ended arrow appears under it (notice that the name and current value of the envelope appear in a box next to the cursor), and right-click the envelope. If you use the Envelope tool, you can't accidentally edit any other data besides the envelope.

   The **Envelope Editing** menu appears.

4. Choose **Add Node** from the menu.

   A node appears on the envelope.

Note: *A shortcut to add a node is to double-click the envelope.*

5. Move the cursor over the node until a cross appears under it, and drag the node in any direction you want.
6. Double-click the envelope to add another node.
7. Drag the new node in any direction you want and release the mouse.

8. Move the cursor over the segment of the envelope that lies between the two nodes until the double-ended arrow appears, and right-click the envelope to open the **Envelope Editing** menu.
9. Choose one of the following **shapes** from the **Envelope Editing** menu:
   - **Jump.** This choice causes the envelope to make a ninety degree jump where the envelope reaches the second node. SONAR displays jumps with a dotted line, meaning that there is automation data at the nodes where the dotted line begins and ends, but not where the line itself is.
   - **Linear.** This choice draws a straight line between the two nodes.
   - **Fast Curve.** This choice draws a curve between the two nodes that changes value rapidly at first, but more slowly toward the end of the curve.
   - **Slow Curve.** This choice draws a curve between the two nodes that changes value slowly at first, but more rapidly toward the end of the curve.

   SONAR adds a shape between the nodes. You can drag any shape except a jump up or down and it maintains its curve or angle. To edit a jump, drag the node that's at either end of the jump.

Make sure the **Automation Read** button is enabled, play the project and listen to the results. You can undo any step by using the **Edit > Undo** command (CTRL+Z) directly after that step. You can drag the nodes in any direction you want. You can play back your project with or without the automation data by clicking the **Enable Automation Playback** button in the **Automation** toolbar.

Note: *When you add a "gain" envelope to a track in SONAR, you increase the track's level post-effects, or after the effects processors. Some hardware mixers call this level "volume," because it is post-effects, but other mixers refer to this as "gain." Either way, SONAR's gain envelopes increase a track's level after the effects processors in the signal chain.*

When you add multiple envelopes to a track or bus, you can choose which envelopes you want to display. See "Showing or Hiding Envelopes" on page 717.

You can also draw envelopes on MIDI tracks. See "Creating and Editing MIDI Envelopes" on page 712.

See also:

Dotted Lines

The Envelope Editing and Node Editing menus

Automated Muting

Using Control Groups

Deleting Envelopes

Snapshots

Recording Individual Fader or Knob Movements

Creating and Editing MIDI Envelopes

This method is only available in the Clips pane. You can also draw MIDI controller data in the Piano Roll view, but the technique is different (see “Adding and Editing Controllers in the Piano Roll” on page 466).

Note 1: *MIDI envelopes you create in the Piano Roll Notes pane and MIDI envelopes you create in the Track view Clips pane are actually separate envelopes, even if they control the same parameter. Both kinds of envelopes are visible in the Clips pane, and should generally not be used to control the same parameter. You can convert Piano Roll view envelopes to Track view envelopes by selecting the time range and tracks that the Piano Roll envelopes occupy, and using the* ***Edit > Convert MIDI To Shapes*** *command.*

Note 2: *After you create an envelope, you can edit it by adding nodes and choosing shapes for the line segments that are between nodes (see the following procedure), but you can also edit by using the Envelope Draw tool to draw freehand or preset shapes. See “Using the Envelope Draw Tool” on page 715 for more information.*

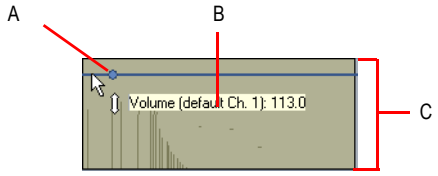
To Draw MIDI Envelopes in the Track View

1. Right-click in the Clips pane in the track you want to automate.

   The Clips pane pop-up menu appears.

2. If you want to create an envelope to control volume, pan, chorus, reverb, or automated mute, choose **Envelopes > Create Track Envelope** and choose one of those items from the menu.

   The envelope appears in the Clips pane as a straight, dotted line in the envelope’s individual color, with a node (very small circle) at the beginning. When you move the cursor over the envelope, a vertical, double-ended arrow appears under it with the name and current value of the envelope in a box next to the cursor. The envelope’s vertical position reflects the current value of the parameter you are editing.



A. *Node* ***B.*** *Envelope name and current value* ***C.*** *Envelope value range*

Note: *An automated mute envelope changes the track’s mute status whenever the envelope crosses the middle of its value range.*

3. If you want to create an envelope to control any other MIDI controller, choose **Envelopes > Create Track Envelope > MIDI**.

The **MIDI Envelope** dialog box appears:

- In the **Type** field, choose what kind of MIDI event you want to control with your envelope.
- In the **Value** field, choose the name of the controller you want to edit.
- In the **Channel** field, choose the MIDI channel that you want the envelope to send data on, and click **OK**.

SONAR creates the envelope you chose.

4. Move the cursor over the envelope until a vertical, double-ended arrow appears under it, and right-click the envelope.

   The **Envelope Editing** menu appears.

5. Choose **Add Node** from the menu.

   A node (very small rectangle) appears on the envelope.

Note: *A shortcut to create a node is to double-click the envelope.*

6. Move the cursor over the node until a cross appears under it, and drag the node in any direction you want.

   When you release the mouse, the envelope changes to follow the node's new position.

7. Double-click the envelope to add another node.
8. Drag the new node in any direction you want and release the mouse.
9. Move the cursor over the segment of the envelope that lies between the two nodes until the double-ended arrow appears, and right-click the envelope to open the **Envelope Editing** menu.
10. Choose one of the following **shapes** from the **Envelope Editing** menu:

    - **Jump.** This choice causes the envelope to make a ninety degree jump when the envelope reaches the second node. SONAR displays jumps with a dotted line, meaning that there is automation data at the nodes where the dotted line begins and ends, but not where the line itself is.
    - **Linear.** This choice draws a straight line between the two nodes.
    - **Fast Curve.** This choice draws a curve between the two nodes that changes value rapidly at first, but more slowly toward the end of the curve.
    - **Slow Curve.** This choice draws a curve between the two nodes that changes value slowly at first, but more rapidly toward the end of the curve.

    SONAR adds a shape between the nodes. You can drag any shape except a jump up or down and it maintains its curve or angle. To edit a jump, drag the node that's at either end of the jump.

Make sure the **Automation Read** button is enabled, play your track and listen to the results. You can undo any step by using the **Edit > Undo** command (CTRL+Z) directly after that step. You can play back your project with or without the automation data by clicking the **Enable Automation Playback** button in the **Automation** toolbar.

When you add multiple envelopes to a track, you can choose which envelopes you want to display. See “Showing or Hiding Envelopes” on page 717.

You can also draw envelopes on audio tracks. See “Creating and Editing Audio Envelopes” on page 710.

See also:

Dotted Lines

The Envelope Editing and Node Editing menus

Automated Muting

Using Control Groups

Deleting Envelopes

Snapshots

Recording Individual Fader or Knob Movements

Dotted Lines

The dotted line in an envelope shows two things:

- There is no automation data at the time in a track where the dotted line is.
- The value of the last piece of automation data that exists before the dotted line is represented by the vertical level of the dotted line.

You can move an automated control while your project plays, and if you move it during a time where that control has a dotted line in its envelope, the control will stay where you move it. As soon as the Now time reaches a node or solid line, the control snaps to the value of the node or solid line.

Using the Envelope Draw Tool

The Envelope Draw tool allows you to draw both freehand and preset shapes on an existing envelope.

To Draw Freehand

1. Activate the envelope you want to edit (click it with the Envelope tool).
2. Enable the Envelope Draw tool: click in the **Track view** toolbar.
3. Click the drop-down arrow on the side of the Envelope Draw tool, and select **Freehand** from the menu.
4. Click and hold the mouse button in the Clips pane at the place where you want to edit the envelope. Drag to the right or left to draw the desired shape, and release the mouse when you’re finished.

To Draw a Preset Shape

1. Activate the envelope you want to edit (click it with the Envelope tool).
2. Enable the Envelope Draw tool: click in the **Track view** toolbar.
3. Set the Snap to Grid to the desired length of each cycle of the shape you want to draw. For example, if you want to draw sine curves, and you want each complete sine curve to last one beat, set the Snap to Grid to a value of Quarter. If the Snap to Grid is disabled, the default cycle is one measure.
4. Click the drop-down arrow on the side of the Envelope Draw tool, and select the kind of shape you want to draw. After you select a shape, both the Envelope Draw tool and the cursor display the kind of shape you selected.
5. Click and hold the mouse button in the Clips pane at the place where you want to edit the envelope. The place where you click also sets the vertical midpoint of the shape you're creating.
6. Drag up or down to set the vertical range of the envelope, and then drag to the right or left to set the length of your edit. As you drag, the cursor's vertical distance from the midpoint (the point where you originally clicked) determines the amplitude of the graph. To create a series of identical shapes, hold the SHIFT key down while you drag. To gradually increase or decrease the amplitude, gradually move the cursor farther from or closer to the midpoint.
7. Release the mouse when you've finished editing. The shape you selected appears, repeating according to the Snap to Grid setting.

To Halve or Double the Shape Cycle Frequency

- To halve the cycle frequency (for example, if snap resolution = quarter note, make each cycle a half note), hold down the CTRL key while you draw.
- To double the cycle frequency (for example, if snap resolution = quarter note, make each cycle an eighth note), hold down the ALT key while you draw.

To Invert the Phase of a Pattern

- You can invert the phase of the pattern by dragging the cursor below the zero-line/center (where you initially clicked to start the pattern).

To Toggle Between the Envelope Tool and the Envelope Draw Tool

- When the mouse button is NOT pressed, hold down the ALT key to momentarily switch between the two tools.

To Stretch a Shape

1. Select the nodes in the part of the shape that you want to stretch: use the Envelope tool to drag around the part of the shape you want to select. Nodes turn white when they are selected.
2. Drag one of the selected nodes in the direction that you want to move the selected area. Stretching stops if any selected node bumps into an adjacent unselected node.

Drawing Envelopes on Clips

You can also draw envelopes on audio clips, but only for gain, pan, and any automatable effects that are inserted on the clips. On MIDI clips, you can draw velocity envelopes. If there is already a Track-level envelope on the clip, the clip envelope data merges with the track envelope data.

Note: *The Trim value of a track is actually a clip parameter, not a track parameter. SONAR applies clip volume settings, including Trim, to a clip before the clip's audio data reaches any plug-in effects. Effects can sound very different when their incoming data changes volume, even if the final volume is unchanged.*

To Draw Envelopes on Clips

1. Right-click the clip that you want to draw the envelope on.

   The Clips pane pop-up menu appears.
2. Choose **Envelopes > Clip > (Gain or Pan or Velocity)** from the menu.

   An envelope appears on the clip with a node at each end.

Edit the envelope just as you would a track envelope, using the Select tool, the Envelope tool, and the Envelope Draw tool.

See also:

The Envelope Editing and Node Editing menus

Using the Envelope Draw Tool

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Showing or Hiding Envelopes

Deleting Envelopes

Snapshots

Recording Individual Fader or Knob Movements

Showing or Hiding Envelopes

You can choose to show or hide any or all envelopes in a track or bus.

To Show or Hide All Envelopes

1. In the **Track view** toolbar, click the drop-down arrow that's next to the Envelope tool to display the **Envelope Options** menu.
2. Choose either **Show All Envelopes** or **Hide All Envelopes**.

To Show All of One Kind of Envelope

1. In the **Track view** toolbar, click the drop-down arrow that's next to the Envelope tool to display the **Envelope Options** menu.

2. Choose the kind of envelope that you want to show.

To Show or Hide Individual Envelopes

1. Right-click the Clips pane in the track that contains the envelope(s) that you want to show or hide.

   The Clips pane pop-up menu appears.

2. Choose **Envelopes > Show Track Envelopes**.

   A menu of all the envelopes in the track appears. A checkmark appears to the left of each envelope that is currently showing.

3. Click the name of one envelope that you want to show (if it's currently hidden), or hide (if it's currently showing).

   SONAR hides or displays the envelope.

4. Repeat steps 1 to 3 for each envelope that you want to show or hide.

You can also hide, but not show, individual envelopes by right-clicking an envelope and choosing **Hide Envelope** from the **Envelope Editing** menu.

See also:

Using Control Groups

Creating and Editing Audio Envelopes.

Creating and Editing MIDI Envelopes

Deleting Envelopes

Recording Individual Fader or Knob Movements

Deleting Envelopes

To Delete a Single Envelope

1. Move the cursor over the envelope until a vertical, double-ended arrow appears under it, and right-click the envelope.

   The **Envelope Editing** menu appears.

2. Choose **Delete Envelope** from the menu.

SONAR deletes the envelope.

To Delete Several or All Envelopes

1. Select the data that contains the envelopes you want to delete—you can select parts of tracks, one or more whole tracks, or all tracks.
2. Use the **Edit > Cut** command to open the **Cut** dialog box.
3. Select **Track/Bus Automation** if it's listed.
4. Select **Clip Automation** if it's listed.

5. Click **OK**.

SONAR deletes any track and clip envelopes that are in the data you selected.

See also:

Recording Individual Fader or Knob Movements

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Drawing Envelopes on Clips

Showing or Hiding Envelopes

Copying and Pasting Envelopes

Snapshots

Copying and Pasting Envelopes

You can copy and paste envelopes or parts of envelopes between tracks and clips. You cannot, however, copy and paste a clip envelope without also copying and pasting the audio or MIDI data that is in that clip. If you paste a clip envelope into a track without the clip that it came from, the clip envelope becomes a track envelope.

To Copy an Envelope

1. In the Track view or the Clips pane, select the track or clip that has the envelope you want to copy. If you want to copy all the automation data in the track, select the whole track. If you want to select only a clip, but want to select any track envelopes in that track, click the drop-down arrow next to the Select tool , and make sure that the **Select Track Envelopes With Selected Clips** option has a checkmark next to it.
2. Press CTRL+C or use the **Edit > Copy** command.

   The **Copy** dialog box appears.
3. Choose **Clip Automation** and/or **Track/Bus Automation**.

Note: *If the **Track/Bus Automation** field is greyed-out, you must re-select a part of the clip that contains either a node or a solid line (shape). A dotted line by itself is not an envelope and can not be copied.*

4. Choose any other kinds of data you want to copy—if you only want to copy the automation data, choose only **Track/Bus Automation** and/or **Clip Automation**.
5. Click **OK**.

SONAR copies the data you selected to the clipboard.

To Paste an Envelope

1. Select the track(s) and location (Now Time) you want to paste the data to.

2. Press CTRL+V or use the **Edit > Paste** command.

   The **Paste** dialog box appears.

3. Choose a track and location to paste to, if you haven't already.
4. Click **OK**.

SONAR pastes the automation data and any other types of data you chose in the **Copy** dialog box into the track and location you selected.

See also:

Recording Individual Fader or Knob Movements

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Drawing Envelopes on Clips

Showing or Hiding Envelopes

Snapshots

Resetting Envelopes and Nodes to Current or Neutral Values

You can reset an envelope so that it becomes a horizontal line at the current value of the parameter it controls, which eliminates any curves or jumps from the envelope. You can reset a node so that it jumps to the neutral value of the parameter it controls. For example, the neutral value of the pan parameter is C, or 0%.

To Reset an Envelope to the Current Value

1. Move the Now time to where the envelope's value is to your liking.
2. Right-click the envelope to display the **Envelope Editing** menu.
3. Choose **Clear All** from the menu.

SONAR resets the envelope to the current value.

To Reset a Node to a Neutral Value

Do either of the following:

- Double-click the node.
- Move the cursor over the node until it a cross appears under it, right-click the node, and choose **Reset Node** from the pop-up menu.

The node jumps to the neutral value for the parameter it controls.

See also:

Recording Individual Fader or Knob Movements

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Drawing Envelopes on Clips

Showing or Hiding Envelopes

Copying and Pasting Envelopes

Snapshots

Envelope Mode and Offset Mode

There are two modes which control how your volume faders, pan faders, bus send faders, and bus send pan faders behave during playback. The two modes are **Envelope mode** and **Offset mode**.

Envelope mode. In envelope mode, volume and pan faders follow the project's automation and do not respond to changes you make in real-time.

Offset mode. In Offset mode, you "offset" the current automation in a track using a parameter's controls. For example, if a pan envelope is set to hard left (100% left) and you adjust the pan in offset mode to 100% right, then the pan parameter is now set to hard right. Setting the pan in offset mode to 50% right would set the pan to the center.

Note: *Any position that you set a fader to in Offset mode remains in effect when you switch back to Envelope mode. For example, if you set a volume fader to -INF while in Offset mode, switch to Envelope mode and drag the fader to its maximum level, you will not hear anything.*

To Turn On Offset Mode

There are several ways to turn on Offset mode in SONAR:

- In the **Track view** toolbar, click the drop-down arrow that's next to **Envelope Tool** button. Choose **Offset** from the menu to enable/disable Offset mode.
- In the **Automation** toolbar, click the **Offset** button.
- Press the O key.

In Offset mode, all controls that can be offset appear with a plus sign. For example Vol+.

The following audio controls support both Envelope and Offset modes:

Control	Envelope Mode Range	Offset Mode Range
Volume	-Infinity to +6dB, default is 0dB	-Infinity to +6dB, default is 0dB
Pan	100% L to 100% R, default is C	100% L to 100% R, default is C
Bus Send Level	-Infinity to +6dB, default is 0 dB	-Infinity to +6dB, default is 0dB
Bus Send Pan	100% L to 100% R, default is C	100% L to 100% R, default is C
Bus Return Level	-Infinity to +6dB, default is 0dB	-Infinity to +6dB, default is 0dB

Table 142.

Control	Envelope Mode Range	Offset Mode Range
Bus Return Balance	100% L to 100% R, default is C	100% L to 100% R, default is C
Main Out Volume	-Infinity to +6dB, default is 0dB	-Infinity to +6dB, default is 0dB
Main Out Balance	100% L to 100% R, default is C	100% L to 100% R, default is C

Table 142.

The following MIDI controls support both Envelope and Offset modes:

Control	Envelope Mode Range	Offset Mode Range
Volume	0 to 127, default is 101	0 to 127, default is 101
Pan	100% L to 100% R, default is C	100% L to 100% R, default is C
Chorus	0 to 127, default is 0	-127 to 127, default is 100
Reverb	0 to 127, default is 0	-127 to 127, default is 100

Table 143.

To Open Non-SONAR Envelope Display on a Percentage Scale

You can globally configure the placement of 0 dB for your envelopes in the Clips pane. The default placement in the Clips pane of 0 dB is roughly 1/3 from the top of the clip. You can change the position of 0 dB in all envelopes to the middle of the clip.

There are several advantages when using the **Envelope Display on a Percentage Scale** option:

- It makes it easier to tell if there have been any changes.
- There is a finer resolution around 0 dB.

Note: *In Envelope mode, newly created volume clips appear at the same dB value as the current Vol setting. For example, if the Vol setting is +3 dB, a newly created volume envelope appears above the middle of the clip.*

To Display Envelopes on a Percentage Scale

1. Select **Options > Global** to open the **Global Options** dialog.
2. In the **General** tab, click the **Display Envelopes on Percentage Scale** check box.
3. Click **OK**.

Converting MIDI Envelopes to Shapes

MIDI controllers you edit in the Piano Roll view and MIDI envelopes you create in the Track view Clips pane are actually separate data, even if they control the same parameter. Both kinds of envelopes are visible in the Clips pane, and should generally not be used to control the same

parameter. You can convert Piano Roll view envelopes to Track view envelopes by selecting the time range and tracks that the Piano Roll envelopes occupy, and using the **Edit > Convert MIDI To Shapes** command.

To Convert MIDI Controller Envelopes to Shapes

1. In the Clips pane, select the time range and track(s) that contain the controller data you want to convert.
2. Use the **Edit > Convert MIDI To Shapes** command.

   The **Convert MIDI To Shapes** dialog box appears.
3. In the **Type** field, select the type of controller you want to convert.
4. In the **Value** field, select the controller number of the controller you want to convert. For example, if you're converting a volume envelope to a shape, select **7**.
5. In the **Channel** field, select the channel of the controller you want to convert, and click **OK**.

SONAR converts the Piano Roll view controller envelope you selected to a Track view shape that controls the same parameter.

Note: *If two clips overlap, the **Edit > Convert MIDI To Shapes** command converts the controller envelopes in both clips, in whatever parts of the clips lie in the selected time range.*

Snapshots

Making a snapshot of a single parameter is now a single-click process. A snapshot is a setting or group of settings that SONAR's controls snap to when your project reaches a certain Now Time. You set all the controls to the values you want, and then create a snapshot of these settings at a particular Now Time. This approach is useful, for example, when your project contains a variety of distinct sections and you want to make a sudden change in one or more settings between the sections.

To Create a Snapshot of a Single Parameter

1. Move the parameter control to where you want it.
2. Move the Now Time to the location where you want to create the snapshot.
3. Right-click the control and choose **Automation Snapshot** in the pop-up menu. You don't have to write-enable the track or bus module.

   An indicator will appear on the control to show that automation has been added, and a node will be added to the control's envelope on the track.
4. Make sure the appropriate **Automation Read** button is enabled, play your project and listen to the results. You can undo the snapshot by using the **Undo** command, or by taking another snapshot at the same Now Time.

To Create a Snapshot of Multiple Parameters

1. Arm the Parameters that you want to create a snapshot of by doing one of the following:

- Enable the **Automation Write** button in the tracks and/or buses that you want to automate. This also write-enables all parameters of any automatable effects that are in the track or bus.

  You can click the **Clear All Automation Write-Enabled** button in the **Automation** toolbar first if you want to make sure that no hidden tracks or buses are write-enabled.
- Or, disable all write-enabled parameters by clicking the **Clear All Automation Write-Enabled** button in the **Automation** toolbar, and then right-click each parameter control that you want to arm and select **Automation Write Enable** from the pop-up menu.
- Or, if you want to automate all automatable parameters in a plug-in, enable the **Automation Write** button in the effect or synth property page, or the synth's strip in the Synth Rack. In the Synth Rack, you can also move any new parameter knobs you've created with the **Parameter Learn** function to create automation.

2. Set your armed parameters the way you want them.
3. Move the Now Time to the location where you want to create the snapshot.
4. Click the **Snapshot** button in the **Automation** toolbar to make the snapshot.

   An indicator will appear on the control to show that automation has been added, and a node will be added to the control's envelope on the track.
5. Make sure the **Automation Read** button for the tracks and/or buses you automated is enabled, play your project and listen to the results. You can undo the snapshot by using the Undo command, or by taking another snapshot at the same Now Time.

You can play back your project with or without the automation data by clicking the **Enable Automation Playback** button in the **Automation** toolbar.

Successive snapshots do not update envelope node values

When taking multiple automation snapshots at the same Now time, new envelope nodes are created instead of updating any existing envelope nodes. To address this issue, undo the previous automation snapshot before performing a new snapshot.

Adding Nodes at a Selection

One of the most common automation tasks is to raise or lower an envelope over a specific time range. The **Add Nodes at Selection** command simplifies this task: simply make a time selection, right-click the desired envelope, and choose **Add Nodes at Selection**. Two pairs of nodes appear—two nodes at the **From** time, and two nodes at the **Thru** time.

Each pair of nodes is only 2 milliseconds apart by default, so each pair looks like a single node, but if you drag the envelope segment between the two pairs up or down, you can see all four nodes.

To Add Nodes at Selection

1. Make a time selection.
2. Right-click the desired envelope within the selected time range.

   The **Envelope Editing** menu appears.

3. Choose **Add Nodes at Selection** from the menu.

Two pairs of nodes appear on the envelope—one pair at the start of the selected time range, and one pair at the end. Now you can drag the selected envelope segment up or down, and maintain the envelope's shape.

Automating Effects

SONAR allows you to automate plug-ins, giving you real-time control over dozens of effects parameters.

See also:

Recording Individual Fader or Knob Movements

Creating and Editing Audio Envelopes.

Creating and Editing MIDI Envelopes

Showing or Hiding Envelopes

Deleting Envelopes

Using Control Groups

Note: *When using automatable effects, the CPU meter may fluctuate rapidly within a few percentage points. This is normal behavior.*

Automating Individual Effects Parameters

You can automate the parameters of some of SONAR's effects by drawing envelopes, or recording fader movements, or creating snapshots. You enable all automatable parameters in an effect when you enable the **Automation Write** button in an effect property page.

To record fader movements, see "Recording Individual Fader or Knob Movements" on page 709.

To Draw Envelopes for an Individual Effect's Parameters

1. Patch an automatable effect into the track or bus where you want to use it, and close the effect's dialog box when it appears.
2. Right-click in the Clips pane in the track (or bus) where you patched the effect.

   The Clips pane or Bus pane pop-up menu appears.
3. If you opened the Clips pane pop-up menu, choose **Envelopes > Create Track Envelope > (name of the effect you patched)**. If you opened the Bus pane pop-up menu, choose **Create Bus Envelope > (name of the effect you patched).**

The effect's envelope dialog box appears, listing all the parameters you can automate in the **Envelope Exists** list.

4. Check all the parameters you want to create envelopes for; as you check each envelope choice, you can choose a color for the envelope by clicking the **Choose Color** button that's in the lower right corner of the dialog box.

Note: *You can change a plug-in envelope's color whenever you want by highlighting its name in the effect's envelope dialog box and clicking the* ***Choose Color*** *button.*

5. Click **OK**.

All the envelopes that you checked appear in the track or bus you were working in. You can edit them just like any other envelopes.

See also:

Recording Individual Fader or Knob Movements

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Drawing Envelopes on Clips

Showing or Hiding Envelopes

Copying and Pasting Envelopes

Snapshots

Recording Automation Data from an External Controller

You can record automation data from an external controller or a MIDI keyboard.

To Record Automation Data from an External Controller

1. In either the Track view or Console view, right-click the control or knob that you want to control externally, and choose **Remote Control** from the pop-up menu.

   The **Remote Control** dialog box appears.

2. If your controller sends standard MIDI messages, RPN's, or NRPN's, choose a controller (such as Wheel) with which to control your knob or control (see Remote Control dialog for more information). Also choose the MIDI channel your controller will be sending the automation data on (it doesn't have to be the same channel that the knob or control's track plays back on), and click **OK**.
3. If your controller works by sending SysX information instead, choose options in the **SysX** fields (see Remote Control dialog for more information), and click **OK**.
4. In either the Track or Console view, write enable the knob or control for automation that you just configured for remote control.

5. Start playback or recording, and move the slider or wheel that you selected on your external controller.
6. When you finish recording the automation, click the **Stop** button in the **Transport** toolbar.

Listen to your project and either re-record the automation, or disable each armed control by clicking the **Disable Automation Recording** button in the **Automation** toolbar. You can disable remote control by right-clicking the relevant knob or fader and choosing **Disable Remote Control** from the pop-up menu.

See also:

Recording Individual Fader or Knob Movements

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Drawing Envelopes on Clips

Showing or Hiding Envelopes

Copying and Pasting Envelopes

Snapshots

Reassigning envelopes

You can reassign an envelope to control a different parameter from the one it originally controlled. For example, you can reassign a volume envelope to control pan.

To Reassign an Envelope

1. Move the cursor over the envelope until the cursor changes to a double-ended arrow, and right-click the envelope.

   The **Envelope Editing** menu appears.
2. Choose **Assign Envelope >** (**name of the parameter you want the envelope to control**).

The envelope changes color to reflect its new parameter assignment.

See also:

Recording Individual Fader or Knob Movements

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Drawing Envelopes on Clips

Showing or Hiding Envelopes

Copying and Pasting Envelopes

The Envelope Editing and Node Editing menus

The **Envelope Editing** menu appears when you move the cursor over an envelope until a **double-ended arrow** appears under it, and right-click the envelope. The **Node Editing** menu is almost identical, and appears when you move the cursor over a node until a **cross** appears under it and right-click. The menus contain the following options:

Menu Option	What it Does
Jump (**Envelope Editing** menu only)	This choice causes the envelope to make a ninety degree jump between two nodes. SONAR displays jumps with a dotted line, meaning that there is automation data at the nodes where the dotted line begins and ends, but not where the dotted line itself is.
Linear (**Envelope Editing** menu only)	This choice draws a straight line between two nodes.
Fast Curve (**Envelope Editing** menu only)	This choice draws a curve between the two nodes that changes value rapidly at first, but more slowly toward the end of the curve.
Slow Curve (**Envelope Editing** menu only)	This choice draws a curve between two nodes that changes value slowly at first, but more rapidly toward the end of the curve
Add Node (**Envelope Editing** menu only)	This choice adds a node, which is a point on the line that you can drag, to the place on the envelope where you right-clicked.
Add Nodes at Selection	This command creates 2 pairs of envelope nodes, one at the beginning of the current selection, and one at the end. Each pair of nodes is only 2 mSec apart. You can easily adjust the selected part of the envelope by dragging the selected envelope segment up or down. See “Adding Nodes at a Selection” on page 724.
Add Nodes at Transient Markers (**Envelope Editing** menu only)	This command adds nodes to an envelope at the transient markers of any AudioSnap-enabled clips that a track contains.
Hide Envelope	This choice hides the envelope that you right-clicked. You can re-display the envelope by right-clicking in the same track and choosing **Envelopes > Show Track Envelopes > (name of the envelope you want to show)** from the Clips pane pop-up menu.
Assign Envelope-(name of the parameter you want to control)	This choice reassigns the envelope to control the parameter that you choose.
Delete Envelope	This choice deletes the envelope.

Table 144.

Menu Option	What it Does
Automation Read Enabled	This choice enables automation playback for the envelope.
Clear All	This choice deletes everything from the envelope except the first node.
Reset Node (**Node Editing** menu only)	This choice resets the node to the parameter's neutral value.
Delete Node (**Node Editing** menu only)	This choice deletes the node.
Properties (**Node Editing** menu only)	This choice opens the **Edit Node** dialog box, which allows you to edit the node's value and location.

Table 144.

Automated Muting

The **Mute** buttons in the Track view and Console view work in two ways:

- You can record or draw automation for each **Mute** button, and the automation data controls the buttons.
- You can click a **Mute** button while playback is in progress and manually override any automation data for that button.

A track's **Mute** button can display the muted or unmuted status of either the automation envelope or of manual muting. The **Tracks > Show Automated Mute** command causes the **Mute** button on a selected track to show whether the track's mute envelope (if any) is in the muted or unmuted position (the *automated mute status*). When the command is disabled, the track's **Mute** button shows whether you have depressed the **Mute** button manually or not (the *manual mute status*). When the command is enabled, the **Mute** button displays an armed fader next to the M: M↑. Besides the **Tracks > Show Automated Mute** command, you can also right-click a **Mute** button and choose **Switch to Automated Mute** from the pop-up menu.

To Draw a Mute Envelope

1. In the Clips pane, right-click in the track you want to mute, and choose **Envelopes > Create Track Envelope > Automated Mute** from the Clips pane pop-up menu.

   An envelope appears at the bottom of the track.
2. Add nodes to the envelope and edit it so that the envelope is more than 50% of its maximum height wherever you want the track muted.

To Record a Mute Button's Movement

1. Right-click the **Mute** button you want to automate and choose **Switch to Automated Mute** from the pop-up menu.
2. Make sure the **Mute** button or its whole track is write-enabled.
3. Start playback or recording, and click the **Mute** button on and off where appropriate.

4. Click the **Stop** button in the **Transport** toolbar or press the SPACEBAR when the track has been muted in the appropriate places.

SONAR draws an automated mute envelope in the track you recorded on. Before you listen to your track, make sure that the **Enable/Disable Automation Playback** button in the **Automation** toolbar is enabled.

Layouts, Templates and Key Bindings

A *layout* is the current arrangement of all the views that pertain to a particular project. The layout of each project is stored automatically as part of every project file. In addition, you can save the current layout or load any saved layout and apply it to the current project. You might want to create a layout so you can easily arrange the views in a convenient size and position on the screen.

A *template* is a special file that is used as a pattern to create similar project files. You might create a template file that defines a particular musical ensemble (say, a string quartet) or a particular studio configuration (MIDI instruments, audio outputs, and so on). Templates make it fast and easy to create and configure new projects.

Note that toolbars are not part of a file layout or template. The toolbar arrangement you choose is stored automatically from session to session.

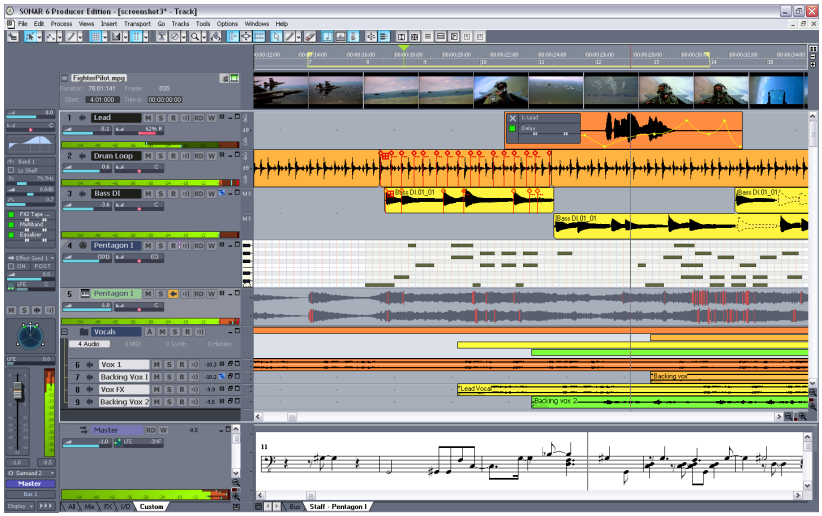
A *key binding* lets you associate SONAR commands with keys on your MIDI or computer keyboard. This makes it easy for you to access specific features more quickly and efficiently. You can even assign saved layouts to key bindings for quick access.

See also:

Templates

Key Bindings

Layouts



The layout of the views that are displayed for a project is stored automatically in the project file when you save the project. By default, the layout of all the views is restored when the file is opened. You can automatically arrange all open views so that they are all visible by using the **Window > Tile in Rows** command.

In addition, you can save the current layout in a separate list—the global layout list. Once you have saved the layout in this list, you can apply it to any open project. The global layout list can contain as many layouts as you want. Layouts in the list can be updated, renamed, and deleted.

Layouts are stored in a folder on your hard disk. To change the default folder for layouts, choose **Options > Global**, click the **Folders** tab, and type the name of a different folder in the **Window Layouts** field (or click the **Browse** button that's at the right end of the **Window Layouts** field, and select a new folder).

There are two options in **Windows Layouts** dialog (select **Views > Layouts** to open) that control how layouts are used, as described in the following table.

Option	Meaning
Close Old Windows Before Loading New Ones	If checked, SONAR will close all the views of the current project before applying the layout. If you leave this option unchecked, existing views remain open and additional views are created according to the settings in the layout.
When Opening a File, Load Its Layout	If checked, the views of a project are automatically arranged according to the stored layout when the project file is opened. If this option is not checked, only the Track view (and File Info view, if applicable) are displayed when the project file is opened.

Table 145.

To Create or Save a Layout

1. Arrange the views for the current project the way you want.
2. Choose **Views > Layouts** to display the **Window Layouts** dialog box.
3. Click **Add** to display the **New Global Layout** dialog box.
4. Enter a name for the layout, and click **OK**. The layout is added to the list.
5. Click **Close** to exit the **Window Layouts** dialog box.

To Update a Layout

1. Arrange the views for the current project the way you want.
2. Choose **Views > Layouts** to display the **Window Layouts** dialog box.
3. Choose the layout you want to update from the list.
4. Click **Add** to display the **New Global Layout** dialog box.
5. Leave the layout name unchanged, and click **OK**.
6. Click **OK** to confirm that you want to update the layout.
7. Click **Close** to exit the **Window Layouts** dialog box.

To Load a Layout

1. Choose **Views > Layouts** to display the **Window Layouts** dialog box.
2. Choose the layout you want from the list.
3. Click **Load**.

Views of the current project are arranged according to the layout settings.

To Delete a Layout

1. Choose **Views > Layouts** to display the **Window Layouts** dialog box.

2. Choose the layout you want to delete from the list.
3. Click **Delete**.
4. Click **OK** to confirm that you want to delete the layout. The layout is removed from the list.
5. Click **Close** to exit the **Window Layouts** dialog box.

To Rename a Layout

1. Choose **Views > Layouts** to display the **Window Layouts** dialog box.
2. Choose the layout you want to rename from the list.
3. Click **Rename** to display the **Rename Existing Layout** dialog box.
4. Enter a new name for the layout, and click **OK**. The layout is renamed in the list.
5. Click **Close** to exit the **Window Layouts** dialog box.

To Set Layout Options

1. Choose **Views > Layouts** to display the **Window Layouts** dialog box.
2. Check the options you want.
3. Click **Close**.

To Load a Layout with a Keyboard Command

1. Use the **Options > Key Bindings** command to open the **Key Bindings** dialog box.
2. In the **Type of Keys** field, click either **Computer** or **MIDI**. If you click **MIDI**, also make sure the **Enabled** check box is checked.
3. If you selected **MIDI** in the **Type of Keys** field, under **MIDI Shift Options** select either **Key** or **Controller**, and select a value for whichever one you pick.
4. Under **Bindings**, scroll through the **Key** field and select the key that you want to trigger the layout command with.
5. In the **Function** field, scroll down towards the end of the list, and under **Global Layouts**, click the name of the layout you want to assign to the key you selected.
6. When both the **Key** and the **Function** are highlighted in their respective fields. click the **Bind** button to bind them together.
7. Click **OK**.

Now you can load the layout you selected by pressing the MIDI keys or computer keys that you bound to that particular layout. You can bind as many layouts as you have available key combinations.

See also:

Templates

Floating Views and Dual Monitor Support

SONAR supports dual monitors and allows you to float most of your views to a second monitor giving you more options when working and increasing the number of views that you can have open at one time.

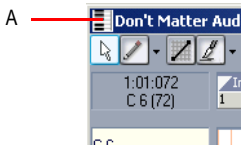
Important: *Dual monitor support requires that you have a video card that supports dual monitors. Follow your hardware manufacturers instructions for using dual monitors.*

You can float views in SONAR without having a second monitor. Floating a view allows you to move it out of SONAR, over the SONAR toolbars and menus for example, giving you added flexibility when using SONAR with other applications. All views except the Track view can be floated.

Note: *If you are using a dual monitor system and experience sluggish performance when selecting and dragging clips in the Clips pane, confirm that both monitors are set to the same "Color Quality" bit depth.*

To Float a View

1. Open the view you want to float.
2. Click the view's icon located in the upper left corner of the view.



A. *Piano Roll view icon*

3. In the menu that appears, click **Enable Floating**.
4. Move the view wherever you want.

Templates

Template files make it easy to create new projects with certain predefined settings. To create a template file, create a new project file and arrange the project settings the way you want, then save the project as a template file. Template files have a file extension of .cwt. When you create a new project, you can use the template as the basis for the new project. SONAR looks for template files in a particular folder on your hard disk. By default, this folder is the program folder. To change the template directory, choose **Options > Global** and click the **Folders** tab.

Every time you start SONAR, a new, empty project is displayed. If you want, you can determine the settings for this default project by creating and saving a special template file, called `Normal.cwt`. If

you create or update the `Normal.cwt` file, SONAR will display this template automatically when the program is started.

As a rule, any parameter that is saved in a project file is also saved in a template file. Following are some useful parameters that are saved in template files:

- Track configuration and track parameters
- Timebase
- Sysx banks
- File information and comments
- Tempo settings
- Meter and key settings
- Clock and synchronization information
- MIDI data
- MIDI In/Out/Thru settings
- MIDI metronome settings
- Selection start and end times
- Record mode and punch-in times
- Drum maps
- Audio data
- Automation

The following parameters are saved globally and are not stored in template or project files:

- Initialization file parameters
- Big Time font settings
- MIDI device settings
- Instrument definitions
- Autosave options
- Key bindings
- Color settings

To Create a Template

1. Create a new file using the **File > New** command.
2. Add tracks.
3. Set one or more parameters to be the way you want.
4. Choose **File > Save As** to display the **Save As** dialog box.
5. Choose **Template** from the **Save as Type** list.
6. Enter a template file name and click **Save**.

SONAR saves the template file.

To Create a New Project from a Template

1. Choose **File > New** to display the **New Project File** dialog box. The list contains the names of all existing templates.
2. Choose a template from the list.
3. Click **OK**.

SONAR creates the new project and displays it in the Track view.

See also:

Template Example: Three MIDI instruments

Templates

Template Example: Three MIDI instruments

Suppose that your system has only a single MIDI output but you own three different synthesizers:

- One synthesizer set to receive on channels 1 through 8
- A general MIDI synthesizer module set to receive data on all 16 channels
- A drum machine set to receive on MIDI channel 10

Here's how you can use a template to make it easy to create new projects that are already configured for the instruments you own.

To create the example template file

1. Choose **File > New** to create a new project file.
2. Insert 16 MIDI tracks.
3. In the **Ch** drop-down menu of track 10, enter **10**. The drum machine responds to channel 10. For consistency, the drums can be placed on track 10.
4. The second synthesizer responds to channels 1 through 8. These can be placed on tracks 1 through 8. For each track, enter the corresponding channel number using the **Ch** drop-down menu for each track. You should now have tracks 1 through 8 set to channels 1 through 8.
5. The third synthesizer can respond to 16 MIDI channels, but the only channels left are 9 and 11 through 16. Enter these numbers in the corresponding tracks. You will need to mute the unused channels on the third synthesizer (1 through 8 and 10) so they won't play. These are assigned to the drum machine and the second synthesizer.
6. Name each track and set any track parameters, such as starting patch, volumes, panning, reverb, chorus, and transposition.
7. If you like, configure other parameters needed in your projects, such as auto-send Sysx banks, tempo settings, window positions, and comments.
8. Choose **File > Save**, and save the file as a template named **my3synths**.

Now, each time you want to start working on a new project, you can simply load your template and start recording.

See also:

Templates

Key Bindings

Key bindings let you associate SONAR commands with keys on both your MIDI keyboard and your computer keyboard. This makes it easy for you to access specific features more quickly and efficiently.

In addition, SONAR supports:

- Importing key bindings from other popular sequencer programs (see “Importing Key Bindings” on page 740)
- Exporting key bindings from SONAR (see “Exporting Key Bindings” on page 740)
- Use of any single key as a key binding (number keys on the number pad are separate keys from the other number keys)
- Changing the key bindings for commands that were previously hardwired, including hotkey commands in the various views

Note: *The SPACEBAR is now “globally” bound to the **Play/stop** button, so that when you have a plug-in window open, you can still start and stop playback with the SPACEBAR.*

Any one or two of the CTRL, ALT, and SHIFT keys can be used in combination with other keys. Preset key combinations appear in bold, with the command that they’re currently assigned to listed at the bottom of the **Key Bindings** dialog.

Rather than tie up all the notes on your MIDI keyboard with key bindings, SONAR lets you define a key binding shift key on your MIDI keyboard that indicates when you want to use a key binding. For example, you could designate the lowest note on your MIDI keyboard as the key binding shift key, and then assign different notes to specific commands (for example, C4 to **Process > Quantize**, C5 to **Process > Groove Quantize**, and so on). If you press the C4 key by itself, the note plays normally. If you press the C4 key in combination with the lowest key on your keyboard (the key binding shift key), then it’s just as if you had chosen the **Process > Quantize** command from the menu.

You can choose one of two options to define the key binding shift key:

- MIDI key (typically, the very lowest or highest key on your MIDI keyboard)
- Controller event (typically, one of the pedals)

If you use a MIDI key as the key binding shift key, then you lose the ability to play that note by itself. When you play the note, SONAR assumes you are about to choose one of the key bindings you

have created and ignores the note. If this is ever a problem, you can disable MIDI key bindings without canceling the key assignments and then re-enable the MIDI key bindings later on.

You can use a key binding to execute a command only when that command is possible. For example, the **File > Save** command is disabled when no projects are open. If you have assigned the CTRL+F2 key combination to the **File > Save** command, it won't do anything when no projects are open.

You can use MIDI key bindings and computer keyboard key bindings at the same time.

You use the **Options > Key Bindings** command to set up and manage your key bindings. Here's how:

To Create a Key Binding Using the Computer Keyboard

1. Choose **Options > Key Bindings** to display the **Key Bindings** dialog.
2. Check **Computer** in the **Type of Keys** list.
3. To quickly scroll to the key or key combination you want, click the **Locate Key** button, and then press the key or keys you want to use.
4. Highlight the key combination you want to use in the Key list. Keys on the number pad appear as Num "n." If a key or combination is already bound to a global command by default, the name of the key appears in bold text, and the command it is bound to appears at the bottom of the **Key Bindings** dialog under **Global Key Assignment**. Binding a key or combination to a command and clicking **OK** overwrites any default binding for that key or combination.
5. In the **Bind Context** menu, select the context in which you want to use the key binding.
6. Highlight the command you want to assign from the **Function** list.
7. Click **Bind** to bind the key combination to the command.

   SONAR places an asterisk next to the key(s) that you chose, and draws a line from the highlighted key(s) to the command that the key(s) will trigger. Any keys that are assigned to commands have asterisks next to them. Any commands that have keys assigned to them list the keys in the **Computer** column and/or the **MIDI** column.
8. Repeat steps 3 through 7 for all the keys you want to bind.
9. If you want to save these key bindings for other sessions, make sure that the **Save Changes for Next Session** check box is checked.
10. Click **OK** when you are done.

SONAR assigns the key(s) you chose.

To Create a Key Binding Using a MIDI Keyboard

1. Choose **Options > Key Bindings** to display the **Key Bindings** dialog.
2. Check **MIDI** in the **Type of Keys** list.
3. Check the **Enable** box to make sure MIDI key bindings are enabled.
4. If you haven't already done so, create a key binding shift key by doing one of the following:
   - Check **Key** under **MIDI Shift Options**, and enter the name of the key you want to use.

- Check **Controller** under **MIDI Shift Options**, and choose the controller you want from the list.

5. Highlight the key you want to bind from the **Key** list (if you click inside the **Key** list to put the focus on it, you can then play a note on your MIDI keyboard, and the note automatically becomes highlighted in the **Key** list).
6. Select the command you want to bind from the **Function** list.
7. Click the **Bind** button.

   SONAR places an asterisk next to the Key that you chose, and draws a line from the highlighted key to the command that it's bound to. Any keys that are assigned to commands have asterisks next to them. Any commands that have keys assigned to them list the keys in the **Computer** column and/or the **MIDI** column.
8. Repeat steps 5 through 7 for all the keys you want to bind.
9. If you want to save these key bindings for other sessions, make sure that the **Save Changes for Next Session** check box is checked.
10. Click **OK** when you are done.

SONAR assigns the key(s) you chose.

To **disable** MIDI key bindings, uncheck the **Enable** box in the **Key Bindings** dialog.

See also:

Importing Key Bindings

Exporting Key Bindings

Importing Key Bindings

SONAR can use key bindings from other sequencer applications. Clicking the **Import** button in the **Key Bindings** dialog allows you to choose a new set of key bindings. After you import new key bindings, you can edit and save them the way you do with the default key bindings.

To Import Key Bindings

1. Choose **Options > Key Bindings** to display the **Key Bindings** dialog.
2. Click the **Import** button to open the Import **Key Bindings** dialog.
3. Navigate to the SONAR program folder (you don't have to store them there).
4. Choose a key bindings file from the choices in the program folder. Key bindings files use the file extension .kbn.
5. Click **Open**.

SONAR loads the key bindings you chose.

Exporting Key Bindings

Clicking the **Export** button in the **Key Bindings** dialog allows you to export the current set of key bindings, so that they are available when you want to switch key bindings.

To Export Key Bindings

1. Choose **Options > Key Bindings** to display the **Key Bindings** dialog.
2. Click the **Export** button to open the **Export Key Bindings** dialog.
3. Navigate to the folder where you want to save the key bindings.
4. Type a name for the key bindings.
5. Click **Save**.

SONAR saves the key bindings, and adds the file extension .kbn to the filename.

Notation and Lyrics

This section describes three SONAR views that are used to edit the music notation and lyrics of your project.

- SONAR's Staff view lets you work with your composition in a standard musical staff, guitar tablature and a virtual guitar fretboard. You can add, move, and delete notes with your mouse or with your computer keyboard. You can add chord names, guitar chord grids, expression marks, hairpin symbols, pedal marks, and lyrics. And you can print professional-quality notation of a complete arrangement or individual parts, with up to 24 staves per page.
- The Meter/Key view lets you view, insert, and edit meter and key changes at any measure boundary in the project.
- The Lyrics view lets you edit a track's lyrics, and can be used to cue you with the lyrics during playback or recording.

See:

The Staff View

Basic Musical Editing

Chords and Marks

Tablature

Working with Percussion

Printing

The Meter/Key View

Working with Lyrics

The Staff View

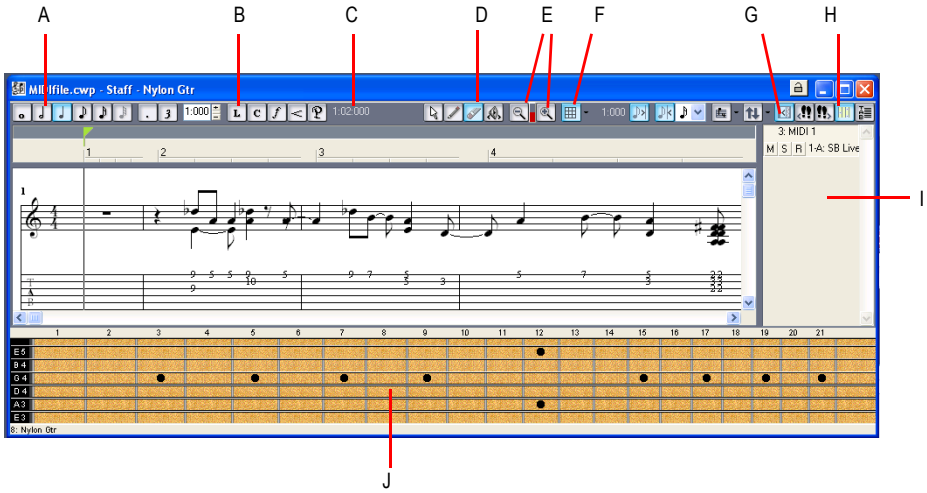
The Staff view is composed of a Staff pane and a Fretboard.

When you first open the Staff view, you may see only the Staff and not the Fretboard. Resize the Staff view by dragging its edges until you can see everything easily. When you save your file, whatever size the Staff view is will be the way it appears the next time you open the file.

The Staff pane displays MIDI note events as musical notation. For some musicians, this may be the most familiar and comfortable view in which to work. The Staff pane provides many features that make it easy for you to compose, edit, and print music.

For guitar players who are new to musical notation, the Fretboard represents the notes in the Staff pane as they would appear on a six-string guitar neck in standard tuning. The number of strings and the tuning are configurable. All notes that appear in the Staff pane at the Now time are shown in the Fretboard. If you enter notes in the Staff at the Now time, they appear on the Fretboard. Likewise, you can enter notes into the Staff at the Now time by clicking the guitar strings on the fretboard. Notes and chords shown in the Fretboard can be easily edited by dragging them up and down the guitar strings.

Figure 124. *The Staff view*



A. *Notehead tools* ***B.*** *Dynamics and markings* ***C.*** *Time and pitch locator* ***D.*** *Editing tools* ***E.*** *Zoom* ***F.*** *Snap grid* ***G.*** *Show/hide track pane* ***H.*** *Fretboard display* ***I.*** *Track list pane* ***J.*** *Fretboard pane*

See:

Staff Pane Layout

The Fretboard

Fretboard pop-up menu

Opening the Staff View

There are three ways to open the Staff view:

- In the Track view, select the MIDI tracks you want to see, then click the **Staff View** button .
- In the Track view, select the MIDI tracks you want to see, then choose **Views > Staff**.
- Right-click on a track in the Clips pane and choose **Views > Staff** from the menu.

You can always change the tracks that are displayed: click the **Pick Tracks** button and select the tracks you want. You can display one or more tracks.

The Staff view lets you edit, delete, copy, and move notes during playback or recording, in real time. This means you can loop over a portion of your project and hear any change you make on the next loop. You can freeze the Staff view from automatic scrolling during playback by pressing the Scroll Lock key.

Like many other views, the Staff view includes zoom tools that let you change the vertical and horizontal scale of the view. The Staff view also has a **Snap to Grid** button. For more information about this feature, see “Defining and Using the Snap Grid” on page 316.

Displaying Tracks

The Staff view also has a Track List pane that allows you to set a track’s Mute/Solo/Arm status and to change track focus.

To view the Track List pane:

- Click the **Show/Hide** button .

To set track focus:

- In the Track List pane, click the track name.

To mute, solo, or arm a track:

- In the Track List pane, click a track’s **M**, **S**, or **R** buttons, respectively.

Note: *You can right-click in the Track List pane to access Snap to Scale commands. For more information about this feature, see “Snap to Scale” on page 501.*

Staff Pane Layout

The Staff pane can display up to 24 staves of standard and percussion notation. When you open the Staff pane, SONAR automatically picks a clef for each track—bass or treble—by looking at the range of pitches in the track. If a track has notes that fall into both clefs, or no notes at all, SONAR automatically splits the track into two staves, treble and bass. You can change the assignment of clefs with the **Staff View Layout** dialog box.

When you split a track into treble and bass staves, you must select a split point. Notes at or above the split are placed into a treble staff, notes below the split are placed into a bass staff.

A wide variety of editing options for notes, layout, and MIDI effects are available from the Staff pane right-click menu.

Percussion settings are discussed in the section “Setting Up a Percussion Track” on page 773.

The Staff pane right-click menu

The Staff pane right-click menu offers the following editing options:

Menu command	Result
MIDI Effects	Opens the **MIDI Effects** submenu. See “MIDI Effects (MIDI Plug-ins)” on page 519 for more information.
Layout	Opens the **Staff View Layout** dialog box.
Quantize	Opens the **Quantize** dialog box. See “Quantizing” on page 520 for more information.
Groove Quantize	Opens the **Groove Quantize** dialog box. See “Quantizing” on page 520 for more information.
Transpose	Opens the **Transpose** dialog box. See “Transposing” on page 482 for more information.
Slide	Opens the **Slide** dialog box.
Interpolate	Opens the **Event Filter Search** dialog box. See “Process > Interpolate” on page 509 for more information.
Length	Opens the **Length** dialog box. See “Stretching and Shrinking Events” on page 486 for more information.

Table 146.

To change the Staff pane layout

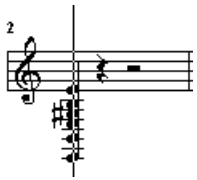
1. Click the **Staff View Layout** button to open the **Staff View Layout** dialog box.
2. Select a track from the list (if the track you want to edit is not in the list, click the **Pick Tracks** button in the **Staff view** toolbar and select it). The **Clef** option shows the track’s clef.
3. Select a new clef from the list.
4. If you select Treble/Bass, select a Split point.
5. If you select one of the Percussion options, click **Percussion Settings** to set up the appearance of percussion notes.
6. Repeat steps 2-5 for other tracks.
7. Click **Close** when you are done.

SONAR displays tracks using the new staff settings.

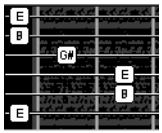
Tip: *If a piano part’s left-hand and right-hand parts overlap, a split point will not correctly separate the two parts into treble and bass staves. You may prefer to put the two parts into two separate tracks.*

The Fretboard

The Fretboard shows you the notes located at the Now time in the Staff pane, laid out on a virtual guitar fretboard. For example, if the Staff pane shows you this:



The Fretboard pane shows you this:



The Fretboard stays in sync with the Now Time during playback and recording, and stays in sync with the scrub time during scrubbing. The color of each note on the Fretboard is the same as the color of the corresponding clip in the Track view. (See “Arranging Clips” on page 299 for information about setting clip properties.)

To turn the display of the Fretboard on or off, click .

See:

Editing Notes and Chords from the Fretboard

Fretboard pop-up menu

Moving Notes from within the Fretboard

MIDI Channels and the Fretboard

To Display Notes on the Fretboard Using their MIDI Channels

To Edit a Chord Symbol

Tablature Settings

Changing Fretboard Texture and Orientation

Quick TAB

Regenerate TAB

Entering Notes from the TAB Staff

Single Note Editing from the TAB Staff

Fretboard pop-up menu

When you right-click the Fretboard in the Staff view, the **Fretboard** pop-up menu appears, giving you choices for note editing, Staff view layout, and Fretboard appearance.

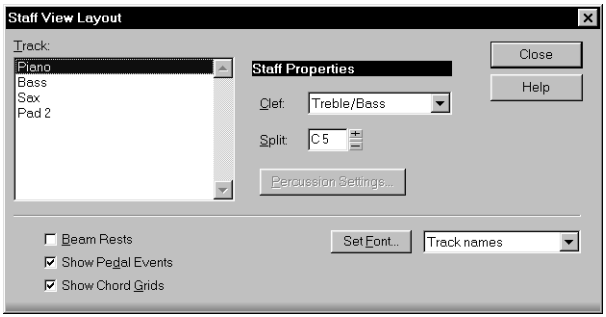
Menu command	Result
Select	Changes your cursor to the Select tool.
Draw	Changes your cursor to the Draw tool.
Erase	Changes your cursor to the Erase tool.
Scrub	Changes your cursor to the Scrub tool.
Layout	Opens the **Staff View Layout** dialog box.
Select Fretboard Track	Controls which of the displayed tracks receive the notes you enter on the Fretboard.
Export to ASCII TAB	Saves the track in ASCII TAB format with the extension .txt.
Mirror Fretboard	Inverts Fretboard so highest-sounding string appears at the bottom.
Rosewood Hi	Fretboard appears in rosewood with high screen resolution.
Rosewood Lo	Fretboard appears in rosewood with low screen resolution.
Ebony Hi	Fretboard appears in ebony with high screen resolution.
Ebony Lo	Fretboard appears in ebony with low screen resolution.
Maple Hi	Fretboard appears in maple with high screen resolution.
Maple Lo	Fretboard appears in maple with low screen resolution.

Table 147.

To Change the Staff View Layout

1. Click the **Layout** button to open the **Staff View Layout** dialog box.

Figure 125. *The **Staff View Layout** dialog*



2. Select a track from the list (if the track you want to edit is not in the list, click the **Pick Tracks** button in the **Staff view** toolbar and select it). The **Clef** option shows the track's clef.
3. Select a new clef from the list.
4. If you select **Treble/Bass**, select a **Split** point. C5 represents middle C.
5. If you select one of the **Percussion** options, click **Percussion Settings** to set up the appearance of percussion notes.
6. Repeat steps 2-5 for other tracks.
7. Click **Close** when you are done.

   SONAR displays tracks using the new staff settings.

Basic Musical Editing

The Staff view's tools let you edit a project by manipulating the elements of standard music notation. Using these tools, you can create and edit notes, chord symbols (guitar fretboards),pedal marks, expression marks, hairpins, and lyrics.

See:

Inserting Notes on the Staff

Inserting Notes with the Fretboard

Selecting Notes

Moving, Copying, and Deleting Notes on the Staff

Moving Notes from within the Fretboard

Auditioning

Changing Note Properties

Deglitch Dialog

Working with Triplets

Beaming of Rests

Changing the Way Notes Are Displayed

Using Enharmonic Spellings

MIDI Channels and the Fretboard

Inserting Notes on the Staff

You can add notes to your composition with simple point-and-click techniques. To help with your composing, SONAR gives you audio feedback as you place each note.

You can insert notes anywhere in the Staff pane, but inserting them at the Now time gives you control over the exact time you want to insert to. The SHIFT+RIGHT/LEFT ARROW command moves the Now Time forward or backward by the amount of the note duration you choose. Six buttons let you select a note duration ranging from a whole note to a 32nd note. Buttons to the right of the notehead buttons let you select dotted note or triplet modifiers. The CTRL+RIGHT ARROW/ CTRL+LEFT ARROW commands pages you through the track, sounding each note as the cursor passes over it. You can also page through the track by clicking the **Play-Next** button or the **Play-Previous** button that are in the **Staff view** toolbar.

Note: *You cannot insert notes whose durations are less than the value in the **Display Resolution** field, which is located in the top level of the **Staff view** toolbar.*

You may want to pick a different snap-to grid value for a particular note. For example, if you want to insert a half note in the last quarter note position in a measure (in order to get two tied quarter notes), you must set the snap resolution to a quarter note. SONAR will automatically convert the half note to two tied quarter notes. The same method can be used to insert a syncopated note, such as a quarter note at an eighth note position.

You may also wish to disable the Fill Durations and Trim Durations options before you enter notes on the staff. This will allow you to see the true durations of all the notes you enter. These options are discussed in “Changing the Way Notes Are Displayed” on page 757.

To Insert a Note on the Staff

1. Disable the **Fill Durations** and **Trim Durations** buttons in the **Staff view** toolbar, if desired (this is usually the best way when you’re entering notes).
2. Click the **Display Resolution** button in the **Staff view** toolbar and choose a resolution that’s as small or slightly smaller than the smallest note you plan to enter.
3. Click the Draw tool .
4. In the second row of the **Staff view** toolbar, select a note duration, and a modifier (dot or triplet) if desired. You cannot insert a note that’s shorter in length than the note in the **Display Resolution** field.

5. Move the Now time to the location where you want the new note by pressing SHIFT+RIGHT ARROW or SHIFT+LEFT ARROW. Notice the vertical line that marks the Now time in the Staff pane. The line moves by the duration of the note you selected to enter.
6. Click the cursor on the vertical line at the pitch that you want.
7. To add a sharp or flat, right-click the note to open the **Note Properties** dialog box—in the **Pitch** field, use the **+** or **-** buttons to raise or lower the pitch, and click **OK**. You can type enharmonic spellings into the **Pitch** field, such as C#5, E”4. and Fx6. The double quotation mark produces a double flat, and the x produces a double sharp.

SONAR places the new note in the staff. If desired, drag the note horizontally or vertically to a new time or pitch.

Inserting Notes with the Fretboard

You can also enter notes onto the staff from the fretboard using the mouse. You always enter notes into the staff at the Now time.

To Insert Notes on the Fretboard with the Mouse

1. Click in the Time Ruler to set the Now time.
2. Click to select the Draw tool.
3. Select a note duration, and a modifier (dot or triplet) if desired.
4. Click on the guitar strings in the fretboard to enter notes. You can enter up to six simultaneous notes (one per string).
5. Advance the Now Time by the current note duration using the right arrow key while holding down the shift key. This allows you to quickly enter a series of notes.

Selecting Notes

Use the Selection tool to make selections. Selection methods in the Staff view are similar to those in other views. Here is a summary:

To do this	Do this
Select a note or other symbol	Click it
Select several symbols at once	Click and drag a rectangle around them
Add symbols to the selection	Press SHIFT and either click on the symbols or drag a rectangle around the events
Add or remove symbols from the selection	Press CTRL and either click on the symbols or drag a rectangle around the events

Table 148.

To do this	Do this
Select symbols in a time range	Click and drag in the Time Ruler
Select symbols between two markers	Click between the markers
Remove all selections	Click in an empty area

Table 148.

Note: *Tied notes must be selected together, since the series is really just a single MIDI note. To select tied notes, you must click or drag a rectangle around the first note of the series.*

Moving, Copying, and Deleting Notes on the Staff

Selections can be cut, copied, pasted, and deleted with **Edit** menu commands. The techniques are similar to those used in other views. Selections can also be dragged and dropped to copy or move them. To keep track of your current position while dragging, you can keep an eye on the time and pitch locator in the upper-right corner of the Staff view.

Notes can be dragged horizontally, to a new time, or vertically, to a new pitch or staff. When you drag a note up or down to a new pitch, the note normally snaps to the notes in the current key signature (diatonic scale). This makes it easy to drag notes quickly among pitches that are in the current key.

If you need to transpose more than a few notes, use the **Process > Transpose** command. For more information, see “Transposing” on page 482.

To Move a Single Note in the Staff View

1. Click the Select tool or the Draw tool .
2. Click the note to be moved.
3. Drag the note to a new time, pitch, or staff.

SONAR moves the note to the new location.

To Move Several Notes in the Staff View

1. Click the Select tool .
2. Select the notes to be moved.
3. Click one of the selected notes.
4. Drag the notes to a new time, pitch, or staff.

SONAR moves the notes to the new location.

To Copy One or More Notes in the Staff View

1. Click the Select tool .
2. Select the notes to be copied.
3. Press and hold the CTRL key.
4. Drag the notes to a new time, pitch, or staff.

SONAR inserts copies of the notes at the new location.

To Erase Notes with the Eraser

1. Click the Erase tool .
2. Click any notehead to erase the note.
3. To erase several notes, click and drag the eraser.

Any notes whose notehead is touched by the eraser will be deleted.

Moving Notes from within the Fretboard

You can drag notes displayed in the fretboard horizontally along each string to change their pitch. They always change in the chromatic scale. You can not drag notes from one string to another.

To Change the Pitch of a Single Note in the Fretboard

1. Click in the Time Ruler to set the Now time to the time of the note you want to change.
2. Click the Select tool or the Draw tool .
3. Drag the note along the string to a new fret.

SONAR moves the note to the new pitch.

To Change the Pitch of a Chord in the Fretboard

1. Click in the Time Ruler to set the Now time to the time of the chord you want to change.
2. Click the Select tool .
3. While pressing SHIFT, click each of the notes you would like to change.
4. While continuing to press SHIFT, drag the notes along the strings.

SONAR moves the notes you selected to the new pitches.

Tip: *You can also move the Now time pointer to the exact note by using the **Step Play** buttons.*

Auditioning

Sometimes it is useful to listen to your music slowly, note-by-note, rather than at full speed. For example, you may need to locate a bad note, or you may be trying to learn the correct fingering for a difficult passage.

The Staff view has two features that let you audition your composition at reduced speed: Scrub and Step Play. The Scrub tool lets you drag a vertical bar over the staff, playing the notes as it goes. You can scrub backward or forward at any speed. Step Play lets you step through the project note by note, in either direction.

To Audition with the Scrub Tool

1. Click the Scrub tool .
2. Drag the mouse horizontally through the Staff pane to play the notes.

SONAR plays any notes the scrub line passes over.

To Play Notes with Step Play

1. Set the Now time by clicking in the Time Ruler.
2. Step through the music as follows:

To do this	Do this
Step forward	Click , or press CTRL+RIGHT ARROW
Step backward	Click , or press CTRL+LEFT ARROW

Table 149.

Changing Note Properties

The Staff view lets you edit all the MIDI parameters for a note, including those not normally portrayed by standard musical notation. Note properties are as follows:

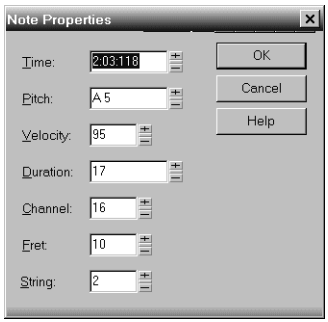
Property	Meaning
Time	The starting time of the note
Pitch	The note's pitch
Velocity	The note's velocity (0 to 127)
Duration	The note's duration, in ticks or in beats and ticks
Channel	The MIDI channel on which the note is played

Table 150.

To Edit a Note's Properties

1. Right-click the note to open the **Note Properties** dialog box.

Figure 126. *The **Note Properties** dialog*



2. Edit the note's properties, as described in the table.
3. Click **OK**.

SONAR changes the note's parameters and redraws the note if necessary.

Deglitch Dialog

When recording MIDI guitar, even the best players occasionally play unintended notes. The Deglitch feature allows you to filter out the softest, shortest, and highest notes in the file.

There are three filters in the **Deglitch** dialog:

Pitch

With the Pitch filter you can set the maximum pitch allowed in the track. If a MIDI event has a higher pitch than the maximum you set, it is removed.

Velocity

With the Velocity filter you can set a minimum velocity allowed in the track. If a MIDI event has a lower velocity than the one you set, it is removed.

Duration

With the Duration filter you can set a minimum note duration for the track in either ticks or milliseconds. If a MIDI event has a shorter duration than the one you set, it is removed.

To Use the Deglitch Filter

1. Select a track or a section of track.
2. Select **Process > Deglitch** from the menu.

   The **Deglitch** dialog box appears.
3. Check each of the filters you want to use.

4. Enter the parameters (maximum or minimum values) you want for each of the filters you are using.
5. Click **OK**.

If you are not happy with the result, select **Edit/Undo** from the menu to restore the original MIDI track.

Working with Triplets

The Staff view places certain limitations on the use of triplets. The limitations are:

- Triplets must occur in full sets of three.
- All three steps in a triplet must be notes (no rests) of the same basic duration.
- There can be no ties in or out of, or within the triplet.

In most cases, the Staff view can recognize triplets in MIDI data. However, the slight timing inaccuracies inherent in live performances can complicate the detection of triplets. If working from performance data, you may find it useful to quantize the notes closer to exact triplet positions using the **Process > Quantize** command. See “Quantizing” on page 520 for details.

To Enter a Triplet

1. Turn on the **Snap to Time** option.
2. Click the Draw tool .
3. Click the appropriate notehead button.
4. Select the **Triplet** option .
5. Enter the first note at the desired location in the staff.

   SONAR inserts all three triplet notes at the same pitch. You can then drag the second and third notes to their correct pitch locations.

Beaming of Rests

The Staff view supports beaming of rests, a practice that is popular with rhythmically complex music. Beam lengths are extended to include rests that are integral parts of the beamed group of notes. Short stems, called stemlets, extend from the beam toward the rest. This makes the rhythms easier to read, because the beat boundaries are made clear.

To Enable Beaming of Rests

1. Click **Layout** button to open the **Staff View Layout** dialog box.
2. Select the **Beam Rests** option.
3. Click **OK**.

   Thereafter, the Staff view beams rests as though they were notes.

Changing the Way Notes Are Displayed

Unlike musical notation programs, SONAR uses the MIDI events themselves as the permanent representation of the music; thus, the Staff view is only an interpretation of a MIDI performance.

MIDI notes do not always correspond exactly to notes on a staff. Whereas a staff defines precise grid-like starting times and durations for notes, a MIDI note can start at any arbitrary time during the project, and last for any length of time. If you record a performance from a MIDI keyboard, for example, you'll find that some notes may start slightly before the beat, and some a little after, and that the notes end a little late or a little early. Although these slight imperfections are what gives a performance its "human" quality, you don't necessarily want to see all these imperfections notated with excruciating precision.

The Staff view has two options you can select to affect the way MIDI notes are displayed on the staff:

Option	Purpose
Fill Durations	Visually rounds up note durations to the next beat or the next note, whichever comes first.
Trim Durations	Visually rounds down note durations if they extend a little way past the start of the next note.

Table 151.

Here's what the Staff view looks like with and without these options:

Figure 127. *Fill and Trim off*

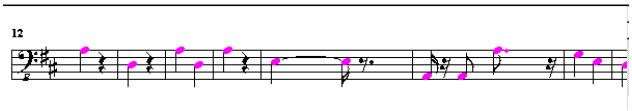
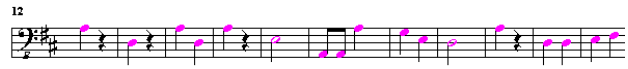


Figure 128. *Fill and Trim on*



On the other hand, if you are entering notes into the Staff view with the mouse, Fill and Trim Durations may produce confusing results. For example, with Fill Durations, an inserted eighth note in 4/4 time would look like a quarter note until you insert another eighth note immediately following it. It is recommended that you turn off the Fill Durations and Trim Durations options when entering notes; these options are more appropriate for looking at notes you recorded via a performance.

Using Enharmonic Spellings

Any musical note can be referred to by several different names. For example, C#3 and Db3 identify the same pitch, as do G#4 and Ab4. The most appropriate name depends upon the current key signature, but can also depend on musical context.

SONAR uses a set of rules to automatically add accidentals (sharps, flats and naturals) to notes based on the current key signature. These rules cover the most common musical situations and usually lead to pleasing results. However, there is no guaranteed right way to resolve accidentals. Doing so ultimately requires knowledge regarding what key or scale is being evoked—knowledge that only the composer possesses. For example, if a modulation is being prepared, then the new key signature has not yet been completely established, and the harmony has already begun to shift. In fact, there may not even be a scale in a diatonic sense: chromatic scales, for instance, are supposed to sharp on the way up and flat on the way down. Because no set of rules will suffice for all situations, the composer needs the ability to override any default choice.

Notes in SONAR normally do not have a forced enharmonic spelling. This means that they will automatically change to match the default for a new key signature. If you specify spelling that matches the default choice, SONAR will drop any forced spelling and switch back to default behavior. Otherwise, the forced spelling is remembered for that note, and will not change to follow the key signature. If you change the pitch of a note by some other means (for instance, by dragging it up or down), it will lose any forced spelling, because it very likely no longer applies to the new pitch. Enharmonic spelling overrides for each note are saved in the project file.

When you type a note's enharmonic spelling, use the following table as a guide:

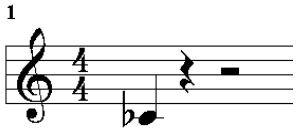
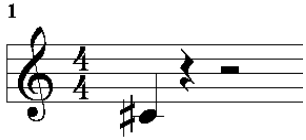
Accidental	Character	Example	Displays as
Flat	b	Cb5	
Sharp	#	C#5	

Table 152.

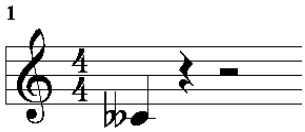
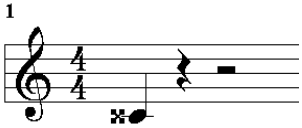
Accidental	Character	Example	Displays as
Double flat	“	C”5	
Double sharp	x	Cx5	

Table 152.

To Change a Note’s Enharmonic Spelling

1. Right-click the note to open the **Note Properties** dialog box.
2. In the **Pitch** textbox, type a new spelling for the note.
3. Click **OK**.

SONAR displays the note with the new enharmonic spelling.

You can change enharmonic spellings in other views, such as the Event List view, by similarly typing a new spelling wherever the note pitch is displayed as a text string.

You can also use the **Process > Interpolate** command to change enharmonic spellings—for example, to change multiple occurrences of Eb5 to D#5, or even all Ebs to D#s. See “Process > Interpolate” on page 509 for more information.

MIDI Channels and the Fretboard

You can display notes on the fretboard based on the note event’s MIDI channel. (Do not confuse this with the Track MIDI channel.) A single track can hold events on many different MIDI channels. See “Assigning a MIDI channel (Chn)” on page 211 for more information. Displaying notes using this method is 100% accurate because each string is represented by an individual MIDI channel. For example, String 1 = MIDI channel 11, String 2 = MIDI channel 12, etc.

To Display Notes on the Fretboard Using their MIDI Channels

1. Set your MIDI guitar to transmit on 6 consecutive channels. This is often referred to as “MONO” mode. Refer to your MIDI Guitar device documentation for more information.
2. Select and Arm a track.

3. If you want the data from all 6 strings to be recorded to a single track, set the **Input** to **OMNI**. If you want each string on a separate track, you need to set up each individual track to record on the corresponding MIDI channel. The **GT-30 Guitar Synthesizer** template is designed to do this, so you may want to open that from the **Quick Start** menu or from the **File** menu. To use the **File** menu method, choose **File > Open** and choose Cakewalk Template from the **Files of type** field. Then choose the **Roland GT-30 Guitar Synthesizer** template.
4. Open the Staff view.
5. Click the **Staff View Layout** button .
6. Click **Define**.
7. In the **Method** field, click **MIDI Channel**.
8. In the **1st Channel** field, set SONAR to transmit on the same series of MIDI channels that you chose in step 1. Select **1** for 1-6, **2** for 2-7, etc.

   MIDI guitar devices can transmit in MONO using a different series of MIDI channels, but SONAR needs to be listening to the same channels in order to properly display the MIDI guitar input.
9. Click **Close**.
10. Click **OK**.

SONAR displays notes on the Fretboard based on their MIDI channels.

If you are planning to record or input notes from a MIDI guitar synth or MIDI converter, you need to set this up on the instrument. In the case of the Roland GT-30, for example, you set it to send on MIDI Channel 11, MONO. This sends out each corresponding string on channels 11-16.

Chords and Marks

The Staff view lets you add and edit chord symbols, dynamic markings, hairpin symbols, and pedal events. Like notes, these symbols are placed in the score with the Draw tool. They can be selected, cut, copied, pasted, deleted, and dragged and dropped. With the exception of pedal marks, though, these symbols have no audible effect; they serve only to enhance and clarify the printed score.

See:

Adding Chord Symbols

Adding Expression Marks

Adding Hairpin Symbols

Adding Pedal Marks

Adding Chord Symbols

The Staff view lets you enter chord symbols above the staff. You can enter both ordinary chord names and guitar chord symbols, which display both the chord name and fingering. SONAR has a

large number of predefined chords from which you can choose. You can also define and save your own chords.

If a track is split into treble/bass staves, chords are allowed only above the upper (treble) staff.

SONAR stores its library of chords in the file `Chords.liw`. The chords in the library are sorted into groups. You can add and remove chords from the library, create new groups (i.e., for alternative guitar tunings), and add chords from a different library file.

You edit chords in the **Chord Properties** dialog box. Chord properties are shown in the following table:

Property	Meaning
Time	The time of the chord, in measure, beat, and tick (MBT) format
Name	The name of the chord
Group	The chord group

Table 153.

The **Chord Properties** dialog box also lets you draw guitar chord grids and manage the chord library.

You can suppress the display of all guitar chord diagrams by deselecting the **Show Chord Grids** option in the **Staff view's Layout** dialog box. With this option disabled, only chord text appears.

To Add a Chord Symbol

1. Click the Draw tool .
2. Select the Chord tool .
3. Position the pointer above the staff (the pointer changes to a pencil when you are in a legal position).
4. Click to place a chord symbol.

SONAR inserts a copy of the most recently added chord (by default, C). You can then edit the symbol to display the chord you want.

To Move a Chord Symbol

1. Click the Draw tool .
2. Drag the chord symbol to a new location.

To Edit a Chord Symbol

1. Right-click the symbol to open the **Chord Properties** dialog box.

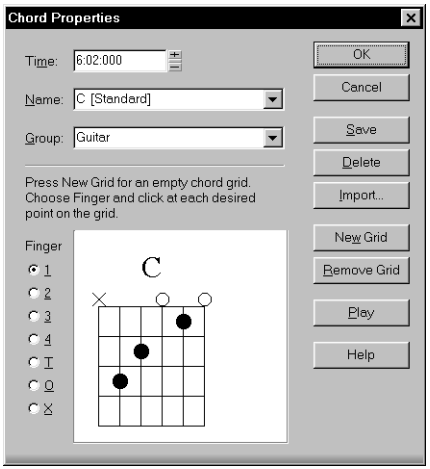
2. Edit information about the chord according to the table:

To do this	Do this
Move a chord in time	Change the Time property.
Give the chord a new name	Select a chord from the drop-down list, or type a new name. Use # for sharp and b for flat.
Add descriptive text to the chord name	Type the text in square brackets after the chord name. The text does not appear in the Staff view.
See a different set of chords	Select a group from the list. This option only applies if you have created a custom chord library.

Table 154.

3. If desired, select a group from the list and/or create a guitar chord grid.

Figure 129. *The **Chord Properties** dialog*



4. Click **OK**.

The Staff view displays the chord with the new properties, moving it to a new time if necessary.

To Add a Guitar Chord Grid

1. Right-click the chord symbol to open the **Chord Properties** dialog box.

2. Follow the instructions in the table:

To do this	Do this
Display a blank chord grid	Click **New Grid**
Place a dot on the grid	Select the finger number (1-4, or T for Thumb), then click the grid at the appropriate string and fret location
Assign an open string	Select O, then click on the string
Assign a muted string	Select X, then click on the string
Change the finger assigned to a dot	Click the dot repeatedly to cycle through the fingers
Insert a fret designation	Click to the right of the grid and enter the number of the index finger fret in the **Chord Fret Number** dialog box
Play the chord (Audition)	Click **Play**
Remove the chord grid	Click **Remove Grid**

Table 155.

3. Click **OK**.

The Staff view displays the chord with the new guitar chord grid.

To Manage the Chord Library

1. Right-click the chord symbol to open the **Chord Properties** dialog box.
2. Follow the instructions in the table:

To do this	Do this
Add a chord to the library	Select a group, enter a name in the **Name** box, enter a guitar grid (if desired), and click **Save**.
Delete a chord from the current group	Select the chord from the list and click **Delete**.
Add a new group	Type a name for the group in the **Group** textbox and click **Save**.
Delete a group	Select a group from the list and click **Delete**.
Merge chords from an external chord library	Click the **Import** button and select a file. Chord libraries have the extension .liw.

Table 156.

3. Click **OK**.

SONAR saves the chord library with the changes you made.

Adding Expression Marks

Expression marks tell a performer how to interpret the notes and durations on the page. They provide a necessary supplement to simple notation, in which notes have only pitch and duration, but no hint of how loudly, softly, or smoothly, they are to be played. Dynamic marks—from *ppp* (pianissimo) for “very, very softly” through *fff* (fortissimo) for “very, very forcefully”—allow notation to convey volume instructions. Expression marks are also needed to specify other aspects of performance, such as whether a passage is to be played legato or staccato. Finally, expression marks can be used to convey to the performer the composer's suggestions or requirements as to how a passage should be interpreted. In such cases the language used can leave much to the imagination, as in *with majesty* or *abrasively*.

Expression marks do not change the underlying MIDI data. They only provide information to the reader on how a piece should be performed.

If the track is split into treble/bass staves, expression marks are allowed only below the treble staff.

When entering an expression mark, you can leave a dangling hyphen at the end of an expression mark to insert automatic spaced hyphens until the next expression mark. For example:

cresc. - - - *ff*

It is often desirable to terminate such a series of hyphens with a blank expression mark. For example:

accel. - - -

Expression text is italicized in the Staff view. Standard dynamic markings also appear bold.

To Add an Expression Mark

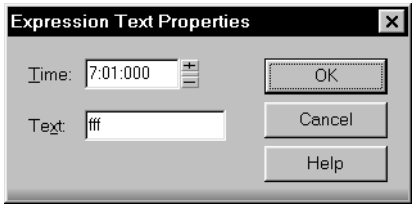
1. Click the Draw tool .
2. Select the Expression tool .
3. Position the pointer below the lowest note in the staff. (The pointer changes to a pencil when you are in a legal position.)
4. Click to open an insertion box.
5. Type the expression mark text. Press ESC to abort the operation.
6. Press ENTER, or press TAB or SHIFT+TAB to move to the next or previous mark, respectively.

SONAR inserts the new expression mark below the staff.

To Edit an Expression Mark

1. Right-click the expression mark to open the **Expression Text Properties** dialog box.

Figure 130. *The **Expression Text Properties** dialog*

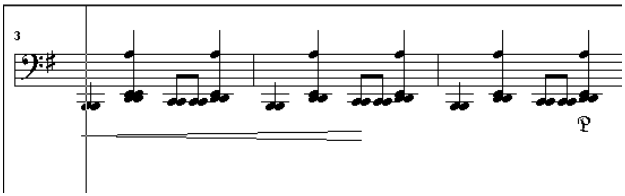


2. Edit the time and text of the expression mark as desired.
3. Click **OK**.

The Staff view displays the expression mark with the new text, including moving it to a new time if necessary. You can also use the Draw tool and click on an expression mark directly to change its text.

Adding Hairpin Symbols

Some musical phrases vary dynamically, increasing or decreasing in loudness for dramatic effect. SONAR lets you insert traditional crescendo and diminuendo hairpin symbols that convey this information to a performer, as shown here:



If the track is split into treble/bass staves, hairpin symbols are allowed only below the treble staff.

To Add a Hairpin Symbol

1. Click the Draw tool .
2. Select the Hairpin tool .
3. Position the pointer below the staff (the pointer changes to a pencil when you are in a legal position).
4. Click to place a hairpin symbol.

SONAR inserts a copy of the most recently added hairpin symbol, which you can edit as desired.

To Edit a Hairpin Symbol

1. Right-click on the hairpin symbol you want to edit.

The **Hairpin Properties** dialog appears.

2. Change any of the following parameters:
   - **Time.** The beginning time of the hairpin symbol
   - **Crescendo or Diminuendo.**
   - **Duration.** Enter the number of beats followed by a colon (for example 4: for one measure in 4/4 time) or a PPQ number value.

Adding Pedal Marks

Pedal marks traditionally indicate where the sustain pedal of a piano is to be pressed and for how long. With SONAR, you can achieve the same effect by inserting a pair of symbols indicating when the sustain pedal controller is to be turned on (down) and when it is to be turned off (up). Unlike chord symbols, expression marks, and hairpin symbols, each pedal symbol corresponds to a MIDI event. The other symbols are purely ornamental, intended to provide a composer with a way to communicate suggestions or requirements to performers.

Pedal event parameters are as follows:

Parameters	Meaning
Time	The time of the event, in measures, beats, and ticks (MBT).
Channel	The MIDI channel on which the event will be sent.
Value	The event value. A value of 127 depresses the pedal, a value of 0 raises it. (Some advanced synthesizers support values between 0 and 127 for “partial pedaling.”)

Table 157.

If the track is split into treble/bass staves, pedal marks are allowed only below the bass staff.

You can suppress the display of all pedal marks by deselecting the **Show Pedal Events** option in the **Staff view's Layout** dialog box.

To Add a Pedal Mark

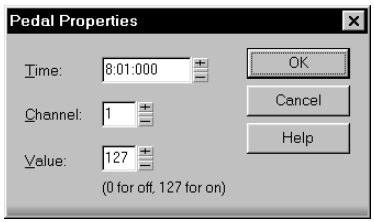
1. Click the Draw tool .
2. Select the Pedal tool .
3. Position the pointer below the staff (the pointer changes to a pencil when you are in a legal position).
4. Click to place a pedal mark.

SONAR inserts a pair of pedal symbols (a pedal down and a pedal up). You can click and drag either symbol to a new time.

To Edit a Pedal Event

1. Right-click the pedal symbol (pedal down or pedal up) to open the **Pedal Event Parameters** dialog box.

Figure 131. *The **Pedal Proerties** dialog.*



2. Edit the pedal event parameters, as described in the table above.
3. Click **OK**.

SONAR changes the pedal event parameters, including moving the symbol to a new time if necessary.

Tablature

The Staff view can display guitar or bass MIDI tracks as tablature. You can generate and edit tablature or enter notes on either the fretboard or on the tablature staff to create a new track. You can export tablature to an ASCII file for printing or distribution on the Web.

See:

Tablature Settings

Changing Fretboard Texture and Orientation

Quick TAB

Regenerate TAB

Entering Notes from the TAB Staff

Single Note Editing from the TAB Staff

Editing Chords or Groups of Notes from the TAB Staff

Editing Notes and Chords from the Fretboard

Tablature Settings

Both the **Staff View Layout** dialog box and the **Tablature Settings** dialog box create tablature settings for a whole track at a time. To modify tablature for selected parts of a track, select part of a track and use the Regenerate command.

In the **Staff View Layout** dialog box you can choose a preset style of tablature by choosing from the **Preset** pop-up menu, or you can define your own style by clicking the **Define** button in the **Staff View Layout** dialog box to open the **Tablature Settings** dialog box.

To Define a Tablature Style

1. In the **Staff View Layout** dialog box, click the name of the track you want to define tablature for.
2. Click the **Define** button (lower right corner).

   The **Tablature Settings** dialog box appears.
3. Click the **Tablature** tab and choose a tablature method from the **Method** drop-down list. There are three methods to determine how the TAB is displayed:
   - **Floating.** Which allows the notes to spread over the entire fretboard
   - **Fixed.** This specifies where on the neck these notes should be played. When **Fixed** is selected the **Finger span** and **Lowest fret** fields are used together to define the "box" where the notes are displayed. The **Finger span** parameter determines how many consecutive frets will be used to display the note. For example, if **Finger span** is set to **4**, then SONAR will attempt to place all the notes within those 4 frets. The **Lowest Fret** then determines where on the fretboard the notes will be displayed within the **Finger span**. The red box in the fretboard display changes to reflect the settings in these two parameters.
   - **MIDI Channel.** This uses the event's MIDI channel to determine which string the note should be displayed on. When **MIDI Channel** is selected, the user chooses which series of MIDI Channels should be considered. This is useful for MIDI guitarists that record parts in MONO mode, where each string transmits on a different MIDI channel. (Values: 1 - 11). Selecting **1** in the **1st Channel field** will cause it to use MIDI channels 1 - 6, selecting **2**, 2 - 7, and so on.)

Note: *Select the **Skip Channel 10** option if you are using a Yamaha G50 or other device which reserves channel 10.*

4. Type a number into the **Number of Frets** field. This determines how many frets the guitar has that the tab is based on.
5. In the **String Tuning** fields, choose the instrument from the drop-down list and number of strings from the **Number of Strings** field.

   The open string pitches for the instrument you choose automatically appear in the **String Number** fields below the drop-down list.
6. Customize any of the open string pitches by using the **+** or **-** buttons on the **String Number** fields.
7. Save your settings by typing a name into the **Preset** field at the top of the dialog box and clicking the disk icon next to it. You can remove presets from the list by clicking the **X** button next to the disk icon.

The next time you want to use these settings for a track, choose your Preset in the **Staff View Layout** dialog box from the **Presets** drop-down list.

Changing Fretboard Texture and Orientation

You can change fretboard texture and orientation (high string on top or bottom of neck) in the **Staff View Layout** dialog box, or by right-clicking the Fretboard.

To Change the Fretboard Texture and Orientation

1. Open the **Staff View Layout** dialog box.
2. Click the **Define** button (lower right corner).

   The **Tablature Settings** dialog box appears.
3. Click the **Fretboard** tab.
4. In the **Texture** field, choose a texture from the drop-down list.
5. If you want to reverse the standard string orientation, in the **Orientation** field click **Low String on Top (Mirror)**.
6. Click **OK**.

The Fretboard changes to reflect your choices.

Quick TAB

SONAR quickly creates a tablature based on standard fingering patterns. After you try the quick version, you can customize the tablature to your liking.

To Create a Quick TAB

1. Open a file that contains a MIDI guitar track.
2. In the Track view, select the track number of the track you want to display tablature for.
3. Select **Views > Staff**.

   The Staff view appears, displaying a fretboard and the notation of your MIDI track. To see everything, you may need to resize the Staff view by dragging the top border upward a few inches.
4. From the **Staff view** toolbar, click the drop-down arrow on the **Staff View Layout** button to display the tablature drop-down list.
5. Choose **Quick TAB** from the drop-down list.

   A tablature grid appears, displaying the fret numbers for all the notes in the track.
6. From the **File** menu, choose **Save**. Saving your file saves TAB settings for each track you generated TABs for.

Press the SPACEBAR to play your file. Notice that the Fretboard displays the name of each note above the string and fret you would play it on as the note plays.

Regenerate TAB

The **Regenerate TAB** command works on selected regions in a track to modify the fingering according to the method you choose. The TAB display by default uses the **Floating** algorithm which allows the notes to spread over the entire fretboard. By choosing the **Fixed** algorithm instead, you

can designate a specific finger span and lowest fret which causes the TAB of a selected region to be displayed within this range. This usually creates a more compact fingering system.

The **Regenerate TAB** command gives you a third choice for displaying tablature MIDI channel. This uses the event's MIDI channel to determine which string the note should be displayed on. When **MIDI Channel** is selected, the user chooses which series of MIDI Channels should be considered. This is useful for MIDI guitarists that record parts in MONO mode, where each string transmits on a different MIDI channel.

To Regenerate TAB

1. In the Staff view, use the Select tool to drag a rectangle around the notes or TAB numbers you want to change.
2. In the **Staff view** toolbar, click the drop-down arrow on the **Staff View Layout** button to display the **Tablature** drop-down list.
3. Choose **Regenerate TAB** to open the **Regenerate Tablature** dialog box.
4. Select **Fixed** from the **Method** field and fill in values for **Finger Span** (usually 4), **Lowest Fret**, and **Number of Frets** (usually 21).
5. Click **OK**.

SONAR regenerates a TAB based on your specifications. If notes are out of the range you specified, SONAR displays them as close to that range as possible.

Entering Notes from the TAB Staff

You can enter notes or chords directly from the TAB staff.

To Enter Notes from the TAB Staff

1. Open the Staff View, and choose **Quick TAB** from the **Tablature** drop-down menu.
2. Press CTRL+HOME to move the Now Time to the start of the project. You may want to display the Now Time by choosing **Views > Big Time**.
3. Choose the desired note duration (keyboard shortcut: press 1 for whole note, 2 for half, 3 for a 32nd note, 4 for quarter, 6 for a 16th note, 8 for an 8th note).
4. Click the Draw tool.
5. Enter a note by clicking a line in the TAB staff.
6. Without letting go of the mouse, click and drag the cursor up to set the fret number.

Tip: *You can move ahead in the track by pressing SHIFT+RIGHT ARROW, and move back in the track using SHIFT+LEFT ARROW. The Now Time moves by the amount of the note duration you choose in the **Staff view** toolbar.*

Single Note Editing from the TAB Staff

SONAR enables you to edit single notes from the TAB staff in several ways:

- With the Draw tool selected, drag fret numbers up or down. When you reach the desired fret number, release the mouse.
- With the Draw tool selected, move a note to a different string by holding down the ALT key while you drag the fret number to a different line. If the note you are moving won't play on the string you are dragging it to, you won't be able to move it.
- Right-click the fret you want to edit. A list of fret numbers appears. Select the one you want, and the fret you right-clicked changes to the fret number you selected.

Editing Chords or Groups of Notes from the TAB Staff

To edit chords or groups of notes in the TAB staff, first select which notes you want to edit, and then drag them to new pitches or strings.

To Edit Chords or Groups of Notes from the TAB Staff

1. Click the Select tool in the **Staff view** toolbar.
2. In the TAB staff, drag a rectangle around the chord or group of notes you want to edit, and release the mouse.
3. Drag the fret numbers you selected up or down by the amount you want.
4. You can drag the notes to different strings by holding down the ALT key while you drag. If the notes you are moving won't play on the strings you are dragging them to, you won't be able to move them.

To Export to an ASCII TAB File

1. Select the track you want to export.
2. Open the Staff view.
3. In the Staff view, click the **Export to ASCII TAB** button.

   The **Save As** dialog appears.
4. Enter a file name in the **File name** field.
5. Click **OK**.

SONAR saves the track with the file extension .txt.

Editing Notes and Chords from the Fretboard

You can transpose single notes or chords from the Fretboard.

To Transpose Single Notes

1. Move the Now Time to the note you want to edit by pressing SHIFT+RIGHT/LEFT ARROW. You may need to change the note duration by clicking one of the note icons in the **Staff view** toolbar.
2. Use the Select tool to drag the note left or right on the fretboard.

To Transpose Chords

1. Move the Now Time to display the chord you want to transpose.
2. SHIFT-select all the notes in the chord.
3. SHIFT-drag the chord to a new position and release the mouse.

Entering Notes from the Fretboard

If you prefer to work with the Fretboard instead of a musical staff, Cakewalk makes it easy to enter notes from the Fretboard. You can enter single notes or chords by clicking the string and fret of the note you want to enter at the Now Time position.

1. Display the track you want to add notes to in the Staff view.
2. In the **Staff view** toolbar, click the Draw tool.

   Now the cursor appears as a pencil when you move it over the Staff or Fretboard.
3. Move the Now Time to where you want to start entering notes by pressing SHIFT+RIGHT ARROW or SHIFT+LEFT ARROW. Each press of the arrow moves the Now Time by the amount of the note duration, which you select by clicking the note icons in the **Staff view** toolbar. You may want to display the Now Time by choosing **Views > Big Time**.
4. Enter a note by clicking the string and fret where you would play the note.

   The note appears on the Fretboard, in the Staff, and in the TAB if you have generated one (you can generate a Quick TAB by choosing **Quick TAB** from the **Tablature** drop-down menu that you open by clicking the drop-down arrow on the **Staff View Layout** button).
5. If you are entering a chord, continue clicking notes at the same Now Time. To move ahead, press SHIFT+RIGHT ARROW and click a new note duration, if desired.

You can delete a note right after you enter it by pressing CTRL+Z, or at any time by clicking the Eraser tool and clicking the note in the notation or TAB staffs.

Cakewalk gives you several options to play and hear the notes in your track:

- Scrubbing enables you to click each note in the Fretboard and hear it play. Select the Scrub tool and click the note.
- Scrub strumming enables you to “strum” chords by dragging the Scrub tool through a chord. With the Scrub tool selected, drag through a chord on the Fretboard from below it or above it and back and forth.
- CTRL+RIGHT ARROW/CTRL+LEFT ARROW moves the cursor through the track, playing each note as it reaches it.

Working with Percussion

The Staff view can display percussion tracks on a five-line percussion staff or on a single percussion line. The staff usually displays notes for a drum set or multiple percussion instruments; the line is used to display notes for a single instrument (although it need not be so).

SONAR lets you control the appearance of percussion staffs in considerable detail. You can display percussion notes using several different types of noteheads and articulation symbols, and you can map any percussion sound to any position on the percussion staff (in a percussion track, each MIDI note value designates a different percussion instrument; mapping lets you display any instrument in any position on the staff, regardless of the underlying MIDI note value). You can save your settings as a preset, and use them again on other tracks and in other projects. SONAR supplies a standard preset based on the General MIDI percussion standard and popularly accepted percussion staff positions and noteheads.

See:

Setting Up a Percussion Track

Setting Up a Percussion Staff or Line

Ghost Strokes

Setting Up a Percussion Track

Before you use the percussion capabilities of the Staff view, your percussion track should be set up correctly. This will allow you to hear the proper sounds when placing notes and during playback, and will allow you to see the correct percussion instrument names rather than generic note names in the Piano Roll view, Event List view, and **Percussion Notation** dialog box.

To Set Up a Percussion Track

1. Right-click on the track in the Track pane and choose **Track Properties** to open the **Track Properties** dialog box.
2. Assign the output and channel for your percussion instrument. For example, if the output is assigned to a sound card that supports General MIDI, use channel 10.
3. Click **Instruments** to open the **Assign Instruments** dialog box.
4. Make sure that the output/channel combination used by your track is assigned to a percussion instrument definition. For example, channel 10 of a General MIDI output should be assigned to the **General MIDI Drums** instrument definition.
5. Click **OK** in both dialog boxes.

SONAR shows the new track output and channel in the Track view, and will use the proper percussion instrument names in the Piano Roll view, Event List view, and **Percussion Notation** dialog box.

For more information about instrument definitions, see the online help topic: Instrument Definitions.

Setting Up a Percussion Staff or Line

The first time you display a percussion track in the Staff view, SONAR picks a default percussion clef for the track. Tracks with only one note value are assigned the Percussion Line clef. Tracks with multiple note values are assigned the Percussion Staff clef.

If you want to change a Percussion Staff to a Percussion Line or vice versa, or if you want to change another type of staff to a percussion staff, you can do so in the **Staff View Layout** dialog box. If you change a track's clef to a non-percussion clef, the percussion notation settings will be lost.

The lowest and highest lines on the Percussion clef are E5 and F6, respectively. The Percussion Line represents E5.

By default, percussion staves are given SONAR's default note bindings and notehead assignments. If you want to use your own notation, or if you want to set up the appearance of a percussion line, you need to use the **Percussion Notation Key** dialog box. In this dialog box, the percussion sounds and staff positions that are bound have an asterisk near their names. When you select a bound percussion sound, a line joins the sound to its staff position. Each percussion sound can be bound only to a single position, but each position may be bound to several sounds. You can use different notehead types and articulation symbols to visually distinguish the sounds.

To Assign a Percussion Staff or Line to a Track

1. Click the **Staff View Layout** button to open the **Staff View Layout** dialog box.
2. Select your percussion track from the list.
3. Select **Percussion Staff** or **Percussion Line** from the **Clef** drop-down list.
4. Click **Percussion Settings** to set up the appearance of percussion notes (see below).
5. Click **Close**.

SONAR changes the track's clef to the selected percussion clef.

To Set Up a Track's Percussion Notation Key

1. Click the **Staff View Layout** button to open the **Staff View Layout** dialog box.
2. Select your percussion track from the list.
3. Click **Percussion Settings** to open the **Percussion Notation Key** dialog box.
4. Set up the percussion notation key according to the following table:

To do this	Do this
Map (bind) a percussion sound to a line or space on the staff	Select the sound (or corresponding MIDI note) in the MIDI Note list, select the intended position in the percussion staff in the Display As list, then click **Bind**.
Set the notehead and articulation mark for a percussion sound	Select the sound in the **MIDI Note** list, then select a **Notehead Type** and **Articulation Symbol**. (Only bound sounds can be assigned a notehead type and articulation symbol other than the default.)
Control how unbound percussion sounds display	In the **Display As** list, click the pitch that you want all unbound notes to display as. Then select a **Notehead Type** and **Articulation Symbol**, then click the **Default note** button to apply your changes.

Table 158.

To do this	Do this
Remove a binding	Select the percussion sound in the **MIDI Note** list, then click **Unbind**. Unbound notes are displayed in the default position.
Load a preset	Select the preset from the **Preset** list.
Save your settings as a preset	Click the **Save** button and enter a preset name.
Clear all bindings	Click **Zap All**.
Select notes in the note lists with a MIDI keyboard	Click in the **MIDI Note** or **Display As** list, then strike a key on your keyboard.

Table 158.

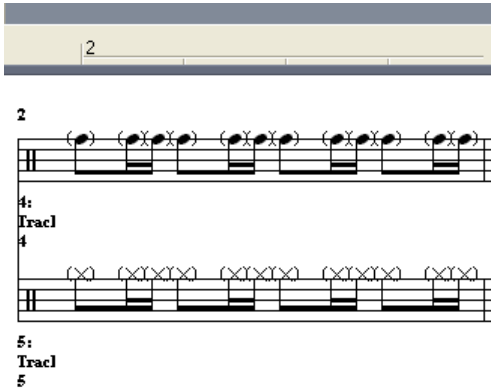
5. Click **OK** to close the **Percussion Notation Key** dialog box.
6. Click **Close** to close the **Staff View Layout** dialog box.

The Staff view shows the percussion clef with the note bindings and noteheads you assigned.

Ghost Strokes

In percussion notation, parentheses around a note mean that it is a ghost stroke, played very lightly and barely heard. SONAR supports ghost strokes by displaying parentheses around any percussion note event with velocity less than 32 (a fixed, arbitrary threshold). If necessary, you can adjust the Vel+ parameter of the track and the velocities of the individual notes to effectively move this threshold without changing the way the note sounds.

The picture below shows two tracks displaying ghost strokes:



Printing

The Staff view provides printing support of standard musical notation in nine staff sizes. The Staff view prints general project information from the **File Info** dialog box (see “Labeling Your Projects” on page 284) at the beginning of the score, including the song's title (or file name), subtitle (dedication), playing instructions, author/composer, and copyright. In addition, SONAR identifies the tracks by number and name, and numbers each measure and each page.

SONAR lets you select a size for your printed score. Engravers have nine standardized sizes of the five-line staff. The vertical distance between the lines of each staff is called its rastral size, or measurement. Each rastral size has a number and is used by publishers for a specific genre of musical composition.

Number	Trade names	Genre usage
0	Commercial or Public	Wire-bound manuscript
1	Giant or English	Elementary band and orchestra books; instruction booklets
2 or 3	Regular, Common, or Ordinary	Sheet music for concertos and classics
4	Peter	Folios, works for organ, etc.
5	Large middle	Band/wind ensemble music; sheet music
6	Small middle	Chorals; condensed sheet music
7	Cadenza	Pocket editions; cues in piano parts; military marches
8	Pearl	Thematic advertisement; ossia

Table 159.

To Print a Score

1. Make sure the Staff view is the current window.
2. Choose **File > Print Preview**.
3. If you want, click **Zoom**, or click in the music, to zoom the view in and out.
4. Click the **Configure** button to select a rastral size.
5. When zoomed out, you can press PAGE UP and PAGE DOWN to navigate between pages.
6. Click **Print**.

SONAR displays the **Windows Print** dialog box, from which you can set up your printer and print the score.

Alternatively, you can choose **File > Print** and skip the print preview window.

Can't print if Staff view is floating

It is not possible to print the Staff view if the Staff view is float-enabled. If necessary, temporarily disable floating if you need to print from the Staff view.

The Meter/Key View

The Meter/Key view lets you enter meter and key changes at measure boundaries. Meter and key changes affect all tracks.

See:

What Is Meter?

What Is Key?

Opening the Meter/Key View

Adding and Editing Meter/Key Changes

Music Notation for Non-concert-key Instruments

What Is Meter?

The meter—also known as the time signature—describes how to divide time into rhythmic pulses. When you set the meter, you are specifying the number of beats per measure and the note value of each beat. Common meters include:

- 2/4 (two beats per measure, quarter note gets a beat)
- 4/4 (four beats per measure, quarter note gets a beat)
- 3/4 (three beats per measure, quarter note gets a beat)
- 6/8 (six beats per measure, eighth note gets a beat)

The top number of a meter is the number of beats per measure, and can be from 1 through 99. The bottom number of a meter is the value of each beat; you can pick from a list of values ranging from a whole note to a thirty-second note.

The meter affects several things in SONAR:

- Metronome accents
- How measure, beat, and tick (MBT) times are calculated and displayed
- How the Staff view is drawn

While SONAR in general allows meters to have up to 99 beats per measure, the Staff view cannot display such measures. You will receive an error message if you try to use the Staff view with meters exceeding its limit.

Internally, SONAR stores times as “raw” ticks or clock pulses. The **timebase**—the number of pulses per quarter note (PPQ)—is adjustable, from 48 to 960 PPQ. If you are using a timebase of 120 PPQ

and the project file is in 4/4 time, then a whole measure equals 480 ticks. See “Setting the MIDI timing resolution” on page 241 for more information about the timebase.

Usually the easiest approach to working with meter changes is to set all of them up before doing any recording. Use the Meter/Key view or the **Insert > Meter/Key Change** command to add meter changes at the desired measures.

What Is Key?

In musical terms, a key is a system of related notes based on the tonic (the base pitch) of a major or minor scale. A key signature is a group of sharps or flats placed immediately to the right of the clef sign. The key signature tells a performer that certain notes are to be systematically raised or lowered.

There are fifteen different key signatures—seven with sharps, seven with flats, and one without either. The fifteen key signatures correspond to fifteen different major scales, and to fifteen different minor scales (for example, the key signature for C major is the same as for A minor).

The key signature affects several things in SONAR:

- The key signature controls how SONAR displays notes. In the Event List view and some dialog boxes, SONAR converts the MIDI pitch number to labels like Db (D-flat in the key of C).
- The Staff view uses the key signature to display notation correctly.
- How the notes are transposed when the **Diatonic** option is enabled.

The key signature affects only how SONAR displays pitches for you. Changing the key signature does not affect the MIDI key number (pitch) stored with each note. To actually transpose pitches, use the Transpose command or edit notes individually by using the Piano Roll, Event List, or Staff views.

Note: *Groove clips are not affected by changes to your project’s key. Groove clips follow the default project pitch value, located on the **Markers** toolbar, and Pitch markers in the Time Ruler. For more information, see “Using Pitch Markers in the Track View” on page 425.*

Frequently you use only one key signature for an entire project, but SONAR supports multiple key signatures and multiple meter changes in a project. The default key is C. You can change these defaults by creating your own default template file. For more information, see “Templates” on page 735.

Opening the Meter/Key View

To open the Meter/Key view, click or choose **Views > Meter/Key**.

The Meter/Key view displays a list of meter/key changes in the project. There is always an entry for measure 1, because there must always be a meter and key signature for the project. The default meter is 4/4 and the default key is C. You can change these defaults by creating your own default template file. For more information, see “Templates” on page 735.

Each meter/key change has the following properties:

Property	Meaning
At Measure	The measure where the meter/key change takes place.
Beats per Measure	The number of beats per measure, the upper number in the time signature.
Beat Value	The note length of a beat, the lower number in the time signature. 2 corresponds to a half note, 4 to a quarter note, 8 to an eighth note, etc.
Key Signature	The key signature.

Table 160.

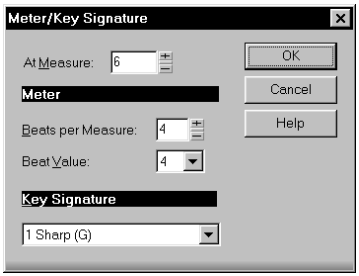
Adding and Editing Meter/Key Changes

The Meter/Key view displays a list of all the meter/key changes in the project. You can add, delete, or edit meter/key changes by clicking the buttons at the top of the view. You can also insert meter/key changes into the project with the **Insert > Meter/Key Change** command.

To Add a Meter/Key Change

1. Open the Meter/Key view.
2. Click **Add** , or choose **Insert > Meter/Key Change**, to open the **Meter/Key Signature** dialog box.

Figure 132. *The **Meter/Key Signature** dialog*



3. Enter information about the new meter/key change.
4. Click **OK**.

SONAR inserts the meter/key change into the project. The meter/key change will appear in the Staff view at the appropriate measure.

To Delete a Meter/Key Change

1. Select the meter/key change to be deleted from the list.
2. Select additional meter/key changes by using SHIFT-click and CTRL-click.

3. Click **Delete** ✕.

SONAR removes the meter/key change from the project. You cannot delete the first meter/key change from measure 1 of a project.

To Move a Meter/Key Change

1. Select the meter/key change to be moved.
2. Click **Add** ✳.
3. Edit the Measure parameter to the meter/key change's new measure.
4. Click **OK**.
5. Select the original meter/key change again.
6. Click **Delete** ✕.

SONAR removes the original meter/key change and inserts a copy of it at the new measure.

To Edit a Meter/Key Change

1. Select the meter/key change to be edited.
2. Click **Change** to open the **Meter/Key Signature** dialog box.
3. Edit the meter/key change properties.
4. Click **OK**.

SONAR changes the properties of the meter/key change.

Music Notation for Non-concert-key Instruments

For historical reasons, certain musical instruments are traditionally notated in a transposed key rather than the actual key. For example, a normal (Bb) trumpet part is written in the key one whole step higher than the actual concert key, and an Eb alto sax part is written a major sixth higher. Musicians have traditionally learned to read and refer to the notes they play using the proper transposition interval for their instrument.

SONAR supports these non-concert instrumental keys through use of the Key+ control in the Track view. Simply enter or record the notes into the instrument's track transposed as the musician would expect them, and then set the proper transposition interval in the Key+ control to make it play in the correct key. For example, a Bb trumpet track should have all its notes a whole note higher than concert pitch, and should have Key+ set to -2 to transpose it two chromatic steps back down. Remember, not all trumpets are Bb instruments!

To Notate a Bb Trumpet Part

1. Record or enter the notes using the pitches that the musician who will be reading the part needs to see. For example, if the non-transposing instruments are playing in the key of C, a Bb trumpet player needs to see the notes a whole step higher—the key of D. The instrument itself sounds a whole step lower than concert pitch, so when a Bb trumpet plays in the key of D, it sounds in the key of C.

Now that the pitches appear the way that the trumpet player needs to see them, the problem is that when you play your project, the MIDI notes in the trumpet track sound a whole step too high.

2. In the Track view, force SONAR to play the trumpet track a whole step lower by entering **-2** (negative 2) in the **Key+** field and pressing ENTER.

Now the trumpet part in the Staff view appears in the key of D—SONAR automatically adds two sharps to the trumpet track's key signature—but the track sounds in the key of C because you entered **-2** in the **Key+** field (you may need to close the Staff view and reopen it to see the new key signature). The Staff view automatically transposes the key signature for each track according to the track's Key+ value. Multiple tracks appear and can be printed as an orchestral score, with the proper different key signatures for each track.

Note that this Key+ information is saved in SONAR .cwp files, but not in standard MIDI files. If you save a file as a MIDI file, the Key+ transposition will be applied to each note event, so that the file will sound the same, but the Key+ information will be lost. If you're reading in a MIDI file, you can easily set up the non-concert instrument tracks and then save the file as a normal project file. First set the Key+ offset to reflect the non-concert instrument's key signature. Then, use Transpose to compensate for the Key+ offset.

Working with Lyrics

SONAR lets you create, edit, and display lyrics, the words and syllables associated with notes in a track. Lyrics can be the words to a song, the text of a vocal passage, a narration to be read along with the music, cues of some type, or text totally unrelated to the music. Each word or syllable in the lyrics must be associated with a note in a MIDI track. Each MIDI track can have its own lyrics.

Although lyrics can logically be associated with digital audio data, you cannot actually place lyrics in an audio track. If you want to create lyrics for an audio track, you must create an auxiliary MIDI track to hold the lyrics.

You can enter and edit lyrics in several ways:

- Using the Lyrics tool in the Staff view
- Using the Lyrics view
- Inserting lyric events in the Event List view

The Staff view is usually the preferred location for entering lyrics, since you can see the notes with which the lyrics are associated. The Lyrics view can also be used for entering or editing lyrics, but its main strength is that it can display lyrics in a larger, more readable format. You might use the Lyrics view to display song lyrics during recording and playback, so performers can see the words and sing along. You can make the font size in the Lyrics view as large as desired, so that the lyrics can be read at a distance from the monitor. During playback, the current line in the lyrics is enclosed in a box and the current word is highlighted.

Lyric events are similar to text events. Like any other event, they occur at a particular time. They contain text, just like general-purpose text events, but generally they contain only a single word (or syllable of a word). As events, Lyrics can be edited in the Event List view (see “The Event List View” on page 512).

See:

Adding and Editing Lyrics in the Staff View

Opening the Lyrics View

Adding and Editing Lyrics in the Lyrics View

Adding and Editing Lyrics in the Staff View

The Staff view displays lyrics below their associated track. If the track is split into treble/bass staves, lyrics are aligned with notes in both staves, but are displayed below the treble staff.

When a lyric word or syllable spans multiple notes, a trailing underline or series of regularly spaced hyphens is automatically drawn, following conventional lyric notation practice.

To Add Lyrics to a Track

1. Click the Draw tool .
2. Select the Lyrics tool .
3. Position the pointer below the staff, under the first note to be assigned lyrics. (The pointer changes to a pencil when you are in a legal position.)
4. Click to open an insertion box.
5. Follow the instructions in the table:

To do this	Do this
Enter a word or syllable	Type it in the insertion box
End the word or syllable and move to the next note	Type a space, tab, or hyphen
Skip over a note	Type a space or hyphen
Move back to the previous note	Press SHIFT+TAB

Table 161.

6. Press Enter when you are done.

SONAR displays the new lyrics below the staff.

To Edit Lyrics

1. Click the Draw tool .
2. Click the word you want to change.
3. Edit the word as desired.
4. Press ENTER.

SONAR replaces the old word with the new one.

Opening the Lyrics View

There are three ways to open the Lyrics view:

- In the Track view, select the track whose lyrics you want to see, then click
- In the Track view, select the track whose lyrics you want to see, then choose **Views > Lyrics**
- Right-click a clip in the Clips pane and choose **Lyrics** from the menu

The **Pick Track** button opens a dialog box where you can select the track whose lyrics you want to see. Select the desired track, then click **OK**.

To select a font for the display, use one of the following:

Option/Button	Purpose
f_a	Selects the first font. By default, this is a small font useful for editing.
f_b	Selects the second font. By default, this is a larger font useful for reading lyrics at a distance.
Font...	Opens a dialog where you can select a font. The selected font is then assigned as Font A or B (depending on which is currently selected).

Table 162.

Adding and Editing Lyrics in the Lyrics View

Lyrics appear in the Lyrics view as a stream of syllables, each one associated with a note in the track. In this context, a **syllable** is any continuous string of characters, without a hyphen. For example, “love,” “desire,” and “infatuation” are all syllables; each one would be associated with a single note. If you want to break a word into multiple syllables, you must hyphenate the word. For example, “de-sire” would map onto two notes, since it is now two syllables long.

When you enter the lyrics, you can mark the syllables the way you want, or you can simply type the text in normally and use automatic hyphenation to break the text into syllables. This means that you can add lyrics to a project by copying and pasting them from another application (such as a word processor), and then hyphenate them automatically.

To extend a single syllable over more than one note, you can use extra hyphens, separated by spaces. For example, in “Oh-say can you see…”, the “Oh” is extended over two notes. If a track contains no lyrics yet, the display will show only a series of hyphens (one for each note in the track).

If you enter more syllables than there are notes in the track, SONAR assigns the extra lyrics times at quarter note intervals.

To Enter Lyrics in the Lyrics View

1. Click in the upper left corner of the view to position the cursor at the start of the text.
2. Follow the instructions in the table:

To do this	Do this
Enter a word or syllable	Type it
End a word or syllable and move to the next note	Type a space or hyphen
Break a line for easier viewing	Press Enter

Table 163.

To Edit Lyrics in the Lyrics View

Editing in the Lyrics view follows standard Windows conventions for cursor movement, selection, cut (CTRL+X), copy (CTRL+C), paste (CTRL+V), and delete (DELETE). When you pause, SONAR will update all lyric events in the track.

To Hyphenate the Lyrics

1. If you want, select a portion of the lyric text. If you do not select any text, all the lyrics will be hyphenated.
2. Click the **Hyphenate** button.

SONAR hyphenates the lyrics.

Instrument Definitions

Instrument definitions are a powerful feature of SONAR that makes it easier for you to find the banks, patches, and controllers of your MIDI instruments. An instrument definition is a file that contains the names of the banks, patches, note names, bank select method, and controllers of an instrument. Instrument definitions for many popular MIDI instruments are included with SONAR or are available on the Cakewalk web site (www.cakewalk.com). If an instrument definition is not available for your instrument, and you are familiar with MIDI and how it works, you can use SONAR to create your own instrument definition.

Most MIDI instruments available today are General MIDI (GM) compatible, which means that they come with the standard set of sounds or patches defined by the GM standard. SONAR initially assumes that your MIDI instruments are GM compatible. The names of patches and controllers that you initially see displayed throughout SONAR are drawn from the GM specification.

At the same time, many MIDI instruments provide additional sounds and controllers beyond those required by the GM standard. In addition, some older MIDI instruments are not GM compatible. If you are using one of these instruments with SONAR, you can use instrument definitions to make sure that the names of banks, patches, and controllers that you see in SONAR are the same ones you see on the display screens of your MIDI keyboards and modules.

See:

Assigning Instruments

Importing Instrument Definitions

Creating Instrument Definitions

To Import Instrument Definitions

To Create a New Instrument

To Rename an Instrument

To Add a Bank or Change the Patch Names for a Bank

To Create and Edit Name Lists

Creating and Editing Patch Name and Other Lists

Copying Name Lists

Assigning the Bank Select Method
Assigning Patch Names
Assigning Note Names
Assigning Controller, RPN, and NRPN Names

Assigning Instruments

SONAR lets you assign a MIDI instrument definition to each available MIDI output and channel. The assignments you make determine the MIDI bank names, patch names, note names, and controller names that you see during your SONAR session.

Suppose that you have a Roland GS-compatible synthesizer attached to MIDI output 1. By assigning all 16 channels of MIDI output 1 to the Roland GS instrument definition, you ensure that the bank, patch, note, and controller name lists you see displayed in SONAR are the same ones that you see on the display screen of your synthesizer.

Often, you want to assign a different instrument to channel 10, which is usually used for percussion. For example, you might assign the Roland GS instrument definition to channels 1 through 9 and 11 through 16, but you would most likely want to assign the Roland GS Drumsets instrument definition to channel 10. That way, any SONAR tracks you assign to channel 10 on that output use the names of drum sets for patch names, and drum notation in the Piano Roll view. If you have several MIDI outputs, with a different MIDI module attached to each one, you would normally assign a different instrument definition to each MIDI output.

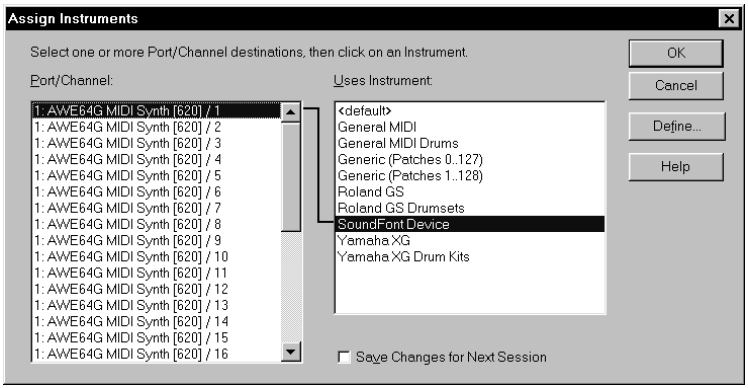
For convenience, you can assign a block of channels to one instrument and then change the assignment of one or more of those channels without changing the others. For example, you can highlight all 16 channels of the first MIDI output and assign them to the Roland GS instrument definition. Then, you can highlight channel 10 of that same MIDI output and assign it to the Roland GS Drumset instrument definition. Channels 1 through 9 and 11 through 16 on the first MIDI output will stay assigned to Roland GS.

If you only have one MIDI output, but have several MIDI modules attached to it, you can assign a few channels to each module. For example, you might have a Roland synth receiving on MIDI channels 1 through 9, a Roland drum machine receiving on channel 10, and a basic GM-compatible synth receiving on channels 11 through 16. In this case, you'd use three different instrument definitions for your one and only MIDI output.

To Assign Instrument Definitions to MIDI Outputs and Channels

1. Choose **Options > Instruments** to display the **Assign Instruments** dialog box.

Figure 133. *The **Assign Instruments** dialog*



2. Select one or more MIDI outputs and channels from the **Output/Channel** list (use SHIFT-click and CTRL-click to select multiple outputs and channels). You can also drag through a bunch of channels to select them. For example, if you want to assign the first 16 MIDI channels on output 1 to a certain MIDI module, drag through the first 16 items in the **Output/Channel** list to select them.
3. Choose the instrument definition to which the selected outputs and channels should be assigned from the Uses Instrument list. A black line connects the two lists. If your MIDI module's name doesn't appear in the list and you don't want to use General MIDI bank and patch names for it, see "Importing Instrument Definitions" on page 788.
4. To save these changes permanently, check the **Save Changes for Next Session** box.
5. Click **OK** to apply your changes.

From now on, the bank, patch, controller, and note names from the assigned instrument definition are used throughout SONAR on any track that uses one of the output/channel combinations you selected in the **Output/Channel** list.

To Clear Instrument Assignments

1. Choose **Options > Instruments** to display the **Assign Instruments** dialog box.
2. Select the MIDI outputs and channels whose assignments you want to remove from the **Output/Channel** list.
3. Choose **<default>** from the **Uses Instrument** list. A black line connects the two lists.
4. Click **OK** when you are done.

You don't really clear instrument assignments—you reassign them to use the default (General MIDI) instrument definition. After you reassign the output/channel combinations, the default (GM) bank, patch, controller, and note names are used throughout SONAR on any track that uses one of the output/channel combinations you reassigned in the **Output/Channel** list.

See also:

Importing Instrument Definitions
Creating Instrument Definitions
To Import Instrument Definitions
To Create a New Instrument
To Rename an Instrument
To Add a Bank or Change the Patch Names for a Bank
To Create and Edit Name Lists

Importing Instrument Definitions

When you install SONAR, a few common instrument definitions are already set up for you and ready to use. SONAR also includes several hundred additional instrument definitions that you can import.

These instrument definitions are stored in text files in your SONAR folder, organized largely by manufacturer. For example, all the instrument definitions for Roland gear are stored in the `Roland.ins` file; all the instrument definitions for Yamaha gear are stored in the `Yamaha.ins` file. The `Misc.ins` file contains miscellaneous instrument definitions.

If SONAR does not include an instrument definition for your MIDI instrument, you can find additional and updated instrument definitions on the **Downloads** section of the Cakewalk website (www.cakewalk.com). Simply download the files to your SONAR folder, unzip if necessary, and import the instrument definitions as described below.

When you import an instrument definition, it is added to the master instrument definition file `Master.ins`. The contents of this file determines the list of instruments that appear in the **Assign Instruments** dialog box.

To Import Instrument Definitions

1. Choose **Options > Instruments** to display the **Assign Instruments** dialog box.
2. Click **Define** to display the **Define Instruments and Names** dialog box.
3. Click **Import** to display the **Import Instrument Definitions** dialog box.
4. Choose the file that contains instrument definitions for your manufacturer, and click **Open**. SONAR displays a list of all the instrument definitions in the file.
5. Choose one or more instruments from the list, and click **OK**.
6. Click **Close** to close the **Define Instruments and Names** dialog box.

The instrument definitions you imported should now appear in the **Uses Instrument** list in the **Assign Instruments** dialog box.

See also:

Creating Instrument Definitions

To Create a New Instrument
To Rename an Instrument
To Add a Bank or Change the Patch Names for a Bank
To Create and Edit Name Lists

Creating Instrument Definitions

SONAR lets you create and edit instrument definitions. To create an instrument definition, you must answer these types of questions:

- What are the names of the patches in each bank?
- Which note names should be used for each patch?
- What are the names of the MIDI Controllers for this instrument?
- Which RPN and NRPNs are available on the instrument?
- Which Bank Select method does the instrument use?

To collect this information, you need the MIDI documentation for your instrument.

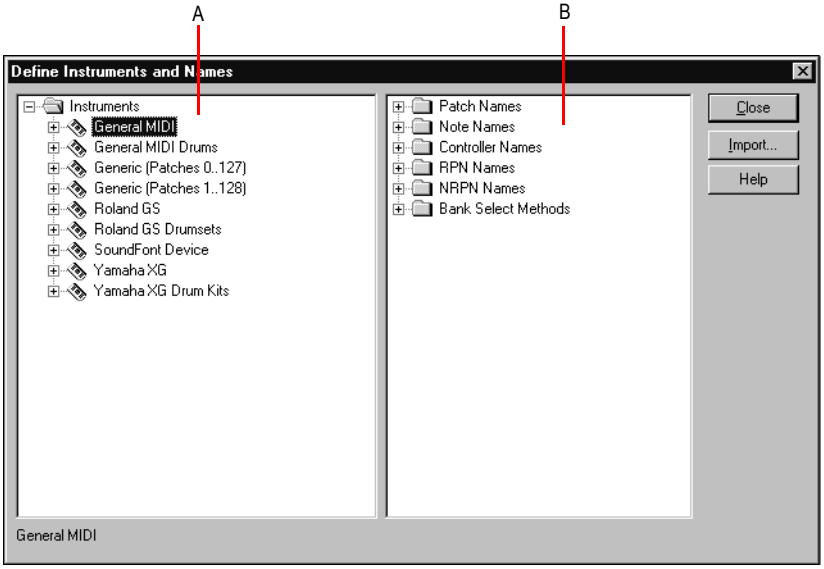
Here's a general outline of the steps you must follow to create an instrument definition:

- Create a new instrument in the **Instrument** tree.
- Create any new name lists in the **Names** tree that are required for the instrument.
- Drag name lists and possibly a bank select method to the new instrument from the **Names** tree.
- Close the **Define Instruments and Names** dialog box.

For detailed instructions, see "To Create a New Instrument" on page 791.

You define instruments in the **Define Instruments and Names** dialog box, shown below:

Figure 134. *The **Define Instruments and Names** dialog*



***A.** The Instruments tree **B.** The Names tree*

The **Define Instruments and Names** dialog box contains two trees:

- The **Instruments** tree in the left half of the dialog box lists all defined instruments and their characteristics
- The **Names** tree in the right half of the dialog box shows all the resources you use to define an instrument

You expand or collapse the folders and lists in each tree by clicking on the **+** or **-** key shown to the left of each item. You can also right-click on an item and choose **Expand** or **Collapse** from the menu, or double-click on an item to expand or collapse it.

To define an instrument, you drag resources from the **Names** tree to the name of an instrument on the **Instruments** tree. Each resource is color-coded—you can only drag a Names list to an **Instrument** tree branch of the same color. For example, you can only drag a list from the **Patch Names** folder in the **Names** tree to a **Patch Names for Banks** folder in the **Instruments** tree.

There are six components to an instrument definition:

- Method for bank selection
- Patch names, such as Piano and Bass
- Note names, which are most frequently used to name drum notes, such as kick or snare
- Controller names, like volume and pan
- Names for Registered Parameter Numbers (RPNs)
- Names for Non-Registered Parameter Numbers (NRPNs)

The instrument definitions organize all names (patches, notes, controllers, RPNs, and NRPNs) into lists. You may be able to define a new instrument using existing name lists. For example, two models of synthesizers made by a particular manufacturer may have identical patch name lists but use different NRPNs. In this case, you can use the same patch name lists for both instruments, but you would need to use a different NRPN list (or perhaps create a new NRPN list) for the second synth.

If you want your changes to be remembered the next time you run SONAR, make sure the **Save Changes For Next Session** option in the **Assign Instruments** dialog box is checked before clicking **OK**. Otherwise, to make only temporary changes, be sure to remove the check from that option.

To Create a New Instrument

1. In the **Define Instruments and Names** dialog box, right-click the word **Instruments** at the top of the **Instrument** tree, and choose **Add Instrument** from the pop-up menu.
2. Type a name for the new instrument and press ENTER.

The new instrument is provided with default settings for all of its characteristics.

See also:

Creating and Editing Patch Name and Other Lists

Copying Name Lists

Assigning the Bank Select Method

Assigning Patch Names

Assigning Note Names

Assigning Controller, RPN, and NRPN Names

To Rename an Instrument

1. In the **Define Instruments and Names** dialog box, right-click an Instrument name in the **Instrument** tree and choose **Edit** from the pop-up menu.
2. Type the new name and press ENTER.

To Delete an Instrument

1. In the **Define Instruments and Names** dialog box, right-click an Instrument name in the **Instrument** tree and choose **Delete** from the menu.
2. Confirm that you want to delete the instrument.

To Save an Instrument Definition

1. Click **Close** to close the **Define Instruments and Names** dialog box.
2. Click **OK**.

SONAR saves the instrument definition in the `Master.ins` file.

To Export an Instrument Definition

1. In the **Define Instruments and Names** dialog box, right-click an Instrument name in the **Instrument** tree and choose **Export** from the menu to display the **Export Instrument Definition** dialog box.
2. If you don't want to save the file in the folder that's listed in the **Save In** field, navigate to the folder in which you do want to save the file.
3. Enter a file name and click **Save**.

SONAR saves the file, with the filename extension .ins.

Note: *Exporting instrument definitions allows you to share them with other SONAR users.*

To Reload instrument definitions

Users of MIDI librarian programs need the ability to update SONAR's instrument definitions in real-time, without having to close and restart SONAR.

When the **Reset (Panic)** button is pressed, SONAR closes and reopens the instrument manager to reload settings from `Master.ins` and `Instrmap.ini`.

Any changes made to patch names or other instrument definitions are reflected immediately.

See also:

Creating and Editing Patch Name and Other Lists

Copying Name Lists

Assigning the Bank Select Method

Assigning Patch Names

Assigning Note Names

Assigning Controller, RPN, and NRPN Names

Creating and Editing Patch Name and Other Lists

You can create and edit the various lists in the **Names** tree that make up each instrument definition. Patch name, note name, and controller name lists can contain up to 128 entries, numbered 0 through 127. RPN and NRPN name lists can contain up to 16,384 entries, numbered 0 through 16,383.

To Create and Edit Name Lists

- To create, edit, or work with name lists, go to the **Names** tree of the **Define Instruments and**

Names dialog box, and follow the directions in the following table:

To do this	Do this
Create a new name list	Duplicate an existing Patch Names or other list by doing one of the following: expand the folder that contains the name list, highlight the name list and press the Ins (Insert) key; highlight the folder and press SHIFT+INSERT; or right-click any folder or name list and choose **Add Names List** from the menu. Then type a name for the list and press ENTER.
Delete a name list	Highlight the names list and press the DELETE key; or right-click on the name list and choose **Delete** from the menu. You will see a warning if the list is used by any instrument definition. If you delete the list anyway, the instrument definition will change automatically.
Add the next item in a name list	Highlight a name and press the Ins key, or right-click on a name and choose **Add Name** from the menu. Then enter the name.
Add a name anywhere in a list	Highlight the name of a list and press SHIFT+INSERT, or right-click on the name of a list and choose **Add Name** from the menu. Then enter the name.
Delete names from a list	Highlight the Names List or Name, and press DELETE. You can also right-click, then choose **Delete**.
Edit a name in a list	Highlight the name or name list and press F2, or right-click and choose **Edit** from the menu. Then enter the new name.

Table 164.

See also:

Copying Name Lists

Assigning the Bank Select Method

Assigning Patch Names

Assigning Note Names

Assigning Controller, RPN, and NRPN Names

Copying Name Lists

You can easily create new lists that are similar to other lists. For example, suppose you want to create a new patch name list called **NewList** that is almost identical to the General MIDI patch list, but with one or two small changes. Here's how you proceed:

- Create a new patch name list in the **Patch Names** folder of the **Names** tree called, for example, **NewList**.
- Drag the new list onto the **General MIDI** list in the **Names** tree. You will be asked if you want to base **NewList** on the **General MIDI** list.

- Click **OK**. **NewList** will now be listed under the **General MIDI** branch. Any patch names that exist in the **General MIDI** list apply to **NewList**, too.
- Add new patch names to **NewList**. These names will override those in the list on which **NewList** is based.

If you change your mind about **NewList** and want to make it a stand-alone, separate list, simply drag it to the **Patch Names** root folder.

See also:

Assigning the Bank Select Method

Assigning Patch Names

Assigning Note Names

Assigning Controller, RPN, and NRPN Names

Assigning the Bank Select Method

Your synthesizer uses one of four bank select methods to switch back and forth between banks of sounds. To find the method used for your instrument, check the instrument's *User's Guide* or the manufacturer's web site. The four methods are as follows:

Method	Used for
Normal	Instruments that respond to Controller 0 or Controller 32 bank select messages
Controller 0 only	Instruments that only respond to Controller 0 bank select messages
Controller 32 only	Instruments that only respond to Controller 32 bank select messages
Patch 100...127	Instruments that let you change banks by sending patch changes between 100 and 127

Table 165.

The bank select method you choose affects the bank numbers that you assign to each patch list, as described in the following section. Here's how you compute the bank numbers:

Bank select method	To compute the bank number
Normal	Take the value of Controller 0, multiply it by 128, and add the value of Controller 32 to derive the bank number. **Note**: A synthesizer manufacturer may refer to Controller 0 as the MSB (Most Significant Byte) and to Controller 32 as the LSB (Least Significant Byte).
Controller 0 only	The value of Controller 0 is the bank number.

Table 166.

Bank select method	To compute the bank number
Controller 32 only	The value of Controller 32 is the bank number.
Patch 100...127	Take the patch number and subtract 100 to derive the bank number.

Table 166.

Here is an example of the Normal bank select method. According to the documentation for the Roland JV-1080 synthesizer, the PR-A Bank has a Controller 0 value of 81 and a Controller 32 value of 0. You compute the bank number that you enter in the instrument definition as follows: (81 x 128) + 0 = 10,368.

To Change the Bank Select Method

1. Highlight and expand the instrument in the **Instrument** tree.
2. Expand the **Bank Select Method** branch in the **Names** tree.
3. Drag the desired bank select method from the **Names** tree to the **Instrument** tree.

See also:

Creating and Editing Patch Name and Other Lists

Copying Name Lists

Assigning Patch Names

Assigning Note Names

Assigning Controller, RPN, and NRPN Names

Assigning Patch Names

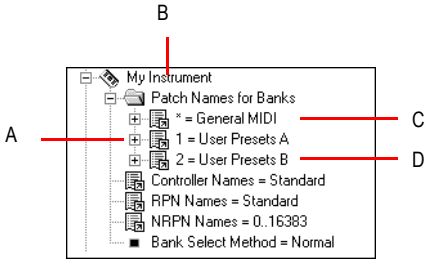
A MIDI instrument can have up to 16,384 banks of 128 patches each. Patches can have names, like “Piano” for patch number 0, “Bass” for patch number 1, and so on. Normally, each bank contains a different set of patches, so each bank needs a separate patch name list. Most synthesizers start with a patch number of 0.

You can assign a patch name list to each bank. You can also assign a default patch name list to the instrument, which is used for all banks for which you haven’t assigned a specific list. The previous section describes how to compute the bank numbers to which each patch name list is assigned.

Each bank can also be assigned a special Drum flag, which indicates that all patches in that bank contain drum sounds. If you set this flag, the Piano Roll view will display drum notes as diamonds, and the Staff view will use percussion notation.

To See the Assignment of Patch Name Lists to Banks

1. Expand the instrument definition by clicking the + sign next to the instrument name.
2. Expand the Patch Names for Banks folder by clicking the + sign. The list expands to show the bank numbers and the patch name list that is assigned to each bank.



***A.** There are three defined banks **B.** Instrument name **C.** The * indicates that this patch list is the default*
***D.** This is the name of a patch name list*

To Add a Bank or Change the Patch Names for a Bank

1. Drag a patch name list from the **Names** tree to the **Patch Names for Banks** folder of the instrument you're editing in the **Instrument** tree.
2. Enter a bank number, or enter **-1** to indicate that this list of patch names should be used as the default.

SONAR displays the updated banks and patch name lists. If necessary, SONAR adds a new bank to the instrument definition.

To Remove a Bank or Patch Name List

1. In the **Instrument** tree in the **Patch Names for Banks** folder of the instrument you're editing, highlight the bank and patch names list.
2. Press the DELETE key, or right-click on the bank name and choose **Delete** from the pop-up menu.

To Set or Clear the Drum Flag

- Right-click on the bank in the **Instrument** tree, and choose **Drums** from the pop-up menu.

See also:

Creating and Editing Patch Name and Other Lists

Copying Name Lists

Assigning the Bank Select Method

Assigning Patch Names

Assigning Note Names

Assigning Controller, RPN, and NRPN Names

Assigning Note Names

Each patch may have a list of up to 128 names for notes. Usually, note names are labels for percussion instruments. For example, the pitch C3 may really be “Kick Drum,” and D3 may be “Snare.” Because a drum machine may provide different drum kits for each patch, SONAR lets you specify a different list of note names for each patch. The Piano Roll and Event List views show you these note names.

You can assign a note name list to each patch. You can also assign a default note name list to the instrument, which is used for all patches for which you haven’t assigned a specific note name list.

Each patch can also be assigned a special Drum flag, which indicates that this patch contains drum sounds. If you set this flag, the Piano Roll view will display drum notes as diamonds, and the Staff view will use percussion notation.

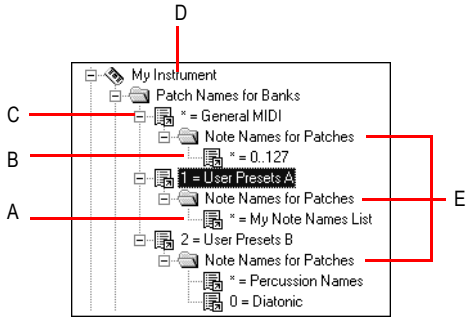
There are several standard note name lists provided with SONAR:

Note name list	Contents
0...127	The numbers 0 through 127
Diatonic	The default MIDI note names (like C4, E5, and so on)
General MIDI Drums	The default instrument names for the General MIDI drum patch

Table 167.

To See the Assignment of Note Name Lists to Patches

1. Expand the instrument definition by clicking the + sign next to the instrument name.
2. Expand the **Patch Names for Banks** folder by clicking the + sign.
3. Continue expanding the tree by clicking the + sign, until the tree is fully expanded.



***A.** This is the name of a note name list **B.** The * indicates that this note name list is the default **C.** Bank **D.** Instrument name **E.** Note name lists are defined for three different patches*

To Change the Note Names for a Patch

1. Drag a note name list from the **Names** tree onto the **Note Names for Patches** folder of the instrument and bank you're editing in the **Instruments** tree.
2. Enter the patch number that should use these note names, or enter **-1** to indicate that this list of note names should be used as the default.

SONAR displays the updated patch and note name lists. If necessary, SONAR adds a new patch to the instrument definition.

To Remove a Note Name List

1. In the **Instrument** tree in the **Note Names for Patches** folder of the instrument you're editing, highlight the name of the note names list (for example, "diatonic").
2. Press the DELETE key, or right-click on the note name list and choose **Delete** from the pop-up menu.

To Set or Clear the Drum Flag

- Right-click on the patch in the **Instrument** tree, and choose **Drums** from the menu.

See also:

Creating and Editing Patch Name and Other Lists

Copying Name Lists

Assigning the Bank Select Method

Assigning Patch Names

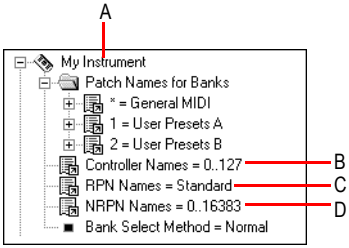
Assigning Controller, RPN, and NRPN Names

Assigning Controller, RPN, and NRPN Names

SONAR lets each instrument have its own lists of controller names, RPN names, and NRPN names. There is always exactly one list of each type per instrument.

To See the Controller, RPN, and NRPN Name Lists

- Expand the instrument definition by clicking the PLUS (+) sign next to the instrument name.



A. *Instrument name* ***B.*** *Controller name list* ***C.*** *RPN name list* ***D.*** *NRPN name list*

To Change the Controller, RPN, or NRPN Name List

1. In the **Names** tree, expand the branch containing the Controller name lists, RPN name lists, or NRPN name lists.
2. Drag the desired name list from the Names tree onto the corresponding branch of the **Instrument** tree.

SONAR displays the updated Controller, RPN, or NRPN name lists.

See also:

Creating and Editing Patch Name and Other Lists

Copying Name Lists

Assigning the Bank Select Method

Assigning Patch Names

Assigning Note Names

SONAR Flags in Instrument Definitions

SONAR has several flags that you can use in instrument definition files for use with specific instrument definitions.

UsesNotesAsControllers=n

Some MIDI devices, certain mixers for example, use MIDI Note events instead of Continuous Controller events for automation. It is often desirable to treat the Note events as Controller events in order for them to obey the “Zero Controllers When Play Stops” and “Patch/Controller Searchback Before Play Starts” settings.

You can enter this variable in any instrument definition by using a text editor, such as Windows Notepad. The variable should be entered directly below an instrument definition. For example:

[Mackie OTTO-1604]

UsesNotesAsControllers=1

Control=Mackie OTTO-1604

Patch[*]=Mackie OTTO-1604

Key[*,*]=Mackie OTTO-1604

NoControllerReset=n

Any port/channel using an instrument definition that has a NoControllerReset flag set to 1 does not receive a "zero controller" message upon stop. You can enter this variable in any instrument definition by using a text editor, such as Windows Notepad. The variable should be entered directly below an instrument definition. For example:

[Yamaha Promix 01 Control Chan]

NoControllerReset=1

Control=Yamaha Promix 01 Control Chan

Patch[*]=Yamaha Pro Mix 01

This parameter should be used when it is undesirable to zero/reset controllers when playback stop, such as when using an external effects processor that uses MIDI controllers for real-time parameter control, or when using a digital mixer as a MIDI control surface (and not using the generic control surface plug-in).

Instrument Definition Tutorial

The following tutorial takes you through the process of setting up an instrument definition for a Roland keyboard so that the bank and patch names, including any self-created sounds, read the same in SONAR as they do on the display screen of your keyboard instrument.

Next topic: Why Use Instrument Definitions?

Why Use Instrument Definitions?

The main reason to import or create an instrument definition is so you can use patch names that are specific to the MIDI module you're using, instead of using generic General MIDI patch names. It's much easier to find a particular sound on a MIDI module when the actual names of the patches in the current bank of sounds pop up on a list, instead of just the numbers 0 to 127, or General MIDI names like Trumpet. Of course, if you're only using General MIDI modules, General MIDI patch names might be all you need. You can also rename each MIDI output with the name of the MIDI module it's connected to. For example, it might be more meaningful to name a MIDI output Roland Sound Canvas instead of MOTU MIDI Express 5. That way, you won't have to remember that you connected the Sound Canvas to the MOTU MIDI Express output number 5—the name **Sound Canvas** shows up as an option in the **Output** field of each MIDI track in SONAR's track view. Also if you have an effects processor or module that's hard to get to in your studio, you may find it convenient to control it from SONAR.

Next topic: What Can They Do and Not Do?

What Can They Do and Not Do?

Instrument definitions don't increase the number of sounds or the capabilities of your modules, they just make it easier to find and remember the sounds and/or MIDI controllers you want to use, if they're not all generic General MIDI items. After you define an instrument, SONAR displays the names that you choose for the sounds in each of that instrument's banks, rather than displaying the same 128 General MIDI names over and over for each bank of sounds.

Next topic: Where Do Instrument Definitions Come From?

Where Do Instrument Definitions Come From?

The patch names and other characteristics of each particular MIDI module are supplied by the manufacturer, and are contained in an instrument definition file, which is a text file written in a format SONAR can read. Many of these files come with SONAR, and many more are available at Cakewalk's website, and also at lilchips.com. Instrument definition files have the extension .ins and can contain a definition for only one instrument, or definitions for several instruments. For example, the file `Roland.ins` contains definitions for many Roland modules. The file `Misc.ins` contains miscellaneous definitions that might include your instrument if you don't see a specific file for it. You can find these files in your SONAR folder. The file `Master.ins` contains all the instrument definitions currently loaded into SONAR, and determines the list of instruments that appears in the **Assign Instruments** dialog box.

Next topic: Start of Tutorial

Start of Tutorial

Let's say you have a Roland XP-10 and you want SONAR to display all of its patch names from all of its banks, including any self-created sounds you add to it.

Let's start by importing the names of the built-in banks and patches that the XP-10 has.

To Import a Roland Instrument Definition

1. Choose **Options > Instruments** to display the **Assign Instruments** dialog box.
2. Click **Define** to display the **Define Instruments and Names** dialog box.
3. Click **Import** to display the **Import Instrument Definitions** dialog box.
4. Choose the file that contains instrument definitions for your manufacturer, which in this case is the `Roland.ins` file, and click **Open**. SONAR displays a list of all the instrument definitions in the file.
5. Scroll down the list, select **Roland XP-10**, and click **OK**.
6. Click **Close** to close the **Define Instruments and Names** dialog box.

The instrument definition you imported should now appear in the **Uses Instrument** list in the **Assign Instruments** dialog box.

When you import an instrument definition, it is added to the master instrument definition file `Master.ins`. The contents of this file determines the list of instruments that appear in the **Assign Instruments** dialog box.

Now let's assign the XP-10 definition to some channels on a MIDI output:

To Assign the Roland XP-10 Bank and Patch Names to a MIDI Output

1. Choose **Options > Instruments** to display the **Assign Instruments** dialog box.
2. Let's assign all 16 MIDI channels on output 1 to use the XP-10 bank and patch names:
   - Drag through the first 16 items in the **Port/Channel** list to select them.
   - From the **Uses Instrument** list, click **Roland XP-10**. A black line connects the two lists.
3. To save these changes permanently, enable the **Save Changes for Next Session** option.
4. Click **OK** to apply your changes.

From now on, any track that uses any of channels 1 to 16 on output 1 displays bank and patch names from the XP-10.

To check this, assign a MIDI track in a project to Ch 1, assign the **Output** field to **1-Roland XP-10**, and then examine the drop-down lists in the **Bank** and **Patch** fields of the track. You should see bank and patch names that are specific to the Roland XP-10.

Let's check some of our bank and patch lists to see if they match up with what we see on the screen of the XP-10. On the XP-10, let's look at the **Vari 1** bank: if we look at tone (tone means the same as patch) **#005** in the **Vari 1** bank on the XP-10, we see that it is called **Detuned EP1**. If we change the bank on a MIDI track to **128-Roland XP-10 Var #01**, and look at the menu of patches in the **Pch** field, we see that there is no name listed for patch **#004** (Roland numbers its patches from 1 to 128; SONAR numbers patches from 0 to 127, so patch **#004** in SONAR is the same patch number as patch **#005** on the Roland). Let's look at some of the other Roland XP-10 patch name lists in the right window of the **Define Instruments and Names** dialog box to see if another one has the right patch names in it, and rename it **Var #01**.

To Substitute and Rename a Patch List

1. Use the **Options > Instruments** command to open the **Assign Instruments** dialog box, and click the **Define** button to open the **Define Instruments and Names** dialog box.
2. In the **Names Tree** window on the right, click the + sign on the **Patches** folder to expand the tree of patch name lists.
3. Scroll down to the **Roland XP-10 Var #08** list and click its + sign to expand it.
4. Compare the names on the **Var #08** list with the patch names of the **Vari 1** instruments on the Roland's display screen. You'll see they are the same.
5. Let's substitute the **Var #08** list for the **Var #01** list that SONAR currently lists as the XP-10's second bank, which has a bank change number of 128:
   1. In the **Instruments** tree in the left window, click the **Roland XP-10** entry to expand it, and then expand the **Patch Names for Banks** list that's directly under it.
   2. Expand the **Patch Names** tree in the right window and find the **Roland XP-10 Var #01** list (if there is one) and right-click it to display the pop-up menu.

3. Choose **Edit** from the pop-up menu, and change the name from **Roland XP-10 Var #01** to **Roland XP-10 Var #011**.
4. In the same tree find the **Roland XP-10 Var #08** list and change the name from **Roland XP-10 Var #08** to **Roland XP-10 Var #01**.
5. Drag the newly renamed list from the **Patch Names** tree in the right window to the **Patch Names for Banks** tree in the left window.
6. In the **Bank Number** dialog box, enter **128**, and click **OK**.

6. Click the **Close** button to close the **Define Instruments and Names** dialog box and click **OK** to close the **Assign Instruments and Names** dialog box.

Examine the new bank and patch data in a track that uses **1-Roland XP-10** as an output. In the **Bnk** field, select **128 Roland XP-10 Var #01**, then look at the drop-down list of patches in the **Pch** field. The list should now have the same names that the Roland keyboard uses for its **Vari 1** bank.

The Roland XP-10, like most MIDI keyboards, allows you to create your own sounds and store them in one or more User banks. You can create patch name lists in SONAR that are the same as the names you gave to each of your own sounds.

Checking Bank Numbers

You can calculate bank numbers by using the methods described in “Assigning the Bank Select Method” on page 794, but you might find it easier to use the following method:

To Check the Bank Numbers

1. Set up a MIDI track to record from your MIDI keyboard or module.
2. Click the **Record** button to start recording, and change banks on your keyboard.
3. Stop recording, and open the Event List view.
4. The bank change you recorded is displayed in the Event List view in this way: in the **Data** column you’ll see what kind of bank change method your keyboard uses (probably Normal), and in the column to the right of that data is the number of the bank you changed to.

When we changed the Roland XP-10 to the User 1 bank, we recorded a bank number of 8192.

To Create a Patch Name List for Your Own Sounds

1. You could create a new list by copying and renaming an existing list (right-click a list and choose **New Patch Name List** from the pop-up menu), but since the instrument definition we imported for the XP-10 includes a list called **Roland XP-10 User Tone 1**, let’s just edit that one: in the **Names** Tree window on the right, right-click the **Roland XP-10 User Tone 1** list and choose **Add Patch Name** from the pop-up menu.

   A new patch field appears, with the text `0=0` inside.
2. Replace the first number in the **Patch** field with the number of a patch you stored in **User Bank 1** on the Roland.
3. Replace the second number in the **Patch** field with the name you made up for the patch you just gave a number to, and press ENTER.

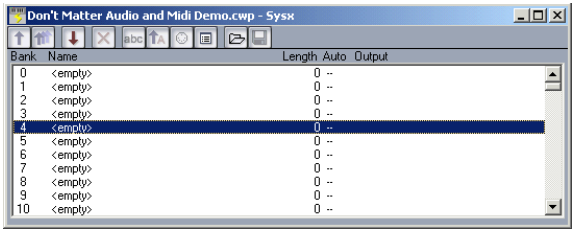
4. Assign names to as many patch numbers as you want—the numbers between 0 and 127 that you don't assign any names to show up in the Track view **Patch** menu just as patch numbers with no other names.
5. When you finish assigning names, drag your edited patch list to the Roland XP-10 **Patch Names for Banks** tree in the left window.
6. Enter **8192** as the bank number, which we know is the correct bank number from the previous procedure.
7. Click the **Close** button to close the **Define Instruments and Names** dialog box and click **OK** to close the **Assign Instruments and Names** dialog box.

Now you can select the **8192-Roland XP-10 User Tone 1** bank in the **Bank** field of a MIDI track, and then examine the patch list in the **Patch** menu: you should see the patch list that you just created.

System Exclusive Data

SONAR's System Exclusive (Sysx) librarian provides you with 8192 banks in which to hold MIDI System Exclusive messages. A **bank** is a storage area plus some associated parameters such as a destination output and an optional description. Each bank can hold any number of messages; the amount of data it can hold is limited only by available memory. The banks are saved in the SONAR project file. Each bank can also be saved as a .syx file.

Figure 135. *The Sysx view*



See:

What Is System Exclusive?

Using the System Exclusive View

Sending Sysx Banks at Startup

Importing, Creating, and Dumping Sysx Banks

Transmitting Banks During Playback

Real-time Recording of System Exclusive Messages

Sysx Echo

Sysx .ini File Settings

Troubleshooting

What Is System Exclusive?

System Exclusive data is MIDI's way of letting each synthesizer manufacturer transmit private data about its products. A System Exclusive message has a manufacturer ID; the rest of the message is completely proprietary and varies for each manufacturer, even for each of its products. SONAR does not understand what this data means; it simply can hold onto it for you. You can take snapshots of your equipment's configuration and store them in SONAR's System Exclusive banks for transmitting back to the equipment. You may want to do this simply to back up your equipment's patches and/or settings, much like backing up your computer's hard drive in case something goes wrong. Or you may configure your equipment differently for each project's requirements, which is why storing System Exclusive banks with each SONAR project file can be useful. Of course, for merely backing up your equipment, you can have a project containing only System Exclusive data and no notes.

See:

Sysx Events

Using the System Exclusive View

Sending Sysx Banks at Startup

Transmitting Banks During Playback

Real-time Recording of System Exclusive Messages

Sysx Echo

Sysx .ini File Settings

Troubleshooting

Sysx Events

SONAR provides two distinct kinds of Sysx events: **Sysx Bank** and **Sysx Data**.

- **Sysx Bank:** You can use Sysx Bank events to transmit one of the project's 8192 banks of System Exclusive data. These banks can be recorded, viewed, and edited in the Sysx view, and each bank can contain one or more very large System Exclusive messages. Sysx Banks may also be marked Auto, so that they are sent when the file is loaded rather than during the start of playback.
- **Sysx Data:** You can also use Sysx Data events, which can each contain a single System Exclusive message up to 255 bytes long. You can view the message bytes in the Event List view.

Sysx Data events can be recorded in real time. See "Real-time Recording of System Exclusive Messages" on page 814 for more information.

See:

Using the System Exclusive View

Transmitting Banks During Playback

Real-time Recording of System Exclusive Messages

Sysx Echo

Sending Sysx Banks at Startup

Sysx .ini File Settings

Troubleshooting

Using the System Exclusive View

The System Exclusive view has a list box for a maximum of 256 Sysx banks, plus a toolbar of buttons. Most of the buttons affect whatever bank you have selected in the list. Certain buttons will be disabled if the selected bank is empty. To open the System Exclusive view, choose the **Sysx** command from the **View** menu, or click the Sysx view icon in the **Views** toolbar.

SONAR stores Sysx messages as either Sysx banks or Sysx data. The main difference is in the number of bytes in the message, and also that Sysx data is only visible in the Event List view as SysxData events. A Sysx data message can have up to 255 bytes in it. You can send Sysx data to an instrument without interrupting playback (depending on the speed of your computer and the number of bytes in the message), however, sending a Sysx bank stops playback until all of the Sysx bank is transmitted. Sysx banks are usually sent to your instrument when you load your work file. SONAR asks you each time you load a project file if you want to send any existing Sysx banks the file contains that are marked for auto-sending. Clicking the **Auto Send Bank** button in the **Sysx view** toolbar marks or unmarks a selected bank for auto-sending.

For more information, see:

Importing, Creating, and Dumping Sysx Banks

Editing Sysx Banks

Sending Sysx Banks at Startup

Real-time Recording of System Exclusive Messages

Transmitting Banks During Playback

Sysx View Buttons

Sending Sysx Banks at Startup

You can tell SONAR to send certain Sysx banks to your instrument(s) each time you open the project file that the banks are in.

To Send Sysx Banks at Startup

1. In the Sysx view, select a bank that you want to send to an instrument when you open the current project.

SONAR highlights the bank you select.

2. Click the **Auto Send Bank** button .

   A checkmark appears next to the bank name in the **Auto** column to show that the bank is marked for auto-sending.

3. While the bank is still highlighted, click the **Output** button to open the **Sysx Bank Output** dialog.
4. Enter the number of the output you want to send this bank out through, and click **OK**.

   The output number you entered appears next to the selected bank in the **Output** column.

5. Repeat steps 1-4 for each bank you want to send, and save your project.

The next time you open a project, SONAR asks you if you want to send any Sysx banks in the project that are marked for auto-sending. If you click **OK**, SONAR sends the bank(s).

If you want SONAR to send auto-send banks every time you open a project without asking you, uncheck the check box in the **Auto-Send Sysx** dialog that says **Ask this question every time**. If you decide later that you want to be asked, use the **Options > Global** command to open the **Global Options** dialog, click the **General** tab, and check the check box that says **Ask Before Sending System Exclusive (When Opening Projects)**.

Importing, Creating, and Dumping Sysx Banks

There are several ways to get a sysx bank into SONAR:

- You can import (load) an external .syx file.
- You can edit an empty bank to create a new bank from scratch.
- You can dump a bank into SONAR from the synthesizer itself.

To Import a Sysx Bank into a Project

1. In the Sysx view, select an empty bank to import the new bank into (unless you want to add to or overwrite an existing bank).
2. Click the **Load Bank from File** button .

   The **Open** dialog appears.

3. If necessary, navigate to the folder that contains your .syx files, select the one you want to import, and click **Open**.

The file appears as a new bank in the row you selected in the Sysx view. If you want SONAR to send this bank every time you open this project, make sure the bank is selected (highlighted), and click the **Auto Send Bank** button . A checkmark appears in the **Auto** column next to all auto-send-enabled banks.

To Create a Sysx Bank

1. In the Sysx view, select an empty bank, and click the **Edit Data** button (or double-click the empty bank).

The **Edit System Exclusive Bytes** dialog appears.

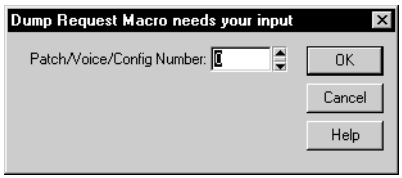
2. Type your message(s). Each message you add to the window must begin with **F0** and end with **F7** (that's F zero and F seven). See your instrument's manual for the messages you can create.
3. When you finish typing the message(s), click **OK** to close the dialog.

After you close the editing window, your new bank appears in the Sysx view. Use the buttons in the toolbar to name it, give it an output number, and mark it for auto-sending, if you want. Save your project when you're finished.

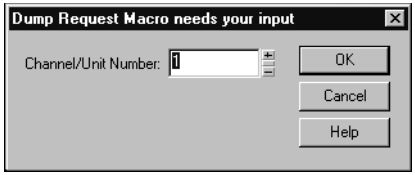
To Dump a Sysx Bank into SONAR

1. Choose **Options > Global** and click the **MIDI** tab, and make sure that the **System Exclusive** item is checked. If it isn't, SONAR won't receive System Exclusive messages.
2. In the Sysx view, select an empty bank to dump the new bank into (unless you want to add to or overwrite an existing bank).
3. Click the **Receive Bank** button (or press C on your computer keyboard).

   The **Receive System Exclusive** dialog appears, which contains a list of Dump Request Macros (DRMs). Each DRM has a name that describes the synthesizer the DRM controls and the type of data that the DRM asks the synthesizer to send.
4. Do one of the following:
   - If the name of your instrument and the kind of data you want to store in SONAR appears in the list, select your choice and click **OK**.
   - If your instrument and the type of data you want to record are not in the list, select You start dump on instrument, click **OK**, and press whatever button on your synthesizer that starts a Sysx bank dump. The **You start dump on instrument** option is not really a Dump Request Macro. It tells SONAR that you will initiate a dump (or multiple dumps) from the front panel of the synthesizer.
5. The DRM may prompt you for additional information, which you should supply.
   - **Patch number:** DRMs that are written to request an individual patch or configuration give you this prompt, so you can specify the one you want to have dumped.



   - **Channel/unit number:** Most synthesizers have a Sysx channel or unit number. This covers the situation in which you own two of the exact same synthesizer, and want to do Sysx with each independently. Your synthesizer manual should describe the factory-set number.



When your instrument starts sending the bank, the Sysx Receive window counts the bytes as SONAR receives them. If the count stays at zero for more than a couple of seconds, something is wrong. The synthesizer may not be hooked up to the MIDI interface in both directions, or you may have answered a DRM prompt incorrectly. Click **Cancel**. If any data were received, you will see the number of bytes in the bank list.

6. Once the bytes received count stops increasing, you can click **Done** to tell SONAR to stop receiving. However, if your synthesizer also displays a message when the instrument is finished sending a bank, wait until that message says the transmission is finished before you click **Done**.

The currently selected bank now holds the received Sysx data. At this point, you may want to give the bank a descriptive name by selecting it and clicking abc.

See also:

Editing Sysx Banks

Sysx View Buttons

Note: *The SONAR librarian may not support synthesizers that require handshaking dump protocols. Some of these synthesizers have a backup protocol where they will do a normal dump if they don't get a handshake. Others do not.*

More about Dump Request Macros

DRMs are defined in your `DRM.ini` file in the `[Dump Request Macros]` section. You may add your own DRMs or modify the ones that we have provided. Use the Windows Notepad to edit the file. Comments in the `DRM.ini` file itself describe how to write DRMs. The specific Sysx messages can be found in the instrument manual, or they can be obtained by contacting the manufacturer. Remember that a DRM must start with **F0** and end with **F7**.

Sometimes you will find that the byte size is different when you use a DRM, as opposed to initiating the dump from the instrument. It is possible the instrument is dumping some additional information when you initiate the dump from the instrument, but you should be able to use either method without any problems.

When you press the **Receive** button in the Sysx window, you may pick from a list of Dump Request Macros. These are short System Exclusive messages sent to a synthesizer to make it dump (send back) System Exclusive data. DRMs are defined in your `Cakewalk.ini` file in the `[Dump`

`Request Macros]` section. You may add your own DRMs or modify the ones that we have provided. Use the Windows Notepad to edit the file.

Please note that many of the DRMs included with SONAR have been donated by customers who are using the particular equipment. In some cases, we have not been able to test those DRMs because we do not have access to that equipment. We redistribute such DRMs on an as-is basis. Additional user-supplied DRMs may be available on the Cakewalk website (www.cakewalk.com).

Editing Sysx Banks

Editing a Sysx bank is very similar to creating one.

To Edit a Sysx Bank

1. In the Sysx view, select the bank you want to edit, and click the **Edit Data** button (or double-click the selected bank).

   The **Edit System Exclusive Bytes** dialog appears.
2. Edit your message(s). Each message in the window must begin with **F0** and end with **F7** (that's F zero and F seven). See your instrument's manual for the messages you can create.
3. When you finish editing the message(s), click **OK** to close the window.

Save your project when you're finished.

See also:

Importing, Creating, and Dumping Sysx Banks

Sysx View Buttons

Sysx View Buttons

Here is a description of the buttons in the Sysx view.

Send

Send All

Receive

Name

Auto

Output

Edit Bytes

Clear Bank

Load Bank and Save Bank

Send

Send transmits the current bank's System Exclusive message. If nothing seems to happen, make sure you have correctly set the output. This button is disabled if the current bank is empty. The shortcut key is S.

Send All

Send All transmits all non-empty banks. The shortcut key is L.

Receive

Receive dumps data from a synthesizer into the bank. If the bank contains data, SONAR asks you whether you want the new data to overwrite the existing data or be appended to it. The shortcut key is C.

When receiving dumps, remember to connect both the MIDI In and Out ports of the synthesizer to the MIDI interface. Also, make sure that your instruments are set up to receive and/or transmit Sysx. Synthesizers that you normally use only to play sounds—for example, sound modules that don't have keyboards—don't need to be hooked up in both directions except for receiving dumps, so it is easy to forget this. (If you will only be *sending* Sysx messages to the device, the normal one-direction hookup is sufficient.)

Clear Bank

This deletes the selected bank. The shortcut key is D.

Name

You may enter a description for a bank by clicking this button. Names are saved only in .cwp and .cwb files. The shortcut key is N.

Auto

The **Auto** option tells SONAR to transmit that bank every time it loads the project file. You might use this option for banks that contain System Exclusive messages that load a set of sounds for a synthesizer at or before the start of a project.

Before transmitting, SONAR asks your permission. This is a safety feature for loading a file you have received from someone else; if it happens to contain data for your synthesizer(s), you might lose your patches and configuration information. However, if you don't want to be asked, choose **Options > Global**, click the **General** tab, and uncheck the box labeled **Ask Before Sending Sysx**. The shortcut key is A.

Output

Each bank is transmitted to a particular MIDI output, just as a track is. Click this button to change the output. The shortcut key is P.

Edit Bytes

Although SONAR's Sysx features are designed mainly to store System Exclusive data for you, you can edit the bytes of shorter messages in hex format (many of the more popular synthesizers have special patch-editing programs available that let you edit data using sliders and other tools rather than raw hex data).

When you select a bank and click the **Edit Bytes** button, SONAR converts the binary data into a text representation and pops up the **Edit System Exclusive Bytes** dialog box, in which you can edit the text. If you make changes and click **OK** to keep them, SONAR tries to convert the text back into binary format. You'll get an error message if the text does not begin with an F0 and end with an F7, which are the System Exclusive begin and end bytes.

SONAR may not be able to convert the data to text format. The text representation requires three to four times more memory than the data itself, and the **Edit System Exclusive Bytes** dialog box can contain roughly as much text as *Notepad*. The shortcut key is E.

Load Bank and Save Bank

You can import banks from and save banks to files with the file extension .syx. If you try to import to a bank that isn't empty, SONAR asks if you want to append or replace. The **Load** and **Save** buttons work only with .syx, not SONAR project files or MIDI files.

You may also use this feature to copy a Sysx bank between two SONAR project files. Save the bank into a file, load the other SONAR project file, then load the bank again. This is also a good way to copy one bank to another in the *same* project file. The shortcut keys are **o** and **v** respectively**.**

To Export a Sysx Bank to Another Project

1. In the Sysx view, select the bank you want to export.
2. Click the **Save Bank** button .

   The **Save As** dialog appears.
3. Navigate to the folder in which you want to store the file.
4. Enter a file name and click **OK**.

   SONAR saves the file in the location you specified, with the extension .syx.
5. Open the project to which you want to import the bank and select an empty bank in the Sysx view (unless you want to add the file to an existing bank).
6. Click the **Load Bank from File** button to open the **Open** dialog.
7. Navigate to the desired folder, select the .syx file you want to import, and click **Open**.

SONAR loads the selected bank into the current project.

Transmitting Banks During Playback

SONAR has a special meta-event, Sysx Bank, that lets you play a System Exclusive bank at a specified time in your project. You can use a Sysx meta-event to send any of the 8192 available Sysx banks at any time in a sequence. To do this, you have to insert a new event in the Event List using the INSERT key on the PC keyboard. Next you have to double-click **Event Kind** and change it to **System Exclusive**. In the **Values** column, select the bank (0-8191) that you want to send.

MIDI is a serial data transmission, meaning it can do only one thing at a time. If you try to upload a huge sampler dump during a fast drum solo, playback will noticeably lurch. MIDI must complete the System Exclusive message before it can resume playback. The Sysx meta-event is appropriate only for very short System Exclusive messages. The exact length depends on various factors, such as the speed of your computer but as a rule of thumb, 100 bytes is a likely maximum, and even that may often be too large.

You don't need to use Sysx meta-events for sending System Exclusive information at the beginning of your project. Instead, use the **Auto** option for System Exclusive banks. Banks that are marked Auto are transmitted automatically by SONAR when it loads the project file they are stored in. Use the Sysx meta-event only when you need to send a Sysx Bank during the middle of the project.

See:

Real-time Recording of System Exclusive Messages

What Is System Exclusive?

Real-time Recording of System Exclusive Messages

You can record short System Exclusive messages in real time. These will end up in the track as the new Sysx Data types of events, which can hold System Exclusive messages up to 255 bytes long. Before you record any Sysx messages, choose **Options > Global**, click the **MIDI** tab, and make sure that **System Exclusive** is checked.

To Record Sysx Messages in Real Time

1. Arm a MIDI track for recording—use a track that's uses the output you want to send the Sysx data out through.
2. Press the **Record** button or press R to start recording.
3. Move the button or fader on your MIDI instrument that sends Sysx data.
4. Stop recording.

SONAR records your instrument's Sysx data as a Sysx Data event. Open up the Event List view for the track you recorded on to view the data. When you play back the MIDI track that the Sysx Data event is on, make sure that the **Output** field of the track is set to the output that the MIDI instrument you want to send Sysx data to is on.

See also:

Sysx Echo

Troubleshooting

Sysx Echo

You can configure SONAR to echo received System Exclusive messages to output devices.

To Echo Sysx Messages

1. Choose **Options > Global**.
2. Select the **MIDI** tab.
3. Check the **Echo System Exclusive** option.
4. Click **OK**.

SONAR echoes received Sysx data according to the echo settings on the **MIDI Input** tab of the **Project Options** dialog box.

See:

Troubleshooting

Sysx .ini File Settings

The `TTSseq.ini` initialization file contains settings that govern the sending and receiving of System Exclusive information. If you are experiencing difficulties using Sysx, you will probably be able to correct the problem by adjusting these settings.

The options described below occur in the `[Options]` section of the `TTSseq.ini` file. You can edit this file using the Windows Notepad. Every time you add or change one or more lines in `TTSseq.ini`, you must restart SONAR in order for the change to take effect.

SysxSendDelayMsecs=n

This setting causes SONAR to delay *n* milliseconds if it encounters an F7 in a System Exclusive bank, but only if the line `SysxDelayAfterF7=n` is not zero. The line SysxDelayAfterF7=*n* enables a delay between Sysx messages, while the line `SysxSendDelayMsecs=n` sets the size of the delay.

n = 60 Default value (in milliseconds)

SysxDelayAfterF7=n

This setting causes SONAR to delay Sysx transmission for a certain amount of time if it encounters an F7 in a System Exclusive bank. This gives some instruments the required amount of “breathing” time necessary to process the Sysx transmission. The default delay is 1/18 of a second, but can be changed by also adding the `SysxSendDelayMsecs=n` line, where *n* is the number of milliseconds that the delay lasts.

The possible values of *n* in the line `SysxDelayAfterF7=n` are 0 and 1. Their significance is as follows:

n = 0 No delay

n = 1 Delay between each Sysx message

SysxSendPacketSize=n

System Exclusive bytes are transmitted in packets, with a 1/18-second default delay between each packet. Setting this value to a smaller number will help slower synthesizers avoid overflowing their internal buffers. This line sets the number of bytes between each Sysx transmit delay.

n = 1024 Default value (in bytes)

See:

Troubleshooting

What Is System Exclusive?

Troubleshooting

SONAR Is Not Receiving Sysx Messages

- Make sure all your devices are connected correctly.
- Make sure you have the right MIDI Input selected by using the **Options > MIDI Devices** command.
- Make sure that your instrument is set up to transmit System Exclusive data.

Sysx Bank Names Don't Show When I Open a File

Sysx bank names are only saved in .cwp and .cwb files (not in .mid files).

SONAR Doesn't Include a DRM for My Instrument

If there is no Dump Request Macro (DRM) for your instrument, you should select You start dump on instrument, then initiate the Sysx dump from the instrument. Once the bytes received count stops increasing, click **Done** to tell SONAR to stop receiving. The currently selected bank now holds the received Sysx data. You can rename the bank if you want by selecting the bank and clicking the **Name** button.

You can also add a DRM for any unlisted instrument. For more information about how to do this, read the section “More about Dump Request Macros” on page 810 earlier in this chapter.

Synthesizers Reporting MIDI Data Errors

Some synthesizers will report data errors when you try to send Sysx information to them. This usually happens when SONAR sends data at a rate too fast for the synthesizer to keep up. You can use the `SysxSendPacketSize=number` setting in `TTSseq.ini` to make SONAR transmit Sysx data more slowly, as described in Sysx .ini File Settings.

Try setting the number to 64. If that does not solve the problem, try successively smaller values. If 64 works, you may try larger values until it stops working; go back to the largest value that worked and you will have the fastest transmission rate that the problematic synthesizer can keep up with.

My Equipment Is Not receiving Sysx from SONAR

Make sure the instrument is set up to receive System Exclusive messages. In the Sysx View, make sure the right output is selected. Verify that the Sysx message originally transmitted from the same kind of instrument. An instrument will not recognize Sysx messages from a different make or model of instrument.

Finally, try adjusting the parameters in the `TTSseq.ini` file, as described Sysx .ini File Settings .

Timing Requirements When Receiving Sysx

Some MIDI devices have special timing requirements when receiving System Exclusive transmissions. If your equipment has problems receiving System Exclusive data from SONAR, you might need to introduce some small delays to allow the equipment to digest the information it is receiving.

The line in `TTSseq.ini` that reads `SysxDelayAfterF7=n` enables SONAR to introduce a delay between each Sysx message so that the instrument has some time to respond to the message. Setting *n* to be 1 enables the delay. The line SysxSendDelayMsecs=*n* lets you control how many milliseconds the delay is, where *n* is the number of milliseconds that the delay lasts.

Roland Equipment

Some Roland equipment—notably, the GR-1 and GR-50 Guitar Synthesizers—have problems receiving Sysx packets in fast succession. You must use the setting SysxDelayAfterF7 = 1 with these devices.

Ensoniq Instruments

Successfully sending Sysx messages to most Ensoniq instruments requires that you add the following three lines to the `[Options]` section of `TTSseq.ini`:

`SysxDelayAfterF7=1` Enables delay

`SysxSendDelayMsecs=200` Sets delay time to 200 milliseconds

`SysxSendPacketSize=65535` Increases packet size to 64k

See:

What Is System Exclusive?
Using the System Exclusive View
Transmitting Banks During Playback
Real-time Recording of System Exclusive Messages
Sysx Echo
Sysx .ini File Settings
Troubleshooting

Synchronizing Your Gear

Your computer is often used with other equipment: sound cards, MIDI equipment, and digital tape decks or other digital recording tools. All these devices can have their own built-in clocks or timing mechanisms.

When several pieces of equipment are used together, it's important that they operate in synchronization. For this to happen, all the equipment must rely on the same source of clock or timing information. SONAR lets you use many different types of synchronization so that you can get your work done quickly and efficiently.

See:

Synchronization Overview

Choosing Clock Sources: SONAR as Master

MIDI Synchronization

SMPTE/MIDI Time Code Synchronization

MIDI Machine Control (MMC)

Synchronization Overview

SONAR supports several different types of synchronization, which rely on a variety of different clock sources:

Clock source	Timing is determined by
Internal	The clock on the computer motherboard
Audio	The clock on the computer's sound card
MIDI Sync	The clock on an external MIDI device
SMPTE/MIDI Time Code (MTC)	A time code signal (in SMPTE or some other format) recorded on some external medium or generated and sent by SONAR

Table 168.

When you use either the internal or audio clock, SONAR can control other MIDI devices using MIDI Sync. In this case, SONAR is the “master” device and the other MIDI devices are the “slaves.”

When MIDI Sync is the clock source, SONAR operates either in response to incoming MIDI messages or as the sender. In this case, SONAR can be either the master or the slave. Note that audio playback is not supported when using MIDI Sync with SONAR as the slave.

When SMPTE/MIDI Time Code (SMPTE/MTC) is the source of timing information, SONAR operates in response to incoming MTC messages. These messages could be generated by:

- An external MIDI device that is capable of generating MIDI Time Code (like the Roland VS880)
- A MIDI interface that is converting other time code signals (like SMPTE, EBU, or film time code) into MIDI Time Code

When you use some of these synchronization options, some SONAR commands work differently. This section describes each of the synchronization options, how and why each is useful, and the effect each option has on other features and commands.

The **Sync** toolbar lets you change back and forth quickly between the different clock settings:

Figure 136. *The **Sync** toolbar*

You can also choose the sync mode as follows:

1. Choose **Options > Project**, and click the **Clock** tab.
2. Choose the desired clock source from the **Clock** list.
3. Click **OK**.

The clock source and the type of synchronization that is used are options that are stored as part of your project files. For example, one of your projects might be set up to use the internal clock; a second might use the Audio clock and MIDI Sync with SONAR as the master timing source; and another might use SMPTE/MTC Sync as the clock source.

Many technical support requests concern synchronization problems, which are among the hardest to diagnose and duplicate over the phone. If you experience problems, before you call, perform as much experimentation and gather as much information as possible about what does and doesn’t work. The more prepared you are, the more we can help.

Choosing Clock Sources: SONAR as Master

When SONAR is used alone, or with an external device that does not have its own clock or timing signal, you use one of two clock sources: Internal or Audio.

When the clock source is set to Internal, SONAR uses the clock built into the computer or the computer’s MIDI interface as its timing source. If your projects contain only MIDI (no audio), this is the most efficient method of playback.

If your projects contain MIDI and audio, or only audio, you should set the clock source to Audio. This lets the sound card clock determine the correct speed for audio playback and automatically

synchronizes MIDI playback to match the audio. For more information, see “System Configuration” on page 843. You cannot use the tempo ratio controls when using the audio clock, because the audio playback speed is determined by the audio clock.

When either of these clock sources is used, you can also configure SONAR to drive other MIDI devices using MIDI Synchronization. For more information, see “MIDI Synchronization” on page 821. If you need to send MIDI Time Code (MTC), SONAR will send this data regardless of the clock setting.

To Use the Internal Clock Source

1. Click on the **Sync** toolbar.

   OR

1. Choose **Options > Project**, and click the **Clock** tab.
2. Check the **Internal** box.
3. Click **OK**.

To Use the Audio Clock Source

1. Click on the **Sync** toolbar.

   OR

   Choose **Options > Project**, and click the **Clock** tab.
2. Check the **Audio** box.
3. Click **OK**.

MIDI Synchronization

MIDI Synchronization, or **MIDI Sync**, is usually used to synchronize SONAR with drum machines, stand-alone MIDI hardware sequencers, and sequencers built into MIDI keyboards. SONAR can slave to MIDI Sync, and can send MIDI Sync on multiple output ports.

When MIDI devices are synched, the master device sends messages to all other devices to start and stop playback and to keep all the devices in sync. To change the tempo of a project, you adjust the tempo on the master device. The playback tempo on all slave devices is then set automatically.

The following MIDI messages are sent by the master device to support MIDI Sync:

Message	How it is used
Start	This message tells slave devices to start playing from the beginning of the currently loaded sequence.
Stop	This message tells slave devices to stop playback.

Table 169.

Message	How it is used
Continue	This message tells slave devices to continue playing from the current location in the currently loaded sequence.
Song Position Pointer (SPP)	This message tells slave devices to change the current location to the designated point in the project. SONAR normally issues an SPP message immediately prior to any Start or Continue message.
Clock	The master sends clock messages to each slave device at the rate of 24 per quarter note. The slave devices use these messages to establish the tempo and stay in sync.

Table 169.

When you start playback on the master MIDI device, for example, it sends a Start message to all slave devices, announcing that playback has started. If the slave devices are set up correctly, they receive the message and start playing back with the master device. When SONAR is set up as the master device, you can enable or disable these messages.

See:

SONAR as the Slave

SONAR as the Master

Using MIDI Sync with Drum Machines

Troubleshooting MIDI Sync

SONAR as the Slave

When SONAR is slaved to an external MIDI device, the following changes occur:

- When you click the **Play** or **Record** button, a message (Waiting for MIDI Sync) is displayed in the status bar. When you start your external device, SONAR will follow.
- If you change the tempo using an external device, the SMPTE time code display in SONAR will be incorrect.
- SONAR will not transmit MIDI Start, Continue, Stop, and Clock messages.
- Digital audio will play back, but not necessarily in sync.

To Use MIDI Sync with SONAR as the Slave

1. Configure the external MIDI device you want to use as the master device to transmit MIDI Sync.
2. Configure external slave devices to receive MIDI Sync.
3. Choose **Options > MIDI Devices** to display the **MIDI Devices** dialog box.
4. Make sure that your MIDI interface is highlighted in the Inputs list, and click **OK**.
5. Click on the **Sync** toolbar to use the MIDI Sync clock source.

From now on, SONAR starts playback and recording only after the appropriate message is received from the master device.

Tip: *Make sure the Status bar is displayed when using MIDI Sync. Otherwise, you will not be able to see the MIDI Sync status messages. To display the Status bar, choose* ***Options > Global*** *and click the* ***General*** *tab. Then check the* ***Show Status Bar*** *box.*

SONAR as the Master

There are several options, found on the **Sync** tab of the **Project Options** dialog box, which you can use when SONAR is the MIDI Sync master device:

Option	What it's for
Transmit MIDI Start/Continue/Stop/Clock	Choosing this option causes SONAR to tell the slave when to start, when to continue, when to stop, and what timing data to go by (SONAR's).
Use Start, Never Continue (greyed out unless above option is checked)	If you are using an external drum machine to repeat a drum pattern or loop, you might always want playback on the drum machine to start at the beginning of the loop. When this option is chosen, SONAR sends a Start message to all slave devices when playback is started, even if you are in the middle of a project. (Normally, SONAR would send a Continue message if playback starts from the middle of a project.)
Transmit MIDI Song Position Pointer (SPP)	When this options is checked, SONAR sends an SPP message before starting or continuing playback. If you are using a drum machine as described previously, you might want to disable this option.
Locate Delay for SPP Recipient	Some older MIDI devices take a small amount of time to respond to SPP messages. This option causes SONAR to delay briefly after sending an SPP message, to give the slave device time to respond. The delay is in 1/18ths of a second. Enter 1 for a 1/18th second delay, 2 for 2/18ths of a second, or 18 for a full second delay.
MIDI Sync Output Ports	Choose the outputs that your slave devices are connected to.

Table 170.

To Use MIDI Sync with SONAR as the Master

1. Configure your external MIDI devices to receive MIDI Sync.
2. Click or on the **Sync** toolbar to use the **Internal** or **Audio** clock source.
3. Choose **Options > Project**, and click the **Sync** tab.
4. Check the **Transmit MIDI Start/Continue/Stop/Clock** box.
5. For most applications, check the **Transmit MIDI Song Position Pointer** box.
6. If you are using a drum machine to play patterns or loops, check the **Use Start, Never Continue** option and disable the **Transmit MIDI Song Position Pointer** option.

7. In the **MIDI Sync Output Ports** field, check off the output ports that you want to send the sync signal out of.
8. Click **OK**.

From now on, the transport controls in SONAR control playback on the external MIDI devices.

Using MIDI Sync with Drum Machines

The most flexible way to use a MIDI drum machine is to record the notes it generates into SONAR, then use that machine as a MIDI playback device. This lets you edit, cut, paste, and copy your drum parts like any other clip. You can use MIDI Sync to record the notes from the drum machine into SONAR as follows:

1. Use the drum machine's pattern-composing facilities to compose your drum part.
2. Configure the drum machine to be a slave device that receives MIDI Sync messages.
3. Configure SONAR to send MIDI Stop/Start/Continue/SPP messages.
4. Record the drum part from SONAR. The drum machine starts automatically when recording begins and stops automatically when you press Stop.
5. Switch the drum machine out of MIDI Sync mode so that it acts simply as a sound-producing module.

Troubleshooting MIDI Sync

If you experience problems with MIDI Sync when SONAR is the master device, verify that your external devices are configured correctly to respond to MIDI Sync. Most devices have a **Clock** option that should be set to **External** or **MIDI**.

If SONAR does not respond to MIDI Sync as a slave device, verify that your external devices are configured correctly to transmit MIDI Sync. Remember that only one external device can be used as the master clock source.

SMPTE/MIDI Time Code Synchronization

SMPTE/MIDI Time Code Sync (SMPTE/MTC) is another method of synchronization that lets SONAR act as a master or slave to external devices. SONAR can send or receive SMPTE/MTC messages to or from external devices that can generate or receive MTC. SONAR can send MTC on multiple output ports simultaneously.

SMPTE/MTC is a position and timing reference that indicates the current location in the project and how quickly the project should be playing. Time code labels the position in a project in hours, minutes, seconds, and frames. The speed of playback is indicated by a **frame rate**.

Time code is recorded onto tape using a device called a time code generator. The process of recording a time code signal onto a track is called **striping**. Normally, the start of a tape stripe has a particular time, expressed in hours, minutes, seconds, and frames. For example, the tape stripe

might start at 00:00:00:00, 01:00:00:00, or any other time. The material recorded on the tape usually starts anywhere from 10 seconds to several minutes after the start of the time code. Sometimes, the tape stripe starts at a time like 00:59:50:00, and the material starts 10 seconds later, at 01:00:00:00.

When you create a new SONAR project, by default the project is configured so that the beginning of bar 1 is synchronized with a time code of 00:00:00:00. If the starting point of the material on your tape or external project is not 0, you need to enter an offset to tell SONAR the time code that corresponds to the start of the project.

To Enter an Offset

1. Select **Options > Project**.

   The **Project Options** dialog appears.
2. Click on the **Clock** tab.
3. In the **Clock** tab, enter an offset in the **SMPTE/MTC Offset** field. To enter an offset of 15 seconds, type **0**,**0**,**15** and hit ENTER. The **SMPTE/MTC Offset** value should now be **00:00:15:00** or 15 seconds.

Frame Rates

Seven time code frame rates are supported in SONAR, which are normally used for the following types of applications:

External Timecodes	Cakewalk Setting	Description
24 frames per second	24 FPS	Used for theatrical film worldwide. Any film in North America or Japan uses this setting.
25 frames per second (EBU timecode)	25 FPS	Used for PAL/SECAM video, video and some film in countries that use 50 Hz wall electricity. This is the setting to use when synchronizing to any European video format.
29.97 frames per second non drop-frame	29.97 FPS NDF	NTSC non-broadcast and short length video in North America and Japan. Some music projects. This setting synchronizes the video perfectly with SONAR, but the sequencer position displayed in the Now Time and Big Time displays will gradually drift and become incorrect over long periods of time. The audio and MIDI synchronization to the external device will not be affected by this discrepancy.
29.97 frames per second drop-frame	29.97 FPS DF	NTSC broadcast and long format video in North America and Japan. This setting synchronizes the video perfectly with SONAR, but the sequencer position displayed in the Now Time and Big Time displays will gradually drift and become incorrect over long periods of time. The audio and MIDI synchronization to the external device will not be affected by this discrepancy.

Table 171.

External Timecodes	Cakewalk Setting	Description
30 frames per second non drop-frame	30 FPS NDF	Most music projects and some film in North America. This is the best choice for any music project and should be used unless the situation dictates otherwise.
30 frames per second drop-frame	30 FPS DF	Not a standard type of timecode, used rarely for speed correction and transfer problems in tape based systems.

Table 171.

For more information about frame rate time formats, see the documentation for your time code hardware.

Refer to the documentation for your MIDI interface or external MIDI device for additional information about SMPTE/MTC.

To Use SONAR as the Master MTC Generator

1. Configure the clocks on each external device that you want to synchronize to receive SMPTE/MTC. Make sure they're connected to MIDI outputs from your computer or MIDI interface.
2. Click or on SONAR's **Sync** toolbar to use the **Internal** or **Audio** clock source (to display the **Sync** toolbar, use the **Views > Toolbars > Sync** command).
3. Use the **Options > Project** command to open the **Project Options** dialog.
4. On the **Sync** tab, check the **Transmit MTC** check box (you can also click the **Transmit MTC** button on the **Sync** toolbar).
5. In the **Frame Rate** field (it's just below the **Transmit MTC** check box), choose the frame rate that your project uses (see "Frame Rates" on page 825, if necessary).
6. In the **MTC Output Ports** field, check off the outputs that you want to send MTC on (the outputs your external devices are connected to).
7. Click **OK**.

SONAR saves your sync and MTC output port settings with your project. However, output ports are saved by their number only, not their name. Their number is determined by the order in which they appear in the **MIDI Devices** dialog under **Outputs** (**Options > MIDI Devices** command). If you change the order of devices in this dialog, the MTC output ports in your project will retain the same numbers, but those numbers will now refer to different outputs. Also, if you reduce the number of highlighted outputs in the **MIDI Devices** dialog, and the MTC ports you chose have higher numbers than what are currently highlighted in the **MIDI Devices** dialog, SONAR does not substitute new port numbers. Also, SONAR does not send MTC if SONAR's **Tempo Ratio** buttons are set to any value other than 1.

To Configure SONAR to Sync to SMPTE/MTC

1. Click the **SMPTE/MTC mode** button in the **Sync** toolbar.
2. Select **Options > Global** and click on the **Timecode** tab.

3. Select one of the following options:
   - **Ask first, then switch to clock source and start.** This option prompts SONAR to alert you when it detects a SMPTE/MTC signal, asks if you want to sync to the incoming signal, and if you respond that you do, switches the clock source and starts to receive the signal.
   - **Always switch the clock source and start.** SONAR automatically switches to the clock source of the incoming signal and begins to receive the signal.
   - **Do not switch clock source, but start if in SMPTE/MTC mode.** This option automatically syncs to the incoming signal if SONAR is in SMPTE/MTC mode.

Note: *The final option, Never switch clock source, never start, should never be used if you are attempting to sync to an external clock source.*

4. Click **OK**.
5. Choose **Options > Project**, and click the **Clock** tab.
6. Choose the frame rate and time offset that are appropriate for your source material.
7. Click **OK** to close the dialog box.
8. Choose **Options > MIDI Devices** to display the **MIDI Devices** dialog box.
9. Make sure that your MIDI interface is highlighted in the Inputs list. If your interface also has a Sync driver, highlight that as well, then click **OK**.

When SONAR is the slave, here's how things work:

- SONAR monitors for a SMPTE/MTC signal. You are able to perform other action in SONAR while waiting for the signal.
- Start playback on the external device. It takes about two seconds for SONAR to lock from the time it receives time code input.
- If the time code is earlier than the start of the project (based on the time code offset), another message (Chasing…) is displayed in the status bar. When the time code reaches the start of the project, SONAR starts to play in sync.
- If the time code is at or after the start of the project, SONAR starts playback as soon as it locks to the time code.
- When the external device stops (or when the time code ends), SONAR will stop.

Note: *If you want SONAR to switch its clock source to SMPTE/MTC automatically when SONAR receives a SMPTE/MTC signal, you can choose this option on the **Timecode** tab of the **Global Options** dialog.*

See:

Playing Digital Audio under SMPTE/MTC Sync

SMPTE/MTC Sync and Full Chase Lock

Playing Digital Audio under SMPTE/MTC Sync

SONAR gives you two choices for controlling audio playback when using time SMPTE/MTC Sync:

Option	How it works
Trigger and freewheel	Audio event playback is started (or triggered) at the exact time code, but then the audio plays at its own internal rate (or freewheels). When audio freewheels, it can gradually drift from the time code due to variations in the time code signal.
Full chase lock	The speed of audio event playback is continually adjusted to stay in sync with the time code. If the external clock drifts or changes rate, SONAR adjusts the audio playback speed to stay in sync. This adjustment may introduce slight pitch changes, but those changes will be negligible if the external clock is reasonably steady.

Table 172.

Some digital sound cards (such as the Frontier Design Wavecenter or the Antex Studio Card) have external clock inputs. If you are using one of these cards, and an external clock source like a digital tape deck is the master timing source for the project, choose the **Trigger and Freewheel** option. The clock input on the audio card guarantees that there is no drift between the time code and audio playback.

To Set the Audio Playback Option

1. Choose **Options > Audio**, and click the **Advanced** tab.
2. Check the desired option from the **Synchronization** list.
3. Click **OK**.

   Audio playback under time code sync is handled according to the setting you chose.

SMPTE/MTC Sync and Full Chase Lock

When using SMPTE/MTC Sync with full chase lock, the first time you play any audio the pitch may fluctuate wildly for up to 30 seconds. Also, you may occasionally note the pitch of the audio sounding consistently high or low pitch.

A simple analogy makes this behavior easy to understand: Synchronizing audio to SMPTE/MTC is a lot like trying to get even and stay neck-and-neck with another car on the freeway. If the car is ahead of you, you need to drive faster to catch up to it. If it's behind you, you have to slow until the car catches up to you. Once the two cars are neck-and-neck, you can simply keep going at the same speed, unless the other car changes its speed. If the other car speeds or slows, you must speed or slow too.

The first time you play audio under SMPTE/MTC Sync, the audio clock has to get even with the external clock. This could mean racing ahead, which raises the pitch of the audio, or stepping on the

brakes, which lowers the pitch of the audio. These fluctuations continue until SONAR matches its playback speed to the external clock, which usually takes no more than 30 seconds. The stable playback speed, by the way, may be slightly faster or slower than the normal audio playback speed, resulting in a slight change in the pitch of the audio. Here's the best way to address this problem:

- Start each new SONAR session by playing some audio under SMPTE/MTC Sync.
- Let the audio play for 30 seconds or until all audio pitch fluctuations stop.

Once this procedure is complete, SONAR knows the difference in rates between the external time code and the audio clock on your sound card. For the rest of the session, SONAR will start playback closely in sync, without any drastic pitch changes.

If the external timing source were 100 percent stable, the audio would stay in sync with the external clock. Unfortunately, no timing source is perfect. Therefore, every once in a while after playback has started, SONAR may need to vary the playback speed by a tiny amount to stay even with the time code. If the time code signal is unstable (as might be the case from an analog source), these variations can cause noticeable changes in audio pitch, which can in turn cause audible audio distortion.

Troubleshooting SMPTE/MTC Sync

The most common problems with SMPTE/MTC Sync, and ways to correct or avoid them, are shown in the following table:

Problem	What to do
The tape is striped incorrectly	Check the tape stripe using your time code generator and, if necessary, restripe the tape.
The MIDI interface isn't producing MIDI Time Code	Use utility programs that come with your MIDI interface to make sure that the time code stripe is being received (sometimes you must enable a **Time Code Sync** option). Check the MIDI interface settings to make sure that MIDI Time Code is being generated.
The frame rate is set incorrectly	The frame rate on the stripe must match the frame rate you set in SONAR.
The offset is set incorrectly	The offset you enter in SONAR must match the start time of recorded material on the tape.
SONAR is not configured correctly	Verify and/or repeat the steps in "To Configure SONAR to Sync to SMPTE/MTC" on page 826.

Table 173.

Problem	What to do
Audio playback drifts out of sync with the tape	Enable the **Full Chase Lock** option, which keeps audio from freewheeling.
SONAR continues playing for up to one full second after the time code stops	Some time code readers tolerate dropouts of up to one second, without affecting playback. When you stop the tape deck, it takes a full second for the reader to realize that this isn't merely a dropout and to signal the end of the time code to SONAR. This does not indicate any problem with time code sync.

Table 173.

No MTC sync within 1 minute of midnight roll-over

SONAR will not sync to MTC within one minute of roll-over (1 minute before midnight; 23:59:00:00 - 23:59:59:xx). To address this, use a SMPTE offset that doesn't require you to trigger the midnight roll-over.

MIDI Machine Control (MMC)

MIDI Machine Control (MMC) is a protocol that controls an MMC-equipped remote device via MIDI. SONAR lets you use MMC to start and stop playback and recording on remote MIDI devices such as tape decks, video recorders, and even other software packages. If you have several MMC-controllable devices in your studio, assign each a unique Unit ID so that MMC commands can be addressed to a particular device.

MMC is very powerful when used with MIDI Time Code sync. For example, suppose you have an MMC-equipped digital tape deck that generates time code and want to use the tape deck as the timing master for a project. You can set up your equipment and software so that the transport controls in SONAR send MMC messages to the tape deck, which in turn starts and stops playback in SONAR via SMPTE/MTC Sync. In this configuration, SONAR's transport buttons (**Play**, **Record**, and **Stop**) are simply remote control substitutes for the buttons on your tape deck. In this type of configuration, you must choose one MMC-controllable device as the time code master.

When MMC is enabled, press Play to start playback on all connected MMC devices, and press Stop to stop all connected devices. If you press Record while playback is underway, all connected MMC devices (e.g., tape decks) begin recording on any armed tracks. If you stop recording (without stopping playback), SONAR instruct the tape decks to punch out. You must arm and disarm tracks on the tape deck; you cannot do this from SONAR.

If you have established punch-in/out points using the **Transport > Record Options** command, SONAR will attempt to preprogram the punch-in and punch-out times. However, your equipment must recognize the MMC event command for this feature to work. (Consult the owner's manual or contact the equipment manufacturer for more information.) If your equipment behaves erratically with automated punch-in, don't attempt to use it when those pieces of equipment are connected.

SONAR instructs MMC devices to locate the current project position only when playback or recording is started. This prevents excessive wear on the motors and tape heads of the devices.

To Configure MIDI Machine Control

1. Choose **Options > Project**, and click the **Clock** tab.
2. Select **SMPTE/MTC** as the clock source.
3. Click the **MIDI Out** tab.
4. Check the **Transmit MMC** box.
5. Enter the ID of the master timing device in the **Time Code Master's Unit ID** box.
6. Click **OK**.

MMC is now enabled.

To Disable MIDI Machine Control

1. Choose **Options > Project**, and click the **MIDI Out** tab.
2. Make sure the **Transmit MMC** box is not checked, and click **OK**.

MMC is disabled.

Audio File Management

Project files in SONAR do not contain the digital audio itself. A SONAR project file (.cwp) references the audio contained in the project, so care must be taken when backing up your digital audio projects. This section covers file management, including backing up your projects.

See:

Project Files and Bundle Files

Audio Folders

Backing Up Projects with Digital Audio

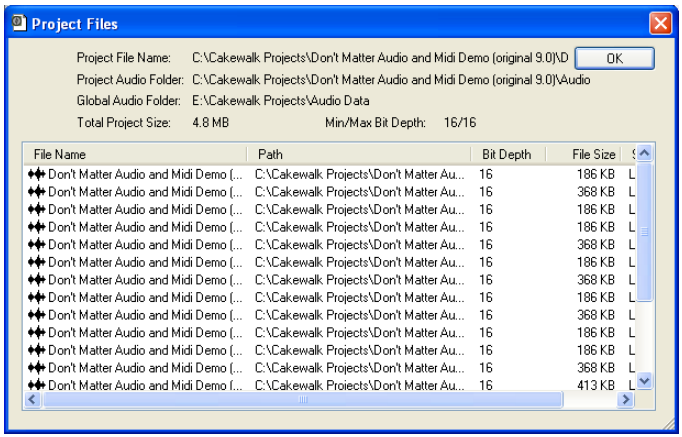
Deleting Unused Audio Files

The Project Files Dialog

SONAR projects, extension .cwp, contain all your project information with the exception of your digital audio data. This data is stored in a separate folder or folders. You can opt to save the audio data for all of your projects in a single audio folder, or create multiple folders.

The **Project Files** dialog lists all of your project's audio files and their location. This dialog is a valuable tool for managing your audio files. Access the dialog by opening a project and choosing **File > Project Audio Files**.

Figure 137. *The **Project Files** dialog*



How to use the Project Files Dialog

The **Project Files** dialog has important information, including:

- Exactly which folders all of your audio files are saved in—know at a glance if you can backup your project by copying the audio folder and the .cwp file or if you need to do a Save As to round up files not in your project's audio folder.
- The filenames for each audio file your project is referencing
- The combined size the audio data in your project—important if you are going to backup your project
- The bit depth of every audio file in your project, including a display o the lowest and highest in the **Min/Max Bit Depth** field
- The location status of each audio file, which could be any of the following:
  - **Global.** This means that the file is stored in the Global Audio Data directory. The Global Audio Data directory can be changed in the **Audio Data** tab of the **Global Options** dialog.
  - **Local.** This means that the file is stored in the local wave data directory, a per-project data directory which is a subdirectory in the directory where the project file is stored.

- **External.** This means that the file is stored in a directory other than the Global Audio Data directory or in a Local audio data directory.
- **Missing.** This means that the file is not to be found.

Project Files and Bundle Files

SONAR project files contain various project settings, any MIDI data, and references which "point" to audio clip data. The audio data (and video data) itself is not saved in a project file. To save audio as well, save your project as a Bundle file (extension .cwb). Bundle files contain everything that a project file contains in addition to the digital audio. Bundle files are useful for backing up projects and for burning onto removable media, like a blank CD or DVD.

The following are descriptions of both file types:

File Type	Description	When to Use
.cwp	Contains MIDI data, project settings, and pointers to audio data in your Data directory. Project files contain no audio data, so they are small. Backing up a Project file does not back up the associated audio data.	Project files are good for routine projects. You can use Project files and back them up as Bundle files at various steps during a projects development.
.cwb	Contains all project data, including all audio data. Bundle files are large.	Bundle files are useful for backing up projects or for transporting a project to another computer (to bring it to a friend's house, for example).

Table 174.

See “64-bit CWB files” on page 241.

To Create a Bundle File

1. Choose **File > Save As** to display the **Save As** dialog box.
2. Choose Bundle from the **Save as Type** list.
3. Enter a file name and click **OK**.

SONAR compacts all the audio and merges it with the remaining project data in a bundle file.

To Unpack a Bundle File

1. Choose **File > Open** to display the Open dialog box.
2. Choose a file with a .cwb extension.
3. Click **Open**.

   If you have the **Per-project Audio Folders** option enabled in the **Global Options** dialog, the **Unpack Bundle** dialog appears. If this option is not enabled, the bundle file opens and all audio data is stored in the Global Audio Folder.

4. If you want to store the project in its own folder do the following in the **Unpack Bundle** dialog:
   - Enter a project filename in the **Project Name** field.
   - Use the **Browse** button to the right of the **Location** field to select a destination folder for the project, or to create a new folder, enter a new folder pathname in the **Location** field.
   - Use the **Browse** button to the right of the **Audio Path** field to select a destination folder for the project's audio data, or to create a new folder, enter a new folder pathname in the **Audio Path** field.

   OR

   If you want to store the project in the Cakewalk Projects folder, and its audio in the Global Audio Folder, uncheck the **Store Project Audio in its Own Folder** option.
5. Click **OK**.

Audio Folders

By default, SONAR stores audio data separately from the rest of your projects, as wave files placed into a special folder called the **Global Audio Folder**, the location of which is listed in the **Global Audio Folder** field on the **Audio Data** tab in the **Global Options** dialog. You can also create audio folders on a per-project basis.

Note: *Previous versions of Cakewalk used a folder called the WaveData folder, located in the product directory.*

See:

Global Audio Folders

Per-project Audio Folders

Imported Audio Files

Global Audio Folders

You can change the location of the Global Audio Folder. This may be necessary if, for example, your hard disk is full and you want to move all audio data storage to a different hard disk. We strongly recommend that you do not change the location of the Global Audio Folder unless absolutely necessary.

If your original Global Audio Folder contains any audio files with the extension .wav, you must manually move these files to the new Global Audio Folder using the Windows Explorer, or open the project and use the **Missing Audio** dialog to find and move the missing files.

To Change the Global Audio Folder

1. Choose **Options > Global** and click the **Audio Data** tab.

2. Enter the pathname of the new Global Audio Folder in the **Global Audio Folder** field, or click the **Browse** button that's at the right end of the **Global Audio Folder** field to browse to the new directory.
3. Click **OK** when you are done.
4. Use the Windows Explorer or some other program to move all audio files from the old Global Audio Folder to the new Global Audio Folder.

All new audio files will be stored in the new Global Audio Folder, unless you decide to use per-project audio.

It is safer, but more time-consuming, to first save all projects as bundle files, change the Global Audio Folder, then open the bundle files. This ensures that all of the audio data is properly moved to the new Global Audio Folder.

Tip: *It is safer, but more time-consuming, to first save the all projects as bundle files, change the Global Audio Folder, then open the bundle files. This ensures that all of the audio data is properly moved to the new Data directory.*

Per-project Audio Folders

You have the option of using a single audio data folder or using different audio data folders for each project. By default SONAR stores audio data in per-project audio folders, but you can use the Global Audio Folder if you want. If you want to change the default behavior, use the following procedure:

To Enable or Disable the Per-project Audio Folder Option

1. Select **Options > Global**.

   The **Global Options** dialog appears.
2. Select the **Audio Data** tab.
3. In the **Per-Project Audio** section, check or uncheck the **Use Per-Project Audio Folders** option.
4. Click **OK** to apply the change.

If you enable the per-project audio folder option, the **New Project File** allows you to choose the directory where you want to store the new project and a subdirectory where you want to store the project's audio data.

Note: *If you want to use per-project audio folders, but you don't want to choose a folder and fill out the **New Project File** dialog every time you open a new project, you can choose to load the Normal template file every time you use the **File > New** command. This way you can start using the project right away. While you're recording, new audio data is stored in the Global Audio Folder. When you save the file, you can choose to store the audio in a per-project folder, or leave the audio in the Global Audio Folder. To use this option, enable the **Autoload Normal.tpl on Startup** check box that's under the **Use Per-Project Audio Folders** option in the **Global Options** dialog **Audio Data** tab.*

To Create a New Project Using Per-project Audio

1. Select **File > New**.

   The **New Project File** dialog appears.

2. Enter a filename in the **Name** field

   The **Location** and **Audio Path** directories are automatically updated in the following format:

   - `C:\default directory\<project name>`. The default directory for new projects is assigned in the **Folders** tab of the **Global Options** dialog. <*project name*> is the project's per-project folder name.
   - `C:\default directory\<project name>\Audio`. The default directory for new projects is assigned in the **Folders** tab of the **Global Options** dialog. <*project name*> is the project's per-project folder name, and Audio is the subfolder where your audio data will be stored.

3. If you want, rename the **Location** and/or **Audio Path** directories.
4. Click **OK**.

To Save an Existing Project Using Per-project Audio

You may have older files that are not using per-project audio folders. If you want to save these files using a per-project audio folder, use the following procedure:

1. Make sure that per-project audio folders is enabled in the **Global Options** dialog.
2. Open the project whose audio you want to store using per-project audio.
3. Select **File > Save As**.

   The **Save As dialog** appears.

4. If you want, change the name of your project.
5. In the **Project Path** field, enter the new directory where you want to save the project, or use the **Browse** button to the right of the field to navigate to an existing directory.
6. Check the **Copy all audio with project** option.
7. Click **Save**.
8. SONAR copies the project to the directory specified in the **Project Path** field and stores all the project's audio in the directory specified in the **Audio Path** field.

Note: *After you use the above procedure, you have two versions of the same project.*

Imported Audio Files

By default, SONAR will make a copy of any audio data imported using the **File > Import > Audio** command and place the imported audio into the project's audio folder. You can configure SONAR to simply reference audio from its current location if, for example, you want to import large quantities of audio data into a project and don't want to consume time and disk space by making copies of the files. Copies are always made if the imported audio does not match the current project's sampling

rate (and if you edit any of the imported audio data). Automatic handling of imported files is enabled by default. Do not disable this option unless you are prepared to manage the audio files individually. Creating backups of your projects is very easy if all your audio is stored in a single, per-project directory.

To Change Handling of Imported Files

Use the following procedure to allow or disallow file sharing between projects:

1. Choose **Options > Global** and click the **Audio Data** tab.
2. Check the **Always Copy Imported Audio Files** option to create copies of all imported audio clips as a default.

   Or

   Uncheck the **Always Copy Imported Audio Files** option to reference imported audio from its current location.

Note: *You can override this setting when importing audio by checking or unchecking the **Copy Audio to Project Folder** option in the **Import Audio** dialog.*

3. Click **OK** when you are done.

Imported files will be handled based on the settings you have chosen.

See:

Backing Up Projects with Digital Audio

Backing Up Projects with Digital Audio

There are several ways to back up your projects in SONAR. You can use per-project audio folders to keep all a project's audio in its own folder, use the Consolidate Project Audio command to create a backup copy of all your project's audio, or you can save a project as a bundle file (.cwb).

The following table lists several backup methods:

Backup Method	Advantages
Per-project Audio Folders If you are using per-project audio folders you can create a copy of the project folder and its audio subfolder.	This method is an exact copy of your project, preserving all clips and pathname information.
Consolidate Project Audio If your project references audio from multiple folders, for example you have a library of loops that you share between several projects, you can gather all the audio for your project into a single folder using the **Consolidate Project Audio** command. The **Consolidate Project Audio** command copies every audio file your project references into a backup folder beneath the projects audio data folder. Creating a copy of all your project's audio may take a lot of disk space.	Allows you to create a complete backup of all project audio even if the audio is in multiple locations. Creates a new folder which you can move or delete without fear of losing the original audio files.
Bundle Files A **bundle file** is a single file that contains all the information—except video—used in a project. A bundle file includes everything that is stored in a normal project file, plus all the digital audio that is used in the project.	Creates a single file for ease of portability.

Table 175.

To Backup Projects Using Per-Project Audio Folders

Use this procedure to create a backup of a project that has its own project folder.

1. Open the project you want to backup.
2. Select **File > Project Audio Files**.

   The **Project Files** dialog appears.
3. In the **Project Files** dialog, check the **Path** column to make sure that every audio file is stored in the project's audio folder. If any files are stored in folders other than the project's audio folder, you should use the **Consolidate Project Audio** command to move all audio to the project's audio folder.
4. Close the **Project Files** dialog once you have confirmed that all audio files are in the project's audio folder.
5. Close the project.
6. Using Windows Explorer, copy the project folder and its contents, including the project's audio folder, to its backup location (CD-R, CD-RW, DVD-R, DVD-RW, Zip or Jaz drive, another hard drive, network drive, etc.).

You have now created a copy of your project. It is a good idea to open the project once you have backed it up to confirm that all audio loads properly.

To Create a Backup Using the Consolidate Project Audio Command

Use this procedure to backup a project that has multiple audio folders:

1. Open the project you want to backup.
2. Select **Tools > Consolidate Project Audio**.
3. A message box appears listing the destination folder for your audio backup.
4. Click **OK** to confirm.
5. Using Windows Explorer, copy the project, the backup folder and all its contents, including the project's audio folder, to its backup location (CD-R, CD-RW, DVD-R, DVD-RW, Zip or Jaz drive, another hard drive, network drive, etc.).

Note: *The Consolidate Project Audio command only copies the audio in your project, so make sure you copy the project (.cwp) along with the backup folder.*

6. Once you have copied the backup folder you can delete it to free up disk space.

Deleting Unused Audio Files

The **Tools > Clean Audio Folder** command is used to delete digital audio files in an audio folder if they are no longer used by any of your projects. You should use this command from time to time to free up disk space.

This command searches your entire system for project files, and then compiles a list of all the audio files in a specified folder that are not in use by any of these projects. You can then choose to delete these audio files. Make sure that all of your important project (.cwp) files are stored on your local hard disk(s) before using this command. If your project files are stored elsewhere (removable media, etc.), then you risk accidentally deleting important audio files that are associated with your projects.

If you are using another utility program that protects you from accidentally deleting important files (such as Norton Protect), you may need to disable that program. Otherwise, the next time you use the **Tools > Clean Audio Folder** command you may once again find these not-quite-deleted files.

To Delete Unused Audio Files

1. Make sure all project files that contain audio are immediately accessible on a hard disk.
2. Choose **Tools > Clean Audio Folder** to display the **Clean Audio Folder** dialog box.
3. Click the **Browse** button to the right of the **Audio Path** field and navigate to the folder you want to search for unused audio files.
4. If you want to search all subfolders of the folder you chose in the **Audio Path** field, click the **Recursive** option.
5. Click the **Find** button. SONAR searches the selected directory for audio files that appear to be unused by any existing projects, and displays the names of these files in the list.

   SONAR searches the entire system for project files. Audio files in the folder or folders you decide to search which do not belong to any of the projects on your system appear in the **Clean Audio Folder** dialog. If any corrupted or unreadable project files exist on your system, the **Unreadable**

Files dialog appears. It is very important that you restore any unreadable files from a backup before continuing, otherwise you risk data loss.

6. Follow the instructions in the table:

To do this	Do this
Listen to a file	Highlight the file name in the list and click **Play**
Delete a file	Highlight the file name in the list and click **Delete**
Delete all files	Click **Delete All**, and click **Yes** to confirm

Table 176.

7. Click **Close** when you are done.

Improving Audio Performance

Digital audio presents several challenges: it is large, using enormous amounts of disk space, especially at higher sampling rates and bit-depths, and it is CPU-intensive. Added to this mix is the wide variety of audio hardware available today. This section covers some common problems with recording and playback and how to configure your computer and audio hardware for optimum performance.

See:

System Configuration

Improving Performance with Digital Audio

System Configuration

This section covers optimizing your system configuration to work with SONAR.

See:

The Wave Profiler

Enabling and Disabling Audio Devices

Sampling Rates

Bit Depths, and Float Resolution

The Wave Profiler

The Wave Profiler is a utility that analyzes the sound cards in your computer and determines the best DMA (Direct Memory Access) settings for communicating with SONAR. These DMA settings are displayed in samples, at the sample rates and bit depths your sound card supports. The Wave

Profiler also sets a value in milliseconds for the Buffer Slider, which controls mixing latency. The Wave Profiler is unnecessary if you are using an ASIO driver.

The DMA settings are used to ensure that a project that contains both MIDI and digital audio plays back in tight synchronization. If SONAR is not configured properly with your audio device's DMA settings, MIDI and digital audio material may not play back correctly.

Note to users of previous Cakewalk products: The DMA settings in versions of Cakewalk prior to SONAR 1.0 were displayed in bytes rather than samples. Using your previous DMA settings in SONAR will not work. Try the settings that wave profiler displays, and if you are not satisfied, only then attempt to optimize your settings.

The Wave Profiler utility runs automatically the first time you run SONAR. The wave profiler determines the best DMA settings for the supported bit depths and sample rates of your sound card.

Note: *It is possible to load a 48 kHz project when you are using a sound card that does not support 48 kHz. SONAR does not warn you when you do this. Your project may crash, or it may appear to record audio when your project is not actually recording.*

All of your audio settings are listed in the **Audio Options** dialog box, which you open with the **Options > Audio** command. The following list summarizes all the settings that the Wave Profiler sets. You can override all of them except what audio drivers are listed in the Drivers tab:

- Input and output drivers
- DMA buffer sizes (in samples)
- Mixing latency

If you experience MIDI and audio synchronization problems during playback, before contacting technical support, run the Wave Profiler and try the default settings.

To Manually Run the Wave Profiler

1. Choose **Options > Audio** to open the **Audio Options** dialog box, and click the **General** tab.
2. Click **Wave Profiler**.

The Wave Profiler examines each of your sound cards in turn, makes default settings in the **Audio Options** dialog, and displays the name of each sound card and the sample rates that each card supports.

Enabling and Disabling Audio Devices

Your computer may have several installed devices like FAX modems and software synthesizers that Windows recognizes as sound cards containing audio drivers. You do not want to use these devices for audio input or output. If they are listed as audio drivers in the **Audio Options** dialog box, you need to disable them.

To Enable or Disable an Audio Device

1. Choose **Options > Audio** to open the **Audio Options** dialog box and click the **Drivers** tab.
2. In the **Input Drivers** and **Output Drivers** fields, do one or both of the following:

- To enable an audio device, click the name of the device so that it is highlighted.
- To disable an audio device, click the name of the device so that it is not highlighted.

3. Click **OK**.

Disabling a device in the **Audio Options** dialog box usually prevents conflicts with other audio devices. Occasionally you may need to disable a device in the Windows Control Panel.

SONAR also allows you to choose the sound card whose clock should be used to control recording and playback timing (if you only have one sound card, SONAR automatically uses it). Every sound card's clock crystal is slightly different, which causes minor differences in the actual playback rate on each card. These differences may lead to slight synchronization problems if you use one card for recording and a different one for playback. Generally, you should choose your highest quality sound card for both recording and playback timing. Note that while some multichannel sound cards have multiple drivers, most sound cards have only a single audio driver.

To Select Playback and Record Timing Masters

1. Choose **Options > Audio** to open the **Audio Options** dialog box and click the **General** tab.
2. In the **Playback Timing Master** and **Record Timing Master** fields, select which sound cards you want to control playback and record timing, respectively.
3. Click **OK**.

While you must choose a playback timing master, you can route audio output through any number of devices at once. For example, suppose your computer has both a high-end audio card and a basic built-in sound card. You should choose the high-end sound card as the record and playback timing master. However, using the buses in the Console or Track views, you could create a headphone or monitor mix and route it through the built-in sound card.

Sampling Rates

SONAR supports all common sampling rates. Only one sampling rate is allowed per project. It's usually better not to change the sampling rate of a project, because this involves exporting your tracks one at a time, and then importing them at the new sampling rate. During this process you lose clip boundaries, envelopes, and other separate data that is mixed into the exported tracks.

To Set the Sampling Rate for New Projects

1. Open the **Audio Options** dialog (**Options > Audio** command), and on the **General** tab, change the **Sampling Rate** field to the desired number. You can choose from the available options, or enter any number that your hardware supports.
2. Click **OK**.

To Change the Sampling Rate of a Project

1. Select an audio track and use the **File > Export Audio** command to open the **Export Audio** dialog.
2. Select the options you want, and click **Export** to export the track.
3. Repeat steps 1 and 2 for all the audio tracks you want to convert.

4. After you've exported all the tracks you want to convert, open the **Audio Options** dialog (**Options > Audio** command), and on the **General** tab, change the **Sampling Rate** field to the desired number.
5. Use the **File > New** command to open a new project.
6. Use the **File > Import > Audio** command to open the **Import Audio** dialog.
7. Select the audio files you just exported (hold down the CTRL key while you click each one), and click **Open** to import the files.

SONAR imports the selected files at the new sampling rate.

To Import Audio That Has a Different Sampling Rate

- Use the **File > Import > Audio** command to import the audio file(s) (this converts them to the project sampling rate).

Bit Depths, and Float Resolution

SONAR supports all common bit depths, including 64. SONAR's 32-bit mixing provides full floating-point resolution for extended dynamic range, and precise audio processing. For maximum dynamic range and precision, you can also choose 64-bit mixing (**Audio Options** dialog-**General** tab-**64-bit Double Precision Engine** check box). SONAR can import, export, play back, and render 64-bit float files.

A SONAR project can contain files of different bit depths. You can specify different bit depths for playing back, recording, importing, exporting, and rendering audio (bouncing, freezing, applying effects). To play back or record at a specific bit depth, your sound card must support that bit depth.

Notes about 64-bit files:

- 64-bit files can now be imported at their native 64-bit depth.
- At playback time 64-bit files are streamed at full 64-bit resolution when the Double Precision engine is turned on.
- At playback time 64-bit files are converted to 32-bit when the Double Precision engine is turned off.
- **64-bit** is a choice in the **File Import** dialog.
- **64-bit** is a choice in the **Options > Global > Audio Data** file bit depth fields.
- Bounce-to-track now renders at 64-bit if the render bit depth is set to **64**.
- You can save and load .cwb files containing any combination of 16/24/32/64 and stereo/mono wave files.

To Find the Bit Depth of Clips in a Project

- Right-click a clip, choose **Clip Properties** from the pop-up menu, and examine the **Audio files** tab.

  Or
- Use the **File > Project Audio Files** command to open the **Project Files** dialog, and examine the

Bit Depth column.

The following topics show you how and why to choose bit depths for various operations.

See:

Bit Depths for Playback

Bit Depths for Recording

Bit Depths for Importing Audio

Bit Depths for Exporting Audio

Bit Depths for Rendering Audio

Bit Depths for Playback

Most sound cards can play audio at 16-bit or 24-bit resolution, with a few sound cards supporting 18-bit and 20-bit resolution. When your project contains files with different bit depths SONAR plays them at the bit depth that your sound card is currently set to. Because SONAR can play projects that contain files of different bit depths, you don't have to convert 16-bit files to 24 bits to play them with other 24-bit files, saving significant storage space. If you're playing 64-bit, 32-bit, or 24-bit files at 16 bits, you can turn dithering on in the **Audio Options** dialog to compensate for the truncated data.

When you first install SONAR, the Wave Profiler profiles your sound card at all the bit depths that the sound card supports, so when you change the playback bit depth, you don't need to run the Wave Profiler again (you do need to relaunch SONAR).

Here's how to change the playback bit depth for a project:

To Change Playback Bit Depth

1. Use the **Options-Audio** command to open the **Audio Options** dialog.
2. On the **General** tab, choose the bit depth you want to use in the **Audio Driver Bit Depth** field.
3. Click **OK**.

Note:

- *If you choose to play back at greater than 16 bits, you may need to pick a bit format for your data on the **Driver Profiles** tab of the **Audio Options** dialog box in the **Stream > 16 Bit Data As** field. You may need to consult your sound card's documentation to find the optimum setting.*
- *Some audio devices, especially USB devices that use WDM drivers, can not operate in 24-bit mode unless a variable in SONAR's* `Aud.ini` *file is set to 1. The variable is Use24BitExtensible=<0 or 1>, which goes in the* `[name of your audio device ('n' in, 'n' out)]` *section of the* `Aud.ini` *file.*
- *SONAR 4 does not play back projects that contain files with different bit depths (SONAR 5 and later), so if you want to open a multiple bit depth project in SONAR 4, see the following procedure or a conversion procedure.*

To Rewrite Audio Files at Different Bit Depths

1. Use the **Tools > Change Audio Format** command to open the **Change Audio Format** dialog.
2. Choose a new bit depth in the **New Bit Depth** field.
3. If you're changing to 16 bits, you can check or uncheck the **Apply Dither** check box. Dithering means to add a certain audio signal to 16 bit audio to make it sound more like it did as a higher-bit signal.
4. Click **OK**.

SONAR rewrites the audio tracks in your project at the new bit depth.

Bit Depths for Recording

You can choose the bit depth of newly-recorded files in SONAR, and you can change this value at any time. The Status Bar shows the project sampling rate and the current record bit depth setting.

The choices for the recording bit depth setting are 16, 24, 32, and 64. At present, no devices can record at 32-bit or 64-bit resolution, so you don't need to choose these options yet. 24-bit files give greater dynamic range than 16-bit files, so 24 is a good choice for music that gets very soft, as well as loud. 16-bit recording is efficient for many recording projects, especially louder projects.

To Choose a Recording Bit Depth

1. Use the **Options > Global** command to open the **Global Options** dialog.
2. On the **Audio Data** tab, under **File Bit Depths**, change the **Record Bit Depth** field to the desired number.
3. Click **OK**.

Bit Depths for Importing Audio

You can choose the bit depth of imported files in SONAR, and you can also import files at their current bit depth. You can import files at bit depths as high as 64. Because SONAR can play projects that contain files of different bit depths, you don't have to convert 16-bit files to 24 bits to play them with other 24-bit files, saving significant storage space.

Note: *If you are playing back 32-bit or 64-bit audio at high sample rates (and high latency sizes), the disk I/O buffer size in the Advanced tab of the Audio Options dialog (**Options > Audio** command) may need to be increased to handle this extra disk streaming throughput. A too small disk I/O buffer size can result in dropouts or clicks during audio playback of such content. If so try a higher I/O buffer size like 256 or 512.*

See "Bit Depths, and Float Resolution" on page 846 for more information about 64-bit files.

To Choose an Importing Bit Depth

1. Use the **Options > Global** command to open the **Global Options** dialog.

2. On the **Audio Data** tab, under **File Bit Depths**, change the **Import Bit Depth** field to the desired number. You can choose the **Original** option to import the files at their current bit depth.
3. Click **OK**.

This process changes the default import bit depth, which appears in the **Import Audio** dialog. You can override this value for one import process at a time by changing the value in the **Import Audio** dialog.

See also “SONAR Project File Compatibility Notes” on page 850.

Bit Depths for Exporting Audio

You can choose the bit depth of exported files from SONAR. Unless you are burning a CD or DVD, or are concerned about storage space, you can export files at 32 bits (or even 64) to preserve the precision of any audio processing that was done to the files.

To Choose an Exporting Bit Depth

1. Use the **File > Export > Audio** command to open the **Export Audio** dialog.
2. In the **Bit Depth** field, select the desired number.
3. Choose other options and click **OK**.

Bit Depths for Rendering Audio

You can choose the bit depth that SONAR uses for such operations as bouncing tracks, freezing tracks, and applying effects (these processes are referred to as rendering). This bit depth is set at 32 by default, which allows large level changes without clipping, and with greater dynamic range, especially in soft parts of your music. You can also render at 64 bits for greatest precision.

To Choose a Rendering Bit Depth

1. Use the **Options > Global** command to open the **Global Options** dialog.
2. On the **Audio Data** tab, under **File Bit Depths**, change the **Render Bit Depth** field to the desired number.
3. Click **OK**.

Preparing Higher-quality Audio for CD Burning

If your project uses a different sampling rate from 44,100, or contains files that are not 16-bit, use this procedure to prepare your project for CD-burning:

To Prepare Higher-quality Audio for CD Burning

1. Use the **File > Export > Audio** command to open the **Export Audio** dialog. Choose **RIFF Wave** in the **Files of Type** field, **Export to Stereo File(s)** in the **Format** field, and **16** in the **Bit Depth** field.

2. After exporting the audio, close SONAR and open up your sound card control panel (for M-Audio cards, usually the Delta Control Panel, for Echo Audio, usually the Echo Console, for MOTU it's the 324 console, etc.) Once the control panel is open, change the setting for your sampling rate to 44.1 kHz.
3. Next launch SONAR and use the **Options > Audio** command to open the **Audio Options** dialog. In the **General** section change the **Audio Driver Bit Depth** to **16**. Change **Default Settings for New Projects** to **44100 Hz** for the **Sampling Rate**.
4. After making these adjustments, click the **Wave Profiler** button in the **Audio Options** dialog. In some instances, with certain audio hardware configurations you may be prompted with an audio driver error dialog during this process. This is nothing to be concerned about. You will have to exit SONAR, re-launch, verify the settings you made in the **Audio Options** dialog, and click the **Wave Profiler** button again. When you can successfully run the Wave Profiler without an audio driver error, proceed to the next step.
5. Create a new project (**File > New** command). The **Normal** option is fine for this.
6. Import the mixed down audio by using the **File > Import Audio** command.
7. Confirm the bit depth and sample rate of the imported audio by using the **File > Info** command, and clicking **File Stats**. The **File Stats** dialog lists the correct sample rate and bit depth.
8. Final step: use the **File > Export > Audio** command. Be sure to select **16** for the **Bit Depth** and uncheck all **Mix Enables**.

Now you can burn your exported audio file to CD, using Pyro Audio Creator, or other software.

SONAR Project File Compatibility Notes

Cakewalk Bundle (.cwb) files containing double precision 64-bit floating point files will not open in SONAR 5 or earlier versions.

Project files saved in SONAR 5 will not open in SONAR 4 if they reference or include any of the following types of data or information:

- 32 bit audio clips.
- Audio clips that are not all of the same bit depth.

SONAR 5 project files may contain new features that will be missing if opened in SONAR 4, including:

- Clip effects and clip automation:
  - Effects are removed.
  - Automation envelopes are orphaned.
- Groups:
  - SONAR 5 groups are preserved but will not be completely functional in SONAR 4.
  - Controls may be removed from groups.
  - Groups can’t be added to or changed.
  - Group names will be truncated.

- SONAR 4 may add extra groups to the project.

Re-saving a SONAR 5 project file in SONAR 4 may permanently remove the project data described above.

Improving Performance with Digital Audio

When a project contains many tracks of digital audio or when many real-time effects are in use, your computer may have difficulty keeping up during playback. When this occurs, you'll hear portions of the audio drop out, stutter, or pop. Or maybe your project responds slowly to real-time effects and volume changes. In an extreme case audio playback may stop altogether. If you experience a dropout, a dialog appears with suggestions for fixing the problem. This section covers performance issues specific to digital audio, including how to get the more tracks of audio, more real-time effects, lower latency and how to fix audio dropouts.

For more information see:“Getting the Most Out of Your PC” on page 851, “Mixing Latency” on page 853 and “Reduce GUI updates to improve playback performance” on page 856.

Getting the Most Out of Your PC

Mixing Latency

Dropouts and Other Audio Problems

Reduce GUI updates to improve playback performance

Getting the Most Out of Your PC

The maximum number of audio tracks you can expect to play on your computer depends on the audio sample rate, the speed of your hard disk, and the speed of your computer’s CPU.

The effect of your CPU on audio track throughput is much more difficult to quantify. Throughput is affected by the type of chip, clock speed, the number and type of real-time effects in use, cache size and settings, and many other factors.

There are a variety of things you can do to increase the number of audio tracks and effects you can play on your computer, as outlined in the following table:

Approach	How it works
Avoid compressed disks	If you use DoubleSpace, Stacker, or some other disk compression system, it will slow down playback of audio tremendously. Configure your system so that the Data directory is on a hard disk that is not compressed.
Exit other programs	The more programs you have open, the more CPU cycles you are taking away from your project. Exit any programs unnecessary to the task at hand.

Table 177.

Approach	How it works
Refrain from other activity during playback	If you open and close windows or do lots of editing while playback is in progress, you may steal CPU cycles that would otherwise be used for playback.
Apply some audio effects offline	If you are happy with your real-time effects, consider using the **Process > Apply Audio Effects** command to apply those effects offline. Then remove those effects from real-time use and free up lots of CPU power.
Archive unused audio tracks	Audio tracks that are muted continue to place a load on your processor. To lessen the burden and free up cycles to handle more audio, archive all unused audio tracks. See “To archive or unarchive tracks” on page 189 for more information.
Mix down or freeze your audio/synth tracks	If your project contains many different audio/synth tracks or many real-time effects, you can use the **Edit > Bounce to Track(s)** command or the **Track > Freeze > Freeze Track** command to reduce all of this content to an audio track or tracks with no active effects.
Change **I/O Buffer Size** on the **Advanced** tab of the **Audio Option**s dialog box	The default setting is 64 KB. Yours may work better with 128, 32, or 16. If those values don’t help, try 256, 512, or move on to another remedy.
Defragment your hard disk	If your hard disk is fragmented, playback of audio will be slower. Use the Disk Defragmenter to correct the situation.
Turn off dithering on the **Advanced** tab of the **Audio Options** dialog box (choose **None** in the **Dithering** field).	Dithering subtly improves your mix, but most people can’t hear it. Turn it back on for mastering.
Enable read and write caching	By default, SONAR bypasses all disk caching, which typically results in better performance with audio data. If your computer has an older IDE disk controller, or a disk controller that does not use DMA transfers, enabling caching may improve SONAR's audio performance. **Note**: Changes to these settings only take effect when you restart SONAR. Choose **Options > Audio** and click the **Advanced** tab to change the **Enable Read Caching** and **Enable Write Caching** settings.
Disable the Display Clip Contents options	Drawing the contents of audio clips in the Clips pane uses some CPU cycles. If you are using a slow machine, you may want to disable this feature. To do so, right-click in the Clips pane, choose **View Options**, and disable the **Display Clip Contents** option.

Table 177.

Digital Audio Files and Storage

Digital audio requires a large amount of disk storage. The table below shows the disk space requirements in megabytes for a single minute of digital audio in mono and stereo at various sampling rates:

Sampling rate	16 bit	24 bit
11 kHz Mono	1.3 MB per minute	1.9 MB per minute
11 kHz Stereo	2.5 MB per minute	3.8 MB per minute
22 kHz Mono	2.8 MB per minute	3.8 MB per minute
22 kHz Stereo	5.0 MB per minute	7.6 MB per minute
44.1 kHz Mono	5.0 MB per minute	7.6 MB per minute
44.1 kHz Stereo	10.1 MB per minute	15.1 MB per minute
48 kHz Mono	5.5 MB per minute	7.6 MB per minute
48 kHz Stereo	11.0 MB per minute	16.5 MB per minute
96 kHz Mono	11.2 MB per minute	16.5 MB per minute
96 kHz Stereo	22.0 MB per minute	33.0 MB per minute

Table 178.

For more information, consult, Dropouts and Other Audio Problems.

See:

Mixing Latency

Queue Buffers

Status Bar/CPU Meter/Disk Meter

Mixing Latency

SONAR has a slider in the **Audio Options** dialog box, on the **General** tab, to set mixing latency. Mixing latency is the amount of time SONAR allocates to prepare a buffer full of audio data for playback. Lower latency settings add processing time because of the need to refill the smaller data buffers more often. You may need to use the slider to **increase** mixing latency under the following conditions:

- You use lots of real-time effects, and you hear dropouts. Check the CPU meter for high readings; try increasing the latency.
- Your sound card does not function well at lower latency. Some sound cards just do not function well at lower latency settings. Even though SONAR's CPU meter and Dropout indicator report no

problems, if you hear dropouts try increasing the mixing latency.

Sound cards differ in the precision of their timing, what size audio buffers they require, and other characteristics. SONAR has a utility called the Wave Profiler that can usually automatically detect the type of sound card that you have installed and configure its settings for best performance. If your sound card is a well-known model, you can usually use SONAR without having to change many audio settings. However, if you experience synchronization problems between MIDI and digital audio, like to use different sample rates and bit depths, or want to experiment with mixing latency, you need to do some optimization yourself.

See:

The Wave Profiler

Status Bar/CPU Meter/Disk Meter

ASIO Drivers

SONAR supports ASIO drivers. You are limited to a single sound card when using an ASIO driver.

To Use an ASIO Driver

Use the following procedure to enable SONAR for use with an ASIO driver.

1. Select **Options > Audio** to open the **Audio Options** dialog.
2. In the **Audio Options** dialog, click the **Advanced** tab.
3. In the **Playback and Recording** section, select **ASIO** from the **Driver Mode** drop-down menu.
4. Restart SONAR.

ASIO sample position

`UseHardwareSamplePosition=<0, 1>, default = 0`

This variable applies to ASIO mode only and controls whether SONAR internally compute the sample position based on buffer switch calls or uses the ASIOGetSamplePosition reported value to retrieve the driver reported value.

Some drivers change the reported sample position based on how long a buffer switch took to complete and this can cause problems since SONAR expects the reported position to be in sync with the number of buffers actually streamed.

This `Aud.ini` variable defaults to 0.

Queue Buffers

SONAR allows you to set the number of queue buffers in the **Audio Options** dialog box, in the **General** tab. A higher number of queue buffers will take longer to fill, and therefore cause an increase in latency. A lower number of queue buffers decreases latency, but may cause “dropouts.” The default setting is 2. For more information, see: Mixing Latency, and Dropouts and Other Audio Problems.

Status Bar/CPU Meter/Disk Meter

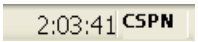
SONAR has several tools to help you identify and correct audio problems, including the CPU meter, the Disk meter, and the Dropout indicator. These tools are all located on the Status bar, which is at the bottom of the screen. The Status bar also contains a measurement of available hard disk space. If you do not see the Status bar, go to **Options > Global**, select the **General** tab, and make sure **Show Status Bar** is selected. The Status bar contains the following fields, reading from left to right:

- **Cursor location.** The left-most field on the Status bar shows the location of your mouse cursor.
- **Audio Running.** Whenever the **Audio Engine** button in the **Transport** toolbar is depressed, the Audio Running indicator lights up.
- **Dropout indicator.** The Dropout indicator is in the same field as the Audio Running indicator. The Dropout indicator displays the word **Dropout** whenever your project requires more resources than your CPU, main memory, and disk can supply.
- **Mute.** Whenever a track is muted, the Mute indicator lights up. You can click the Mute indicator to unmute all muted tracks.
- **Solo.** Whenever a track is soloed, the solo indicator lights up. You can click the Solo indicator to unsolo all soloed tracks.
- **Arm.** Whenever a track is armed for recording audio or MIDI data, the red Arm indicator lights up. This indicator is in the same field as the red Aut indicator. You can click the Arm indicator to disarm all armed tracks.
- **Automation Write.** Whenever a parameter is armed for automation recording, the Automation Write indicator lights up. This indicator is in the same field as the red Arm indicator. You can click the Write indicator to disarm all armed parameters.
- **AUTO.** Whenever any control is armed for automation recording, the red Aut indicator lights up. This indicator is in the same field as the red Arm indicator. You can click the Aut indicator to disarm all armed tracks
- **Sample rate and record bit depth.** This field lists the project's sample rate and the current recording bit depth
- **Disk Space.** This field shows how many megabytes of disk space you have left on the hard drive where your wave data directory is. It also shows this amount of space as a percentage of that drive's total space.
- **CPU meter.** The CPU meter displays the time it takes to process a buffer full of audio data as a percentage of the maximum time available to process that data and maintain uninterrupted playback. There is some tolerance built into the meter, so it's very possible that it will exceed 100% at times (more so during recording than playback). When the meter exceeds 100%, it displays the word "Overload."
- **Disk meter.** The Disk meter measures how much of the available time SONAR is using to perform input/output functions on your hard disk. The size of your setup's I/O buffer (listed in the **Audio Options** dialog box, in the **Advanced** tab) determines how much time is allowed to perform disk operations and maintain uninterrupted playback. When SONAR performs disk operations, the Disk meter jumps up in value and shows the percentage of the allowed time

SONAR is taking to complete each cycle of disk Input/Output.

Note: *If you experience a dropout or your CPU or Disk meters are reading high, there are steps you can take to improve your audio performance. For more information, see "Dropouts and Other Audio Problems" on page 858.*

SONAR's status bar displays bold letters to indicate when Caps Lock, Scroll Lock, Pause and Num Lock are enabled.



Indicator	Means
C	Caps Lock is enabled
S	Scroll Lock is enabled
P	Pause is enabled
N	Num Lock is enabled

Table 179.

See also:

Status Bar/CPU Meter/Disk Meter

Reduce GUI updates to improve playback performance

SONAR has a CPU conservation mode that reduces the number of GUI updates with no effect on actual playback quality and rendering. This maximizes CPU resources for the audio engine and can be useful while playing projects that consume a lot of CPU, to help avoid dropouts.

Like the **Scroll Lock** key, the **Pause** key now works as a special GUI throttle toggle key. When the **Pause** key is pressed, SONAR runs in a CPU conservation mode by reducing the frequency of GUI updates. For example, VU meter updates, Now position pointer and progress updates will appear to update less frequently.

During CPU conservation mode, the UI is only updated once per second.

This mode can also be helpful to conserve CPU while doing a real-time bounce (see "Real-time bounce" on page 666).

Note: *When CPU conservation mode is active, SONAR's status bar displays the letter* **P**.

24-bit Tips

Here are a few tips for playing back and/or recording at 24-bits:

- Try to play back at 24-bits even if your sound card only operates at 20- or 18-bits:

  Having established the default settings for new files, you must also specify at what playback bit-depth you want your sound card to use. In the **Audio Options** dialog box, set the **Audio Driver Bit Depth** to the desired value. Even if your sound card's highest bit-depth is only 18- or 20-bits, you should try selecting an **Audio Driver Bit Depth** of **24** first. If you receive an error message when doing so, try selecting **20**. If this also produces an error message, try selecting **18**. In other words, if you want SONAR to operate your sound card at any bit-depth greater than 16-bits, try selecting the highest value possible in the **Audio Driver Bit Depth** setting, and work downward from there if you have to.

  (If your sound card's maximum bit-depth is 20-bits and you specify an **Audio Driver Bit Depth** of **24** as advised above, audio data will still be sampled by your sound card in 20-bit samples, but each sample will automatically be padded with extra 0's to produce a 24-bit sample, which will be stored at full 24-bit resolution in your project file.

- Some 24-bit cards require you to configure the order in which data is streamed:

  If necessary, open the **Audio Options** dialog, click on the **Advanced** tab. In the **Stream > 16-bit data as** option, select one of the following:

  - 3 bytes
  - 4 bytes, right justified
  - 4 bytes, left justified
  - 32-bit PCM, right justified
  - 32-bit PCM, left justfied

  These settings affect how 24-bit audio samples are transferred from the sound card into the SONAR software, and affect the efficiency of the transfer. You'll get the best performance from this card when working at 24-bits if you use the correct setting for your sound card. If you're not sure whether your particular sound card requires these settings, consult the documentation that came with your sound card. You should also check the web page www.cakewalk.com/Support/Docs/sound cardTips.html to see if any information is available there regarding configuration of your particular sound card in Cakewalk. When in doubt, leave these settings disabled.

  (These settings are only relevant when working with sound cards at >16 bits-per-sample. You can ignore them when operating at normal 16-bit depth.)

- Using 24-bit depth and/or high sampling rate can be costly:

  While using 24-bit audio can improve the sound quality of your recordings, there are some important drawbacks to keep in mind. Projects stored at 24-bit depth will require 50% more disk space than those stored at 16-bits; if you have a large number of audio tracks (and keep in mind that stereo tracks require twice as much data as mono tracks!), your audio project file can grow very large and use up lots of disk space. Also note that recording, playing, and processing 24-bit data utilizes more CPU resources than working with 16-bit data. This means that for a given computer configuration, you will be able to record/play/process a smaller number of total

simultaneous tracks, and use a smaller number of simultaneous real-time effects, in a 24-bit project than you would be able to in a 16-bit project. This is also true when working at higher sampling rates (i.e., a 24-bit/96khz project requires substantially more computing resources than a corresponding 16-bit/44.1khz project). Depending on the size of your project and the configuration of your computer (CPU, RAM, disk), you may need to reconsider whether working at the higher bit-depth/sampling rate is justified or even possible.

Some plug-ins do not function well at a 96 kHz sampling rate.

Using an audio bit depth of 24 can enhance the performance of some plug-ins, but raising the sampling rate to 96 kHz does not offer much improvement, and can cause some plug-ins to add unintended artifacts to the sound. Using a 24-bit, 44.1 kHz setup for your audio provides plenty of enhanced performance for plug-ins that can take advantage of it, without risking the problems that 96 kHz audio causes with some plug-ins.

It's also worth noting that not all audio projects benefit equally from the use of higher bit-depth/sampling rates. Most professional sound engineers will tell you that 24-bit, higher-sampling-rate audio is most beneficial when working with music that focuses on natural acoustic instruments and/or vocals recorded with very high-quality microphones. The benefits of 24-bit/high-sampling-rate recording are less audible when working with highly synthetic or highly compressed program material, often found in contemporary popular music. You must make your own judgement about whether the benefits of higher-capacity audio justify the extra demands it places on your computer.

Note: *Red Book Audio CDs are still 16-bit (44.1 sampling rate), so if your goal is to burn a CD, you will have to mix down to 16-bit.*

Dropouts and Other Audio Problems

If your SONAR application suddenly stops producing audio while in the midst of recording or playback, you've very likely experienced a "dropout." Sometimes instead of a dropout, you may experience a "stutter" during playback (a small section of audio repeats itself once or twice before normal playback resumes). Or, you may occasionally experience a "glitch" or "pop" during audio playback (a brief interruption or clicking noise is heard, but audio playback then continues normally from that point). It is possible to experience a dropout while working exclusively with MIDI (i.e., no audio data in the project), but this is a different matter and is not covered here.

All of these audio problems are the result of audio information not being sent to or received from your sound card fast enough or reliably enough. During recording, the sound card sends incoming audio data to the sound card driver, which in turn sends audio data to SONAR to store on hard disk. When playing back, SONAR reads audio data from the hard disk and feeds it to the sound card driver, which in turn passes it to the sound card for audible output. If these activities can't be completed fast enough, or if the communication between SONAR and the sound card driver is broken in some way, recording and/or playback will be disturbed.

Causes and Cures

The exact cause of your audio problem will vary depending on the configuration of your computer and/or the content of the project file you're working with. The majority of audio problems are caused

by one of the factors listed below. Read each of the topics below, in the order shown, and follow the recommendations provided:

The CPU is being interrupted by "background" activities having nothing to do with audio

Cakewalk doesn't properly “recognize” your sound card

The "I/O Buffer Size" may not be well matched to your hard disk

Mixing latency may be set too low

Your hard disk may be excessively fragmented

Your project file may be excessively fragmented

Your sound card's driver may be obsolete

There may be a conflict with your video card or other multimedia streaming card

Your sound card may have a conflict with another device in your computer

Your project may simply be too "complex" for your computer

Upgrade your computer hardware: More RAM, a faster CPU, and a faster disk drive

The CPU is being interrupted by "background" activities having nothing to do with audio

Turn off these other activities, so your CPU can process audio without interruption:

- Turn off the **Microsoft Office FastFind** option if present on your system.
- Don't use any scheduled background tasks (e.g., tasks which are part of the Windows Plus package, or which you have scheduled yourself using the Windows Task Scheduler utility).
- Discontinue use of any networking or communications applications on your computer. For example, don't run email programs (like Microsoft Outlook), Web browsers, or AOL client software while you are running SONAR. These programs send and receive chunks of information over a modem or a network connection; when one of these data chunks is sent or received, your CPU may be unexpectedly interrupted from SONAR audio processing to deal with the modem or network data. That interruption can disrupt the smooth processing of audio data, causing a dropout or glitch. If possible, you should disconnect your computer from a local area network, and/or disconnect from any dial-up telecommunications while recording or playing back audio in SONAR.
- Turn off your screen saver (if present).
- Turn off the **Auto-Notification** option for your CD-ROM drive. If it is turned on, the insertion of a CD-ROM can interrupt audio processing.

  To disable it, open the System applet in the Control panel, click on the **Device Manager** tab, expand the CD-ROM list entry, double-click on the listed CD-ROM device, click on the **Settings** tab, and uncheck the **Auto Insert Notification** check box.
- Disable any kind of virus scanning program that might be running in the background. To find out what programs are currently running, press the CTRL-ALT-DELETE keys simultaneously to display the Windows Task Manager; if you see an anti-Virus program shown on the list of currently running tasks, select that program and click **End Task**.

- If SONAR's Auto Save feature is enabled, disable it.
- Remove all programs from the Windows Start Up folder (`\Windows\Start Menu\Programs\Start Up`).

Cakewalk doesn't properly “recognize” your sound card

Re-run the SONAR Wave Profiler, which will attempt to analyze your sound card and establish proper settings for it:

- Choose **Options-Audio**, then click on the **General** tab. Click on the **Wave Profiler** button at the bottom of the dialog box.
- If Wave Profiler offers you the chance to use "default settings" for your sound card, accept the defaults, close the **Options Audio** dialog box, and check audio playback/recording.
- If problem(s) continue, re-run the Wave Profiler, but this time do not accept any default settings.
- If you decline to use default settings (or if Wave Profiler can't find any for your sound card), Wave Profiler will analyze your sound card's capabilities by running some tests and automatically establish appropriate settings based on the test results.
- If your sound card is listed at www.cakewalk.com/Support/Docs/sound cardtips.html, read and follow any special card-specific operating instructions listed there.
- Re-test audio recording/playback. If problem(s) persist, go to the Next Step.

The "I/O Buffer Size" may not be well matched to your hard disk

SONAR may be reading and writing audio data to/from your hard disk in chunks that are either too large or too small for your particular hard disk's characteristics.

Select **Options > Audio**, click the **Advanced** tab, and try different values in the **I/O Buffer Size** box until you find a value that works well for your particular hard disk:

- The default value is **64**. Try reducing this value, to **32**, then **16**. After each change, close the dialog box (click **OK**) and re-test your project's recording/playback behavior.
- If problem(s) persist, try increasing this value, to **128**, then **256**, then **512**. Again, close the dialog box and re-try your project after each change.
- If you have an older, slower computer or an older, slower hard disk, you should try increasing the buffer size; decreasing is not advised on slower hardware. However, increasing this setting uses more of your computer's RAM. If you have a smaller amount of RAM in your computer, increasing the buffer size may not help.

If problem(s) persist, restore this value to its default and continue with the next step.

Mixing latency may be set too low

SONAR tries to send and receive audio data to/from your sound card with very a minimal delay (so that any real-time adjustments you make to a track's volume, pan, or other settings will take effect rapidly). If the latency setting is set too low, the sound card driver may not be able to keep up with the SONAR, and audio will be disrupted.

Try higher latency settings:

- Select **Options > Audio**, and click the **General** tab. Move the **Mixing Latency Buffer Size** slider

control to the right in small increments until you see the value to the right of the slider increase; close the dialog (click **OK**) and re-test your project after each increment.

- If problem(s) continue, move the slider control back to its original position, and try increasing the number in the **Buffers in Playback Queue** textbox. (This value starts out at **4**; try increasing it to **5**, **6**, **7**, or **8**). Close the dialog (click **OK**) and re-test your project after each such change.
- The total effective latency is displayed below the slider; it is determined by multiplying the per-buffer latency time (in msec) by the number of buffers in the playback queue.
- If problem(s) continue, click the **Advanced** tab in this dialog, and turn off the **WavePipe Accelerator** check box. Click **OK** to close the dialog and re-test your project.
- If problem(s) persist, turn the **WavePipe Accelerator** check box back on, and continue.

Your hard disk may be excessively fragmented

Audio data can be processed most efficiently if it is arranged in consecutive physical locations on your hard drive. Over time, the chunks become distributed at various discontiguous locations on your disk, which makes it more time consuming for SONAR to access the chunks. This extra access time can interfere with smooth audio recording and/or playback.

Try defragmenting the hard disk:

- Make sure SONAR, and the Wave data directory are not installed on a compressed hard disk.
- Defragment your hard disk. If you have more than one hard disk in your computer, identify the disk which contains the SONAR Data directory (this is where your projects' audio clips are stored.) To defragment the hard disk, exit SONAR first. Then, select **Start > Programs > System Tools > Accessories > Disk Defragmenter**. We recommend that you backup your hard disk before defragmenting it.

Your project file may be excessively fragmented

Audio data can be processed most efficiently if it is arranged in consecutive physical locations on your hard drive. During normal SONAR usage, a project's audio data can become fragmented into chunks stored at discontiguous locations on your disk. Accessing these discontiguous chunks can consume extra processing time, which can lead to dropouts.

Try defragmenting your project file:

1. Open the project file that has audio problems.
2. Save it as a Cakewalk Bundle (.cwb) file by selecting **Save As** from the **File** menu and selecting **Cakewalk Bundle** from the **Save As Type** drop down list and clicking the **Save** button.
3. Close the project.
4. Open the Cakewalk Bundle you just closed

Saving then re-opening the bundle file automatically defragments the audio data used by the project, reducing the chances of a dropout or other audio problem.

When you are ready to save the file again, you may want to save it as a normal (.cwp) file. Saving and opening .cwp files takes less time than saving and opening bundle files.

Your sound card's driver may be obsolete

Obtain and install a new sound card driver (if available):

- Consult your sound card manufacturer's web site (or contact their Customer Service department) to check for the availability of a later driver version. If one exists, obtain it and install it on your computer according to their instructions. With the new driver installed, restart the computer, then delete the file `cw9auddx.ini` from your SONAR folder. Launch SONAR and let it re-profile your audio hardware. When it's done, re-test your audio recording/playback.
- If problem(s) persist, continue with the next step.

There may be a conflict with your video card or other multimedia streaming card

Some video drivers contain bugs which can interfere with SONAR's operation. Or, the driver may be "stealing" excessive CPU time away from SONAR (some video card vendors, in an attempt to make their cards operate faster, supply drivers that tie up the computer's bus for relatively long intervals (so-called “PCI bus contention”). This can interrupt the smooth flow of audio data between SONAR and the sound card's driver.)

Try to remove the video card conflict as follows:

- Try turning off "hardware acceleration" on your video card (if available). This may cause more sluggish screen drawing, but may improve the flow of audio data to your sound card, thereby reducing the possibility of dropouts.

  To disable the hardware acceleration on your graphics card: Launch Control panel (**Start > Settings > Control panel**). Double-click the **Display** icon. Select the **Settings** tab. Click on the **Advanced Properties** button. Select the **Performance** tab. Move the slider for **Hardware Acceleration** one notch at a time toward ‘none’ and re-test your recording/playback after each such adjustment. If problem(s) persist, leave the slider at ‘none’ and proceed with the next step.
- Try Using the Windows driver for your specific sound card (instead of the manufacturer's driver).
- Try using the standard VGA/SVGA drivers provided with Windows (instead of the drivers provided by the manufacturer).
- Check your video card manufacturer's web site for a later driver version. If a newer driver is available, download it and install it on your computer following the manufacturer's instructions.
  - If you have an STB Velocity 128 card, and your graphics card was configured and shipped with a new PC, you may want to check the PC vendor’s website (instead of STB’s site) to see if they offer a driver update for the STB card. PC vendors often will customize drivers to their specific needs and you should use their driver updates.
- Try reducing the number of colors used by your video card. 16-, 24-, or 32-bit true color display settings can severely hamper real-time audio performance on some computers; using fewer colors allows your computer to spend more of its processing time on audio and MIDI.

  You can adjust color depth by right-clicking on your Windows desktop, clicking **Properties**, clicking on the **Settings** tab, and selecting a suitable entry in the **Colors** list. Also, try reducing the display resolution. Re-test your audio playback/recording with these changes.
- If you have one of the following specific video cards, applying the following card-specific .ini file

settings can reduce PCI bus contention problems. Be sure to check out www.cakewalk.com/Support/Docs/VideocardTips.html for more information about these and other popular video cards:

- If you have a Hercules Dynamite 128 card:

  Open the `System.ini` file in Notepad (or any text editor). In the section called `[Hercules]`, check to ensure that this line is present:

  ```
  Optimization=1
  ```

  (The default is 0; if necessary, edit the value to 1 and save the file. Restart Windows.

- If you have a Matrox Millenium card:

  Open the `System.ini` file in Notepad (or any text editor). In the section called `[mga.drv]`, add the following line:

  ```
  Pcichipset=1
  ```

  Edit the file as necessary, and save the file. Restart Windows.

  If you have an early Matrox video card, Disable Use PowerGDI acceleration:

  (**Start > Settings > Control panel > Display > MGA Settings > Advanced > Performance**)

  If you have a later Matrox video card, enable Use Bus Mastering and Disable use Automatic PCI Busd Retries:

  (**Start > Settings > Control panel > Display > Settings > PowerDesk button**)

- If you have a card based on the S3 chipset (S3, Inc. provides graphics chips for other manufacturers; consult your card manufacturer's website to see if that card is S3-based):

  Open the `System.ini` file in Notepad (or any text editor). In the section called `[display]`, make sure the following line is present:

  ```
  BusThrottle=1
  ```

  Edit as necessary, and save the file. Restart Windows.

- If problem(s) persist, continue with the next step.

Your sound card may have a conflict with another device in your computer

Try resolving this device conflict as follows:

- Ensure that your sound card is not sharing IRQs with any other device. Although some sound cards claim that they work properly on a shared IRQ, this is usually not the case and it is advisable to avoid such sharing. To do this, right click on **My Computer** and select **Properties** from the pop-up menu. In the **System Properties** dialog, click on the **Device Manager** tab, then double-click on the Computer icon at the top of the list. This allows you to look at all the devices on your system and which IRQs they are using. Scroll through the list until you see your sound card. Check the IRQ setting to the left of the icon. If there are other devices (such as a video card) that are assigned to the same IRQ, you should try moving your sound card to a different slot in your computer. Note that entries which say something like "IRQ Holder for PCI Steering" do not indicate conflicting devices, and can be ignored.

- Select **Options > Audio**, click the **Drivers** tab, and make sure that only your sound card's input and output drivers are highlighted in both menus. (If you have more than one sound card installed in your system, try using only a single sound card and deselecting the other(s). If you can get audio to record/playback properly on a single sound card, but you encounter problems using two sound cards simultaneously, there may be a conflict between the two sound cards. Contact Cakewalk Technical Support for assistance in this event.)
- If problem(s) continue, another multimedia audio device on your system (like a built-in sound card or voicemodem) could be interfering with your sound card's functionality. To see if this is the cause of your problem(s), you'll have to temporarily disable these other devices. Note that this may cause other programs which rely on these other devices to no longer work correctly.

  To disable these other device(s), in Windows go to the Control Panel, and double-click the Multimedia icon. Click the **Advanced** tab, and click the plus sign next to **Audio Devices**. Double-click any audio devices listed there that AREN'T the sound card, and choose **Do Not Use Audio Features on This Device**. Click **OK**, and repeat this step for any non-sound card device, including voicemodems, 'virtual audio devices' or 'game-compatible devices'. Once the sound card is the only device left, click **OK**, and restart the computer. After restarting, delete the file `cw9auddx.ini` from your Cakewalk folder. Once you've deleted those files, launch Cakewalk, and let it profile your audio hardware. When it's done, try playing your audio again.
- If problem(s) continue, try deselecting any MIDI devices which you might be using. In SONAR, click **Options > MIDI Devices** and deselect every MIDI device in both **Inputs** and **Outputs**, then when SONAR asks, select **Continue with no MIDI input** and **Continue with no MIDI output**, and try re-test your audio recording/playback.
- If problem(s) persist, reselect your audio and MIDI devices, and continue with the next step.

Your project may simply be too "complex" for your computer

Your computer may not have enough processing power to deal with all of the tracks, clips, and real-time effects used in your project. You can upgrade your computer hardware (see later items, below) or you can simplify your project’s content so it demands less processing power.

If possible, try reducing the complexity of your project in any of the following ways:

- Reduce the number of real-time effects used in your project. Instead of generating the effects in real-time (nondestructively) during playback, consider applying the effects offline (destructively), before beginning playback.
- Reduce the number of distinct tracks being played back simultaneously. Consider “sub-mixing” several of your audio tracks into one track (using the **Edit > Bounce to Tracks** command), and then archiving the individual tracks which were combined in the sub-mix. (Archived tracks don’t use up any CPU resources during playback, leaving more CPU resources available to properly play the non-archived tracks.)
- Where possible, record audio using a mono source, rather than a stereo source. Mono clips require less processing power than stereo clips.
- Avoid using overlapping audio clips. Where possible, combine/blend overlapping clips into a single clip, which uses less processing power.
- Thin the amount of MIDI controller data and the number of SysEx messages in your tracks.

- If you can't reduce your project's complexity, or if problems persist even after the complexity has been reduced, proceed to the next step.

Upgrade your computer hardware: More RAM, a faster CPU, and a faster disk drive

If your project makes extensive use of real-time effects (plug-ins), you should consider upgrading to a faster CPU. If your primary concern is playing or recording a large number of tracks, a faster CPU will help, but you may find that adding more RAM, a faster hard disk, and/or an improved hard disk controller may help even more.

The following are some tips on upgrading your hardware:

Audio problems are often caused by a hard disk which is transferring data too slowly. The disk could simply be physically incapable of reading and writing data fast enough, or the disk controller could be causing too much CPU time to be consumed when transferring audio data to/from the disk.

Consider upgrading your equipment as follows:

- Ensure that your hard drive controller is NOT configured to operate in “compatibility mode” which can greatly slow data transfer to/from your hard disk and make it almost impossible to record/play audio in Cakewalk reliably. To do this, go to the Control Panel and double-click on the System icon. Click the **Performance** tab. At the top of the **Performance** screen read the entries across from **File Systems** and **Virtual Memory**. They both need to say **32-bit**. If they mention **MS-DOS Compatibility Mode**, then your computer has a serious problem, beyond the scope of what a Cakewalk technician can fix. Your computer is processing the audio data very slowly and Cakewalk will not work properly until the **MS-DOS Compatibility Mode** problem is eliminated. Help is available on the Microsoft Technical Support Web page at www.microsoft.com/Support. Click on the **Support Online** link and search for the phrase **Troubleshooting MS-DOS Compatibility Mode on Hard Disks**. This problem can arise when installing a new hard disk in your computer; if Windows cannot find a suitable driver for the disk, it installs a generic driver and operates in Compatibility Mode.
- If you're using a hard disk controller that employs "programmed I/O", upgrade to a disk controller that uses "bus mastering" instead. (This is sometimes also known as an UltraDMA IDE Controller). The former technique relies on the CPU to transfer the data to/from the hard disk, stealing cycles which the CPU could be sending audio data to/from the sound card. With the latter technique, the hard disk controller itself is primarily responsible for transferring the data to/from the hard disk, relieving the CPU of much of that burden.
- Install a faster hard disk. If you're using an IDE- or E-IDE-type hard drive, try to find one which has a lower disk access time (e.g., less than 9msec). Use the Win Tune test application available at www.winmag.com, this diagnostic tool measures your hard drive's uncached transfer rate.

Optimized Picture Cache Redrawing

There are several options in the .ini files to speed up picture cache redrawing The biggest improvement will be seen on machines with multiple processors. Parallel processing can yield a significant boost in performance.

There is also an option in the **Clips Properties** dialog to selectively redraw waveforms for individual clips that may have a corrupt waveform display (see “To Redraw Waveforms” on page 866).

.INI File Picture Cache Options

3 new INI file variables that are used by picture cache generation and display:

- In `Aud.ini`:

  In the `[Aud]` section:

  `EnablePicCacheThreads=1` (default)

  This option creates extra background worker threads for the generation of wave pictures when you load a project. One worker thread is automatically created per CPU/core. Setting `EnablePicCacheThreads=0` reverts back to only using a single thread for picture computation.

  If you are running a system with multiple CPU's or cores setting this to 1 can greatly speed up the computation of pictures.

  Notes:

  -These threads are only active while the picture is being computed.

  -This option is only applicable on multiprocessor/multicore systems.

  Also in the `[Aud]` section:

  `ComputePicturesWhilePlaying=1` (default)

  This option allows waveform pictures to be computed in the background while audio playback is in progress. Most modern computers should be able to handle this load with no problems. Note that work is only done while new pictures are actually being computed—once the pictures are finished rendering there is no overhead.

- In `Cakewalk.ini`:

  In the `[WinCake]` section:

  `ProgressiveWavePictures=1` [default]

  This option enables progressive display of waveform pictures. When enabled you will see pictures being displayed in the clips view dynamically as they are being computed. The waveforms will update in the background when the application is idle. If the `ComputePicturesWhilePlaying` flag is set to **1**, waveforms will continue being displayed progressively even while audio playback is in progress. This can save time waiting for a complete picture to be finished before you can see it.

To Redraw Waveforms

1. Select the clips that you want to redraw.
2. Right-click a selected clip, and choose **Clip Properties** from the pop-up menu to open the **Clip Properties** dialog.
3. On the **Audio Files** tab, click the **Recompute Picture(s)** button. A dialog appears, asking if you want to recompute the pictures on the selected clips.

4. Click **Yes**.

Improving recording performance

`EnableCacheWriteThru=<0 or 1>, default = 1`

This `Aud.ini` variable enables disk write thru caching, on by default. When write thru caching is on, data recorded to wave files is written to the hard disk immediately, circumventing the hardware disk cache. Having write thru caching off can be more efficient for disk I/O but can result in data loss if your system crashes.

MIDI Prepare Buffer Size and automation

If your project contains several track/clip automation envelopes, setting your MIDI playback buffer size too low (in **Options > Global > MIDI**) can cause audio to crackle if your audio latency is also set very low. This problem will be somewhat worse if you enable multiprocessing in the audio engine. To minimize or eliminate these crackles, please be sure to keep your MIDI playback buffers at or above the default setting of 500 msec.

External Devices

SONAR can be controlled by a wide range of MIDI controllers and external MIDI devices. SONAR also contains two generic controller/surface plug-ins (the ACT MIDI Controller plug-in, and the Cakewalk Generic Surface Plug-in), which allow you to use almost any MIDI controller or controller/surface with SONAR. You can also control certain external devices from SONAR by using StudioWare or OPT (Open Plug-in Technology) panels.

SONAR allows you to control soft synths as well as effect plug-ins. Active Controller Technology (**ACT**) allows you to control any plug-in that has focus, using the same widget mappings for each instance of the same plug-in (**Note**: some older plug-ins do not support ACT). You can also choose to lock a particular controller/surface to a particular instance of a plug-in.

To keep track of your mappings, SONAR displays different-colored markers on each track and/or bus to show you which controller/surface is currently controlling that particular module. These visual markers on tracks and buses are called the **WAI display** (Where Am I).

SONAR includes preset mappings for popular controllers/surfaces and MIDI controllers such as the Edirol PCR series. If SONAR does not currently include preset mappings for your controller/surface, you can create mappings by using the built-in ACT MIDI Controller Plug-in or Cakewalk Generic Surface Plug-in.

See:

Edirol PCR Controllers

Setting up Control Surfaces

ACT MIDI Controller Plug-in

Cakewalk Generic Surface Plug-in

The WAI Display

ACT

OPT Panels

Working with StudioWare

Edirol PCR Controllers

SONAR has a custom controller/surface plug-in that allow an Edirol PCR controller to control SONAR track, bus, and plug-in parameters (both effects and synths). This includes support for ACT (Active Controller Technology), which lets you use your controller to adjust plug-in parameters on whatever plug-in currently has focus.

Using your Edirol PCR to control SONAR is as easy as:

1. Enabling the Edirol MIDI drivers in SONAR.
2. Choosing the correct Edirol In Port in SONAR's **Controller/Surfaces** dialog.
3. Loading the correct memory preset in your Edirol PCR.

To Enable Edirol MIDI Input Drivers

1. Use the **Options > MIDI Devices** command to open the **MIDI Devices** dialog.
2. In the Inputs pane on the left side of the dialog, make sure that the MIDI Input driver or drivers that your controller/surface uses are enabled (highlighted).

   If you have installed the drivers for your PCR from the installation CD you got with your controller, you can use the following table to choose the input drivers:

Edirol PCR model	Choose these input drivers
PCR-30/50/80, PCR-M30/M50/M80, PCR-M1	EDIROL PCR MIDI In EDIROL PCR1 EDIROL PCR2*
PCR-A30	EDIROL PCR-A MIDI In EDIROL PCR-A 1 EDIROL PCR-A 2*
PCR-1	EDIROL PCR-1 MIDI In EDIROL PCR-1 1 EDIROL PCR-1 2*

Table 180.

   * See note, below.

   If you are using the generic drivers that come with the Windows XP operating system, the driver names for all PCR models will be:

   - USB Audio Device
   - USB Audio Device [2]
   - USB Audio Device [3]*

3. Click **OK**.

To Connect an Edirol PCR to SONAR

1. Follow your controller/surface's instructions for physically connecting your PCR to your computer.
2. In SONAR, use the **Options > Controllers/Surfaces** command to open the **Controllers/Surfaces** dialog.
3. Click the **Add Controller/Surface** button , which opens the **Controller/Surface Settings** dialog.
4. In the **Controller/Surface** field of the **Controller/Surface Settings** dialog, select **Edirol PCR-M30**.
5. In the **Input Port** and **Output Port** fields, select which MIDI input and output ports the controller/surface uses.

Note: *You may need to read the documentation for your controller/surface to find out which MIDI input driver your controller/surface uses to control software applications (see asterisks above). If your controller/surface includes a MIDI keyboard, your controller/surface might use one MIDI input driver for the controller/surface functions (use this driver), and a different MIDI input driver to send MIDI notes and pitch bend data to the application (the piano keyboard functions).*

6. Click **OK** to close the **Controller/Surface Settings** dialog.
7. In the **Controllers/Surfaces** dialog, make sure that the **WAI Display** check boxes and the **ACT Indicators** check boxes are enabled, and click **Close**.

To Load the Correct Edirol PCR Memory Preset

1. Press the **MEMORY** button on your Edirol PCR.
2. Use the **INC** and/or **DEC** buttons to enter **1**, which is the correct preset to control SONAR (only when you are using the default PCR factory presets).
3. Press the **ENTER** button on your PCR.

Now that your controller/surface is connected, you can see which tracks and/or buses are being controlled by it by looking at the colored markings (the **WAI** display: see "The WAI Display" on page 886 for more information) in SONAR's interface. Open your controller/surface's property page by double-clicking the WAI display, or by clicking the **Controller/Surface Properties** button on the **Controllers/Surfaces** toolbar (use the **Views > Toolbars** > **Controllers/Surfaces** command), or by choosing the controller/surface from the **Tools** menu.

Once the Edirol property page is open, press F1 on your computer keyboard to open the help file for the property page.

See:

The WAI Display

ACT

Setting up Control Surfaces

If you are not using an Edirol PCR controller, use the following procedures to connect or disconnect your controller/surface:

To Enable MIDI Input and Output Drivers

1. Use the **Options > MIDI Devices** command to open the **MIDI Devices** dialog.
2. In the Inputs pane on the left side of the dialog, make sure that the MIDI Input driver or drivers that your controller/surface uses are enabled (highlighted).
3. If you have a bi-directional controller/surface (one that both sends and receives data in order to control a software application), also make sure that the MIDI Output driver or drivers that the controller/surface uses are enabled in the Outputs pane on the right side of the dialog.
4. Click **OK**.

To Connect a Controller/Surface to SONAR

1. Follow your controller/surface's instructions for physically connecting your controller/surface to your computer (you may need to close SONAR first).
2. In SONAR, use the **Options > Controllers/Surfaces** command to open the **Controllers/Surfaces** dialog.
3. Click the **Add Controller/Surface** button , which opens the **Controller/Surface Settings** dialog.
4. In the **Controller/Surface** field of the **Controller/Surface Settings** dialog, find the name of your controller/surface, and select it. However, if you want to use Active Controller Technology, or if your controller/surface is not listed, select either the **Cakewalk Generic Surface** or the **ACT MIDI Controller**.

Note: *The Cakewalk Generic Surface plug-in is not bi-directional.*

5. In the **Input Port** and **Output Port** fields, select which MIDI input and output ports the controller/surface uses.

Note: *You may need to read the documentation for your controller/surface to find out which MIDI input driver your controller/surface uses to control software applications. If your controller/surface includes a MIDI keyboard, your controller/surface might use one MIDI input driver for the controller/surface functions, and a different MIDI input driver to send MIDI notes and pitch bend data to the application (the piano keyboard functions).*

6. Click **OK** to close the **Controller/Surface Settings** dialog.

7. In the **Controllers/Surfaces** dialog, make sure that both the **ACT** and **WAI** check boxes are enabled, and click **Close**.

Important: *If your controller/surface needs to be in a certain mode, or have a certain memory preset loaded in order to control a software application, put your controller/surface in the proper mode or load the required memory preset now.*

Now that your controller/surface is connected, you can see which tracks and/or buses are being controlled by it by looking at the colored markings (the **WAI** display, (see The WAI Display for more information) in SONAR's interface.

If you selected the ACT MIDI Controller plug-in or the Cakewalk Generic Surface plug-in for your controller/surface, you can load a default set of mappings by opening the property page for either plug-in, and selecting the name of your controller/surface from the Presets window in the property page.

See also:

To Use ACT with the ACT MIDI Controller Plug-in

To Disconnect a Controller/Surface from SONAR

1. Use the **Options > Controllers/Surfaces** command to open the **Controllers/Surfaces** dialog.
2. In the controller/surface column, click the name of the controller/surface that you want to disconnect.
3. Click the **Delete** button ✕, which deletes the name of the controller/surface that you selected.
4. Click **Close**.

Control surface refresh rate

Control surfaces are refreshed by posting a windows message every 75 milliseconds.

```
CtrlSurfaceRefreshMS=<50 - 5000> (default=75)
```

You may wish to increase the value of this `Cakewalk.ini` variable if you are experiencing sluggish UI responsiveness when using a control surface and playing back high CPU projects.

Also, if you are using a control surface that is not bi-directional, the surface does not need to be refreshed at all and you can safely increase the value.

This variable should be set in the `[Wincake]` section. For example:

```
[Wincake]
CtrlSurfaceRefreshMS=75
```

See:

ACT MIDI Controller Plug-in

Cakewalk Generic Surface Plug-in

ACT MIDI Controller Plug-in

The ACT MIDI Controller plug-in can be configured to support any generic MIDI controller (controller/surface), such as the JL Cooper FaderMaster, Peavey PC-1600, and Kenton Control Freak. Generic controllers/surfaces typically have 8-16 strips of faders/knobs/buttons, are non-motorized, and can often be configured to transmit any MIDI message (continuous controllers, NRPNs, Sysx, etc.). The ACT MIDI Controller supports ACT.

After you have connected your controller/surface, and selected the ACT MIDI Controller plug-in in the **Controllers/Surfaces** dialog (see “Setting up Control Surfaces” on page 872 if necessary), open the ACT MIDI Controller property page, and select a preset for your controller/surface (load the default mappings).

To Open the ACT MIDI Controller Property Page

1. In the **Controllers/Surfaces** toolbar (**Views > Toolbars > Controllers/Surfaces** command), make sure that **ACT MIDI Controller** appears in the drop-down menu. If you can’t find it in the drop-down menu, you need to add it in the **Controllers/Surfaces** dialog (see “Setting up Control Surfaces” on page 872 if necessary).
2. Click the **Properties** button that is in the **Controllers/Surfaces** toolbar. You can also double-click the WAI display of the ACT MIDI Controller plug-in.

Note: *Except for the buttons on the right end of the toolbar, the toolbar is for display purposes only. To enable another controller/surface, use the **Options > Controllers/Surfaces** command. To change the bank of tracks that the controller/surface controls, use the buttons on the controller/surface itself (or drag the WAI display). Use the drop-down menu on the toolbar to choose what controller/surface the toolbar displays information for. Click the **Properties** button in the toolbar to display the property page (interface) of the currently displayed controller/surface.*

See also:

To Use ACT with the ACT MIDI Controller Plug-in

Using the ACT MIDI Controller Property Page

Using the ACT MIDI Controller Property Page

The ACT MIDI Controller property page gives you a wide range of options to control track, bus, and plug-in parameters.

You can press F1 when the property page is open to get a description of all the fields and controls.

To Load Default Mappings

- In the **Presets** list, select the name of your controller/surface. If your controller/surface does not have a preset, select the **Default** preset , and see “Assigning Controls on Your Controller/Surface to Cells in the ACT MIDI Property Page” on page 875.

Important: *After you load the preset for your controller/surface, look at the **Comments** field on the **Options** tab of the ACT MIDI Controller property page. The **Comments** field will usually list the factory memory preset that your controller/surface must be using to use the ACT MIDI Controller plug-in. Make sure that you have loaded the correct memory preset in your controller/surface’s memory.*

To Edit Default Mappings

- On the **Options** tab, in the **Rotaries**, **Sliders**, or **Buttons** fields, choose the **Bank** of parameter mappings that you want to edit, then select a new parameter for that Bank. For example, if in the **Rotaries** field, you select **Bank 4**, and the parameter field next to the **Bank** field now reads **Send 2 Pan**, you could select **Send 2 Vol** instead. If you then click the **Controllers** tab, and select **Bank 4** in the **Bank** menu that’s in the rotaries row, the rotary knobs will now control **Send 2 Volume** on all the tracks currently under control. If you have at least 2 sends in each track, the **Rotary** fields on the **Controllers** tab will now display the name and current level of each **Send 2** in the controlled tracks.

  You can restore the default parameter assignments by clicking the **Defaults** button.

  If you want to choose a different knob or other control to control a specific cell in the property page (the MIDI Learn function), see “Assigning Controls on Your Controller/Surface to Cells in the ACT MIDI Property Page” on page 875.

See:

ACT presets

ACT presets

After you have carefully configured the ACT MIDI Controller property page to work with your controller/surface, you will likely want to save the configuration as a preset.

To Save a Preset

- Type a name in the **Presets** window, then click the **Save** (floppy disk) button.

See:

Assigning Controls on Your Controller/Surface to Cells in the ACT MIDI Property Page

Assigning Controls on Your Controller/Surface to Cells in the ACT MIDI Property Page

Each cell or field on the **Controllers** tab of the ACT MIDI Controller property page lists the SONAR or plug-in parameter that is currently controlled by that cell. However, if your controller/surface does not have a preset, no knobs or sliders on your controller/surface will be assigned to that cell, or the knobs may be assigned in a pattern that you don't prefer.

If your controller/surface does not have a preset, or if you want to change the knobs and sliders that control specific cells in the ACT MIDI Controller property page, use the MIDI Learn function to assign knobs and sliders to cells:

To Assign Controls on Your Controller/Surface to Cells in the ACT MIDI Controller Property Page

1. Click the cell on the **Controllers** tab of the ACT MIDI Controller property page that you want to control with a specific knob or control on your controller/surface. You can assign knobs to cells that do not currently list any SONAR or plug-in parameter.

   The cell displays the MIDI Learn message.
2. Move the control on your controller/surface that you want to use to control that cell. This assigns the control to the cell.
3. You can edit the cell label by clicking the label and entering a new name in the **Edit Label** dialog. This way you can immediately see which knobs or sliders on your controller/surface are controlling which cell in the ACT MIDI Controller property page.
4. Repeat steps 1-3 for all the cells you want to control. Remember, you can assign controls to cells that do not currently list any SONAR or plug-in parameters.
5. When you are finished assigning controls to cells, save your work as a preset: choose a preset or type a new name in the **Presets** box, and click the **Save** button (floppy disk icon) that's next to the Presets window.

See also:

To Use ACT with the ACT MIDI Controller Plug-in

Cakewalk Generic Surface Plug-in

The Cakewalk Generic Surface Plug-in supports both ACT and WAI. See "The WAI Display" on page 886, and "ACT" on page 888 for more information.

After you have connected your controller/surface (including loading the correct memory preset in your controller/surface's memory), and selected the **Cakewalk Generic Surface** plug-in in the **Controllers/Surfaces** dialog (see "Setting up Control Surfaces" on page 872 if necessary), open the Cakewalk Generic Surface property page.

To Open the Cakewalk Generic Surface Property Page

1. In the **Controllers/Surfaces** toolbar (**Views > Toolbars > Controllers/Surfaces** command), make sure that **Cakewalk Generic Surface** appears in the drop-down menu. If **Cakewalk**

Generic Surface is not available in the drop-down menu, see “Setting up Control Surfaces” on page 872.

2. Click the **Properties** button that is in the **Controllers/Surfaces** toolbar. You can also double-click the WAI display of the Cakewalk Generic Surface plug-in.

See:

Loading Cakewalk Generic Surface Presets

Loading Cakewalk Generic Surface Presets

SONAR contains preset mappings for most controllers/surfaces. Before creating a set of mappings from scratch, load one of the preset mappings for your controller/surface and see if you like it. Even if the preset doesn’t meet all of your needs, it is usually a good base for creating your own presets.

Note: *To use ACT with the Cakewalk Generic Surface property page, you need to first assign the knobs and controls on your controller/surface to radio buttons **1-9** and **A-G** in the **ACT Controls** section of the property page, and save these assignments as a new preset. See “To Use ACT with the Cakewalk Generic Surface” on page 878.*

To Load a Preset

1. At the top of the Cakewalk Generic Surface property page, in the **Presets** field, click the drop-down arrow that is at the right edge of the **Presets** box to display the menu of built-in presets.
2. Find the name of your controller/surface. There may be several versions of presets for your controller/surface, if your controller/surface has multiple presets.
3. Click one of the versions. If there are no versions for your controller/surface, see “Assigning Faders and Knobs to Control SONAR Parameters” on page 877.

Try out the available presets for your controller/surface. If you want to edit one of them, first save it under a new name: type a new name for it in the Presets window, and then click the **Save** button that’s next to the **Presets** box.

See:

Assigning Faders and Knobs to Control SONAR Parameters

ACT

Assigning Faders and Knobs to Control SONAR Parameters

The Cakewalk Generic Surface property page has separate sections that control track parameters (the **Track Parameters** section), plug-in parameters (the **ACT Controls** section), and global parameters (the **Global Parameters** section).

To Configure Track Parameters

1. In the Cakewalk Generic Surface property page, in the **Use ACT** or **Strip Params** fields, make sure that either the **ACT Enable** check box is disabled, or that the **Both** check box is enabled. If the **Both** check box is enabled, your controller/surface is controlling both track and plug-in parameters.
2. In the **Configure Strip Number** field, use the drop-down menu to choose which track strip in the current bank of tracks you want to configure (the number of tracks in the current bank is listed in the **Number of Track Strips** field).
3. If you want to change how many tracks are in a single bank, enter a new number in the **Number of Track Strips** field.
4. Click the radio button of the **Parameter** that you want to configure (choose from Parameters 1-16).
5. Use the drop-down menu next to the parameter you clicked to choose exactly what parameter you want to configure.
6. Move the control on your controller/surface that you want to use to control this parameter.
7. Click the **Learn** button in the dialog. The MIDI message that the control you moved sent out appears in the MIDI Message for the **Current SONAR Parameter** section.
8. You can edit how SONAR interprets this particular message if you want. See “MIDI Message Interpretation” on page 884 for more information.
9. Repeat steps 4-8 if you want to configure more parameters for this track strip, or choose a new track strip in the **Configure Strip Number** field, and then repeat steps 4-8

When you’ve finished your edits, either type a name for this group of settings in the **Presets** window and click the **Save** button (recommended), or just click the **Save** button to overwrite the current preset. You can then reload this collection of track settings any time you want to by choosing the name of the preset that you saved in the **Presets** window.

To Use ACT with the Cakewalk Generic Surface

1. Make sure you have completed the following preliminary steps:
   - Successfully connected your controller/surface to SONAR (if necessary, see “Setting up Control Surfaces” on page 872).
   - Opened the Cakewalk Generic Surface property page (if necessary, see “To Open the Cakewalk Generic Surface Property Page” on page 876).
2. In the **ACT Controls** section of the Cakewalk Generic Surface property page are radio buttons **1-9** and **A-G**. These buttons control plug-in parameters in the active effect or synth plug-in. You first need to assign a knob or control on your controller/surface to each one of these radio buttons. Do this by clicking a radio button, moving a knob or control on your controller/surface, and then clicking the **Learn** button in the Cakewalk Generic Surface property page. You can check what MIDI message you’ve assigned to each button by clicking a button and then reading the value in the MIDI Message for **Current SONAR Parameter** section. If the **None** radio button is highlighted after you click an **ACT Controls** radio button, you have not assigned a control to that **ACT Controls** radio button. When you finish, save your assignments as a preset.

3. Next, in the Cakewalk Generic Surface property page, in the **Use ACT** or **Strip Params** fields, make sure that either the **ACT Enable** check box is enabled, or that the **Both** check box is enabled. If the **Both** check box is enabled, your controller/surface is controlling both track parameters and plug-in parameters.
4. In SONAR, put the focus on the plug-in effect or synth -that you want to configure: either click its property page, or click its name in an FX bin.

   The name of the plug-in appears in the **Context** field in the Cakewalk Generic Surface property page.
5. Enable the **Learn** button on the **Controllers/Surfaces** toolbar.
6. In the property page of the plug-in that you want to control, click the parameters that you want to control.
7. Move the sliders/knobs on your controller/surface that you want to use to control the parameters with, in the same order that you clicked the parameters (you can reverse steps 6 and 7).
8. Disable the **Learn** button on the **Controllers/Surfaces** toolbar.
9. A dialog appears, asking if you want to keep your assignments. Click **Yes** or **No**.

As soon as you disable the **Learn** button, any plug-in mappings that you keep are saved globally, and will be the same in every project for a particular plug-in. Now your controller/surface can control whatever soft synth or effect currently has focus. If you want to control only a single instance of a plug-in, regardless of which plug-in has focus, enable the Lock Context check box. For more information about ACT, see “ACT” on page 888.

You can save Track parameter mappings and knob/radio button mappings in the Presets window that is at the top of the Cakewalk Generic Surface property page.

Assigning Forward and Rewind Buttons

The **Forward** and **Rewind** assignments are special cases in the Cakewalk Generic Surface property page. When you click select either of these parameters, notice that **Literally/Toggle** field becomes greyed-out, and the **On/Off** fields become available. This is because the **Forward** and **Rewind** commands both require two different MIDI messages to function: one MIDI message to turn the operation on, and a different message to turn the operation off. This kind of operation is best assigned to a button that sends out one MIDI message when you hold or push it down, and a different MIDI message when you let the button up. The property page can usually fill in the **On** field and the **Off** field correctly if you push the desired button a few times and then click the **Learn** button. But it helps if you know exactly what MIDI messages the desired button sends out. That way, you can fill in the correct trigger values in the **On** and **Off** fields if the displayed values are incorrect.

Conserving Knobs and Buttons

There are a few tricks you can use if you’re running out of buttons, or if your controller/surface only has a couple of buttons on each strip, and you want to control more parameters on each track:

- **Assign a two-way knob or button to control two different parameters.** If a knob sends out one MIDI message when it’s turned to the right and a different MIDI message when it’s turned to the left, you could use it to control 2 toggle-type parameters, such as **Solo** and **Arm**. For example, if a knob sends out **NRPN # 5000** with a data value of **1** when you turn it to the right and a data

value of **16383** when you turn it to the left, you could use a **Trigger Value** of **1** to turn the **Arm** button on and off, and a **Trigger Value** of **16383** to turn the **Solo** button on and off. That way, each time you turn the knob to the right, the **Arm** button turns on or off. Each time you turn the knob left, the **Solo** button turns on or off.

- **Assign a two-way knob to control a continuous parameter.** If your fader is assigned to control **Volume**, you can use a two-way knob to control **Pan** or some other continuous parameter such as **Send 1 Level**. For example, if a knob sends out **NRPN # 5000** with a data value of **1** when you turn it to the right and a data value of **16383** when you turn it to the left, you could use a value of **1** in the **Increment/Decrement Plus +** field, and a value of **16383** in the **Increment/ Decrement Minus -** field. That way, each time you turn the knob to the right, the **Pan** parameter (or whatever parameter you want) increases by 1. Each time you turn the knob to the left, the parameter decreases by 1. The parameter continues to increase if you keep turning the knob to the right, and decreases similarly if you keep turning the knob to the left.
- **Use multiple strips to control one track at a time.** Assign as many knobs and faders as you want to control lots of parameters on only one track (leave the **Configure Strip Number** field set to **1** while you're assigning faders and knobs). Then assign a couple of buttons to **Move 1 Left** and **Move 1 Right**, so you can shift your controller/surface one track at a time.

See also:

Controlling Different Tracks or Groups of Tracks

Controlling Different Tracks or Groups of Tracks

The Cakewalk Generic Surface plug-in can control anywhere from 1-32 tracks simultaneously, as specified by whatever number you fill in the **Number of Track Strips** field in the Cakewalk Generic Surface property page. There is always at least one track being controlled, referred to as the **Base Track**. The **Number of Track Strips** value refers to the base track plus 'n' number of additional tracks. The toolbar automatically updates to display the range of tracks (1-8, 2-9, 9-16, etc.) that your control surface currently controls.

If multiple controller/surfaces are enabled, the **Controllers/Surfaces** toolbar lets you select which controller/surface to display track information for.

The currently controlled tracks are displayed in the **Controllers/Surfaces** toolbar. Go to **Views > Toolbars**, and select **Controllers/Surfaces** if the toolbar is not already displayed. It is important to understand that this toolbar is for display purposes only—it gets information from the Cakewalk Generic Surface plug-in (or any other active controller/surface plug-in), but the toolbar cannot update, or send information to the Cakewalk Generic Surface plug-in. Changing which tracks are controlled must be done with the **Move 1 Left**, **Move 1 Right**, **Move Bank Left**, or **Move Bank**

Right parameters, or by clicking the **BaseTrack** buttons that are at the top of the Cakewalk Generic Surface property page.

Note: *If you don't have any buttons left over to assign to the **Move 1** or **Move Bank** parameters, you can click the right or left buttons in the **BaseTrack** section of the Cakewalk Generic Surface property page to move the **Base Track** to the right or left by one track. The buttons are located so that you can resize the property page to just show the buttons and the **Presets** field.*

To Control the Next Track or Bank of Tracks

1. In the Cakewalk Generic Surface property page under **Global Parameters**, select **Move 1 Right** to control the next higher-numbered track, or **Move Bank Right** to control the next higher-numbered bank of tracks.
2. Move (twice) the button or knob that you want to use to shift the controller/surface to the next higher-numbered track or bank (for example, from track 1 to track 2, or from tracks 1-8 to tracks 9-16).
3. Click the **Learn** button.

   The property page reads the type of MIDI message and displays the characteristics in the appropriate fields.
4. Press the TAB key to accept the data.
5. Move the button or knob again and watch the display in the **Controllers/Surfaces** toolbar to see if the current tracks shift by the appropriate number.

Repeat this procedure, but use a different knob, and select **Move 1 Left** or **Move Bank Left** so that you can move the current track or bank to a lower-numbered one.

See also:

The Cakewalk Generic Surface Property Page

The Cakewalk Generic Surface Property Page

The Cakewalk Generic Surface property page appears when you click the **Properties** button in the **Controllers/Surfaces** toolbar (**Views > Toolbars > Controllers/Surfaces** command) while **Cakewalk Generic Surface** appears in the drop-down menu in the toolbar. The Cakewalk Generic Control controller/surface plug-in must be enabled first, however (see "Setting up Control Surfaces" on page 872, if necessary).

The property page has several sections, as described below:

BaseTrack

This section contains 2 buttons on either side of a number field. You can click the buttons to move the **Base Track** to a higher-numbered track (right button) or lower-numbered track (left button). The **Base Track** is the first track in the bank of tracks that your controller/surface is currently controlling.

You define how many tracks are in a bank by entering a number in the **Number of Track Strips** field. The number can be from 1 to 32, inclusive. The property page is designed so that you can minimize it (by dragging the border) to show only the **BaseTrack** buttons and **Preset** window, so you can click the buttons while you're working. The buttons are an alternative way to change the **Base Track** if you haven't assigned any buttons on your controller/surface to do that. The **Move 1** and **Move Bank** fields are what you use to assign those functions.

Track Parameters

This section lists the particular track strip you are assigning controls for, the number of strips that make up a bank of tracks, and the various track parameters you can control with the faders and knobs on your controller/surface. You can assign the following different track parameters (they are listed in the drop-down menu next to each **Parameter "n"** field):

- Volume
- Pan
- Mute
- Solo
- Record Arm
- Write Enable
- Phase
- Send "n" Level ("n"=1-16; depending on number of active buses; Send 1 Level=Reverb for MIDI tracks, Send 2 Level=Chorus for MIDI tracks)
- Send "n" Pan ("n"=1-16)
- Send "n" Enable ("n"=1-16)
- Send "n" Pre/Post ("n"=1-6)

Use ACT or Strip Params

This section lets you decide whether your controller/surface is controlling track parameters, plug-in parameters, or both.

Note: *It's possible to use the same control on your controller/surface to control both a track parameter and a plug-in parameter. It's not usually a good idea to control both at the same time.*

This section has the following controls:

- **ACT Enable radio button.** Lets you assign a control on your controller/surface to enable or disable the **ACT Enable** check box. Radio buttons are used with Learn mode.
- **ACT Enable check box.** When this check box is enabled (and not greyed-out), your controller/surface controls plug-in parameters only.
- **Both check box.** When this check box is enabled, your controller/surface controls both track and plug-in parameters. When neither the **Both** check box nor the **ACT Enable** check box are enabled, your controller/surface controls track parameters only. In Both mode, you typically

allocate some physical controls to control Track parameters, while other physical controls are allocated to control plug-in parameters.

ACT Controls

This section let's you assign buttons and knobs to control plug-ins. This section has the following controls:

- **Lock Context radio button.** Lets you assign a control on your controller/surface to enable or disable the **Lock Context** check box.
- **Lock Context check box.** When this check box is enabled, your controller/surface controls only the particular instance of the particular plug-in that had focus when you enabled this check box.
- **Context field.** Displays the name of the plug-in that currently has focus, unless the **Lock Context** check box is enabled.
- **Physical Control Type.** This field lets you tell SONAR what kind of control you are using for the selected parameter. For example, if the parameter you're controlling is an On/Off type of parameter, like a power button, it would be a good idea to use a button or switch on your controller instead of a slider.
- **Radio buttons 1-9 and A-G.** Each of these 16 radio buttons lets you map up to 16 plug-in parameters to controls on your controller/surface. The name of each of the 16 plug-in parameters that are currently being controlled are listed in order next to each radio button. To use these buttons, you must first assign a control on your controller/surface to each one of these buttons. See "To Use ACT with the Cakewalk Generic Surface" on page 878.

MIDI Message for the Current SONAR Parameter

This section is where you can choose a specific kind of MIDI message to control whatever parameter is selected in the **Track Parameters**, **ACT Controls** (including the **ACT Enable** check box), or **Global Parameters** sections. Most of the time you don't need to choose, because the **Learn** button fills in the fields automatically.

Choose from the following options:

- **None.** Click this button to disable control of the selected parameter.
- **Learn.** If you don't know the exact MIDI message that a fader/knob/button transmits, you can simply move the fader/knob/button a couple of times, and then click **Learn** to automatically fill in the correct MIDI message.
- **Controller.** With this button enabled and a Controller number entered in the **Number** field, SONAR moves the selected parameter whenever it receives this specific controller message from your controller/surface on the specified channel.
- **Channel.** The MIDI channel the controller/surface uses for the MIDI Message that is controlling the current parameter.
- **NRPN.** With this button enabled and a NRPN number entered in the **Number** field, SONAR moves the selected parameter whenever it receives this specific NRPN message from your controller/surface on the specified channel.
- **Trigger Value.** For triggered actions (mute, solo, play, stop, etc.), specify the Controller, NRPN or RPN value that will trigger the current parameter.

- **RPN.** With this button enabled and a RPN number entered in the **Number** field, SONAR moves the selected parameter whenever it receives this specific RPN message from your controller/surface on the specified channel.
- **Note.** You can use a Note On message to trigger a parameter or action. The **Number** field next to the radio button displays the note number, and the **Trigger Value** field displays the velocity the note must use to trigger the desired parameter. If you use a MIDI keyboard for this field, you can enter zero in the **Trigger Value** field, and the property page will then use the Note Off signal as a trigger, instead of the Note On.
- **Wheel.** You can use a pitch wheel to trigger a parameter. In this case, the **Trigger Value** field uses a range of numbers from 0 to 16383. Continuous parameters such as Pan or Volume are the best choices for a pitch wheel (except for the fact that the wheel usually returns to its original position when you let go of it), but you can use a wheel to control toggle-type parameters by entering 0 or 16383 in the **Trigger Value** field. That way, you'll trigger the desired parameter when the wheel reaches its maximum or minimum position.
- **Sysx Single Byte.** Selecting this option tells SONAR that the significant data (the variable, or parameter value) in the incoming Sysx message is in the form of a single byte. The **Sysx Single Byte** option has the following structure: **F0 ? VV ? F7**. The pre string should be **F0 ?**, where you must include the **F0** byte, and the post string should be **? F7**, where you must include the **F7** byte.
- **Sysx High Byte First.** Selecting this option tells SONAR that the significant data in the incoming Sysx message is in the form of two bytes, with the high byte first. The **Sysx High Byte First** option has the following structure: **F0 ? HI LO ? F7**.
- **Sysx Low Byte First.** Selecting this option tells SONAR that the significant data in the incoming Sysx message is in the form of two bytes, with the low byte first. The **Sysx Low Byte First** option has the following structure: **F0 ? LO HI ? F7**.
- **Starts With.** Fill in the string that your controller/surface sends in Sysx messages that precedes the significant data.
- **Ends With.** Fill in the string that your controller/surface sends in Sysx messages that follows the significant data.
- **Sysx Trigger.** Triggered targets (play, mute, solo, etc.) are enacted by using a Sysx trigger, where the user simply types the entire Sysx message **F0 ?? F7** that will trigger the action.
- **Trigger Message.** The exact Sysx message, in the form of **F0 ? ? F7**, for the **Sysx Trigger** option.

Note: *The **Sysx Single Byte, Sysx High Byte First**, and **Sysx Low Byte First** options assume that the Sysx message will be interpreted as a value to control continuous parameters such as Volume, extracted from somewhere in the middle of the message. That is why those three options are unavailable for "triggered" targets, like play, record, mute, solo, move 1 left, move 1 right, etc.*

MIDI Message Interpretation

A special interpretation of a MIDI message is commonly used in the following two cases:

- **Literally/Toggle.** The property page interprets almost all MIDI messages as either literal values

or toggle-type values, so most of the time this button is checked. A fader usually sends out a stream of different messages that are different for each position of the fader. The values of these messages are used “literally” to make timely changes in a continuous parameter such as Volume. The other common interpretation of a MIDI message is that it is meant to “toggle” a control such as a **Mute** button on and off. The property page interprets almost all MIDI messages as one of these two types of message.

- **Increment/Decrement.** This option is valuable if you want to use a button or knob that can only send two different values to control a continuous parameter, such as Pan or Volume (see “Conserving Knobs and Buttons” on page 879).
  - **Plus+.** The value that causes the desired parameter to increase by 1.
  - **Minus-.** The value that causes the desired parameter to decrease by 1.
- **On/Off.** This option is currently only used with the **Forward >>** and **Rewind <<** shuttle actions. You should only assign buttons to these functions if each button sends a different MIDI message when it is released from the message it sends when it is pushed. The **On** field displays the value the button sends when you push it, and the **Off** field displays the value the button sends when you release it.

Global Parameters

This section let's you assign buttons and knobs to control SONAR’s transport. The parameters you can control are:

- **Play**
- **Stop**
- **Forward >>**
- **Rewind <<**
- **Record**
- **Write Automation**
- **Jog <- (previous measure)**
- **Jog -> (next measure)**
- **Move 1 Left.** This parameter changes the currently-controlled track to the next lower-numbered track.
- **Move Bank Left.** This parameter changes the currently-controlled bank of tracks to the next lower-numbered bank of tracks.
- **Move 1 Right.** This parameter changes the currently-controlled track to the next higher-numbered track.
- **Move Bank Right.** This parameter changes the currently-controlled bank of tracks to the next higher-numbered bank of tracks.

Presets

After you have carefully configured the Cakewalk Generic Surface property page to work with your control surface, you will likely want to save the configuration as a preset.

To Save a Preset

- Type a name in the Preset box, then click the **Save** (floppy disk) button.

Euphonix EuCon control surface support

SONAR supports the Euphonix EuCon protocol, which allows SONAR to be controlled by Euphonix surfaces such as the MC and CM408 series.

To enable EuCon support in SONAR

1. Follow your Euphonix surface's instructions for physically connecting the Euphonix surface to your computer and configure the Euphonix software.
2. In SONAR, use the **Options > Controllers/Surfaces** command to open the **Controllers/Surfaces** dialog.
3. Click the **Add Controller/Surface** button , which opens the **Controller/Surface Settings** dialog.
4. In the **Controller/Surface** field of the **Controller/Surface Settings** dialog, select **EuCon Controller**.
5. Click **OK** to close the **Controller/Surface Settings** dialog.

Note: *It is not necessary to select any input or output ports.*

6. In the **Controllers/Surfaces** dialog, make sure that the **WAI Display** check boxes and the **ACT Indicators** check boxes are enabled, and click **Close**.

For more information about using the EuCon Controller surface, see the separate EuCon Controller online help (open the EuCon Controller plug-in and press F1).

See also:

To Connect a Controller/Surface to SONAR

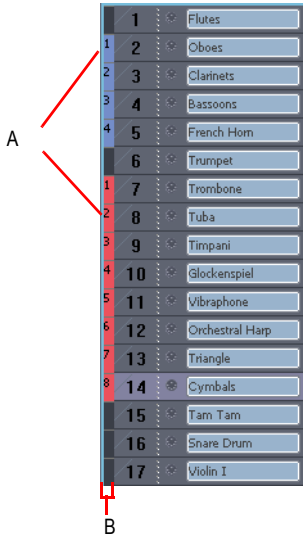
The WAI Display

The WAI display (short for Where Am I) is a group of colored markers to show you which tracks and/or buses are currently being controlled by which controller/surface. Each controller/surface uses different colored markers.

In the following picture controller/surface 1 (blue markers) is controlling tracks 2-5, and controller/surface 2 (red markers) is controlling tracks 7-14. You can **drag the markers** to different groups of

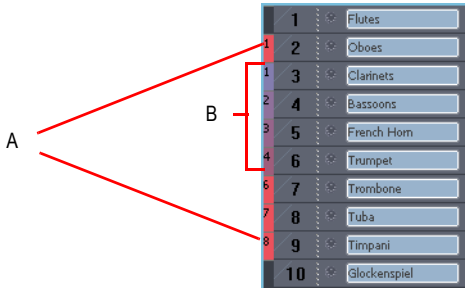
tracks to change which tracks each controller/surface is controlling. You can also double-click the WAI markers to open the property page of that particular controller/surface.

Figure 138. *WAI display*



A. *WAI markers* ***B.*** *WAI strip*

If multiple controller/surfaces overlap, the narrowest strip range appears on top of the widest strip range.



A. *Red markers* ***B.*** *Blue markers*

The following table describes how you can use WAI markers:

To do this	Do this
Change the group of tracks or buses that a controller/surface controls	Drag the WAI markers from one group of tracks to another group, or from one group of buses to another group. Or Right-click in the WAI strip, and choose **Move > [name of controller/surface] > here** from the pop-up menu.
Open the property page of a controller/surface	Double-click the WAI markers for that controller/surface.
Show or hide the WAI markers in the Track view and/or Console view	In the **Controllers/Surfaces** dialog (**Options > Controllers/Surfaces** command), in the **WAI Display** section, enable or disable the **Track view** and/or **Console view** check boxes.
Show or hide the WAI markers for a specific controller/surface	In the **Controllers/Surfaces** dialog (**Options > Controllers/Surfaces** command), in the **WAI** column just to the right of the name of the controller/surface, enable or disable the check box.
Change the color of the WAI markers for a specific controller/surface	In the **Controllers/Surfaces** dialog (**Options > Controllers/Surfaces** command), in the **WAI color** column just to the right of the name of the controller/surface, choose a new color from the drop-down menu.

Table 181.

See:

ACT

ACT

Active Controller Technology (ACT) allows you to control whatever plug-in effect or soft synth currently has focus. The controller/surface mappings for a particular plug-in work the same on each instance of that plug-in, whenever that instance has focus. You can change the focus to a particular plug-in by clicking either the plug-in's interface, or its name in an FX bin.

SONAR has built-in mappings for all relatively recent SONAR plug-ins, however some older plug-ins such as the TTS-1 do not support ACT.

Note: *If you're not using an Edirol PCR controller/surface, using ACT at this date means using either the ACT MIDI Controller Plug-in, or the Cakewalk Generic Surface Plug-in. The ACT MIDI Controller Plug-in has presets for most popular controller/surfaces that include built-in links between the knobs and controls on a given controller/surface and the cells on the Controllers tab of the ACT MIDI Controller property page. If you're not using one of the factory presets (or there isn't one for your controller/surface) OR if you're using the Cakewalk Generic Surface Plug-in, you need to establish some links between the knobs and controls on your controller/surface, and either the cells in the ACT MIDI Controller property page or the radio buttons in the Cakewalk Generic Surface Plug-in property page. To do either of these, see "Assigning Controls on Your Controller/Surface to Cells in the ACT MIDI Property Page" on page 875, or "To Use ACT with the Cakewalk Generic Surface" on page 878.*

To Use ACT with the ACT MIDI Controller Plug-in

1. Make sure you have completed the following preliminary steps:
   - Successfully connected your controller/surface to SONAR (if necessary, see "Setting up Control Surfaces" on page 872)
   - Opened the ACT MIDI Controller property page (if necessary, see "To Open the ACT MIDI Controller Property Page" on page 874)
   - Selected a preset from the ACT MIDI Controller property page **Presets** menu, either a factory preset for your controller/surface, or a self-created preset (if there is no preset, see "Assigning Controls on Your Controller/Surface to Cells in the ACT MIDI Property Page" on page 875).
2. Enable ACT in the ACT MIDI Controller property page by enabling the Active Controller Technology Enable check box. The ACT MIDI Controller can enable this check box from the controller/surface itself.
3. Put the focus on the plug-in that you want to control.

   The name of the plug-in appears in the **Active Controller Technology** field of your controller/surface's property page, and the current mappings appear above the **Knob** and **Slider** fields in the controller/surface property page.
4. Adjust the plug-in's parameters by moving the controls on your controller/surface (if you're using a self-created preset for the first time, you may have to create your own ACT Mappings before you can do this step—see the following procedure).
5. If you want to control only this instance of the plug-in with your controller/surface, enable the Lock check box in the ACT MIDI Controller property page, or enable the **ACT Lock** button in the **Controllers/Surfaces** toolbar.
6. If you are not locking the controller/surface to a single instance of a plug-in, put the focus on another plug-in, if desired, and adjust its parameters.

To Edit the Default ACT Mappings

1. Enable ACT in the ACT MIDI Controller property page by enabling the **Active Controller Technology Enable** check box.
2. Enable the **Learn** button on the **Controllers/Surfaces** toolbar.
3. Open the property page of the plug-in that you want to control.
4. Click the parameters in the property page that you want to control.
5. Move the sliders/knobs on your controller/surface that you want to use to control the parameters with, in the same order that you clicked the parameters (you can reverse steps 4 and 5).
6. Disable the **Learn** button on the **Controllers/Surfaces** toolbar.
7. A dialog asks if you want to keep your assignments. Click **Yes** or **No**.

Any assignments you keep are saved automatically as soon as you disable the **Learn** button. These assignments are global, so they are the same for every project.

OPT Panels

OPT stands for Open Plug-in Technology. If you have a Yamaha sound module that uses OPT panels, you can open the panels directly from SONAR, edit your sounds, and save them as presets.

To Open an OPT Panel

1. Make sure your Yamaha module is connected to your computer and turned on.
2. Use the **Views > OPT Panel** command to display the submenu of installed OPT panels, and click the name of the OPT panel you want to display.

   The OPT panel appears.
3. If you want to edit a preset you've previously created, choose the preset from the Presets window; otherwise type a name for your new preset in the Presets window.
4. Edit your sound (each OPT panel has its own help file).
5. Click the floppy disk icon that's next to the **Presets** box to save your edited sound.

Working with StudioWare

StudioWare panels are software interfaces to external MIDI devices such as samplers, keyboards, automatable mixers, and effects units. These interfaces allow you to manipulate the controls on any external MIDI device from graphical controls on your screen. The changes you make to these controls can even be recorded and then played back as part of your project.

SONAR includes a wide variety of StudioWare panels for popular MIDI devices, with new panels constantly under development here at Cakewalk, by equipment manufacturers, and by SONAR

users. Check the Cakewalk web site (www.cakewalk.com) from time to time for new and updated StudioWare panels.

StudioWare Panels

SONAR comes with a variety of StudioWare panels. Some are designed to control a specific external MIDI device, while others are useful with a variety of devices. Here is a listing of some of the panels that are included with SONAR:

Panel name	What it's for
Line 6 POD	Provides control for the Line 6 POD 2.0/Pro amp modeler.
Line 6 POD	Provides control for the Line 6 Bass POD amp modeler.
Fender Cyber Twin	Provides control for the Fender Cyber Twin amp modeler.
ART SQX20	Provides control for the ART SGX 2000 Express guitar preamp/processor
AWE	Controls the wavetable synthesizer on SoundBlaster AWE sound cards
EMU Orbit	Provides basic control of the EMU's Orbit synthesizer
General MIDI	Provides parameters and control for any General MIDI compatible synthesizer
Mackie OTTO 1604	Fader and Mute control designed for the Mackie 1604 mixer
MMC	MIDI Machine Control panel, providing track arming and transport control for any device that responds to MMC commands
Novation Bass Station BS1	Panel for controlling the settings of the Novation BassStation
Novation Bass Station Rack BSR1	Panel for controlling the settings of the Novation BassStation rack version
Novation DrumStationRack DRM-1	Panel for controlling the settings of the Novation DrumStation
Novation Super Bass Station Rack	Panel for controlling the settings of the Novation SuperBassStation rack version
Roland GS	Control panel providing parameter manipulation for any GS-compatible synth
Roland VS-880	Provides parameter and transport control for the Roland VS-880 digital audio workstation
Tascam RC-808	Control Interface modeled after the Tascam RC-808 remote control unit, used with the DA-38, DA-88, and DA-98 multitrack recorders

Table 182.

Panel name	What it's for
Yamaha ProMix 01	Provides parameter control for the Yamaha ProMix digital mixer
Yamaha 03D	Provides parameter control for the Yamaha 03D digital mixer
Roland UA-100	Provides parameter control for the Roland UA-100 audio canvas

Table 182.

To Open a StudioWare Panel

1. Choose **File > Open** to display the **Open File** dialog box.
2. Choose **StudioWare** from the **Files of Type** list.
3. Choose a StudioWare file and click **Open**.

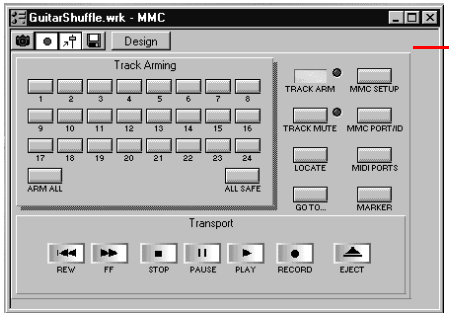
SONAR opens and displays the StudioWare panel.

Using StudioWare Panels

Every StudioWare panel is made up of a collection of controls and other information displays. The controls are software representations of the knobs, buttons, and sliders on an external MIDI device. By moving the controls on the screen, you adjust the controls on the external MIDI device. If you want, you can also configure the StudioWare panel so that moving the controls on the external device adjusts the controls on your computer screen. Some StudioWare panels contain controls that perform other functions within SONAR, such as changing track parameters or running CAL programs.

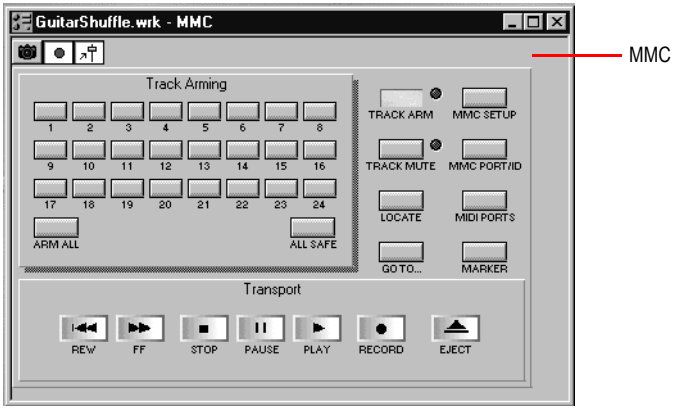
Because StudioWare panels can be used to control many different types of devices, and because each and every panel can be tailored for a specific application and hardware environment, it is impossible to explain here all the different ways to use a particular panel. Instead, this section tells you how to use the different types of controls and how to record the changes you make to each control as part of your project.

There are three types of controls in most StudioWare panels: buttons, knobs, and sliders. In addition, panels may contain LED indicators, level meters, text, and bitmap images. The appearance of controls and other displays may vary greatly from panel to panel. They may be of very different sizes, and they may be designed with custom styles, bitmaps, and colors. In addition, sliders and meters may be laid out either horizontally or vertically.



MMC

General MIDI



There are a variety of ways to adjust the values of buttons, sliders, and knobs:

To change this	Do this
The status of a button	Click on the button

Table 183.

To change this	Do this
The value of a slider	Click on the desired slider position to move the slider to that position, or drag the slider to the desired position
The value of a knob	Click along the outer edge of the knob to move the knob to that position, or drag the outer edge of the knob in a circular motion to set the desired position

Table 183.

To change the value of a knob or slider using the keyboard, you must first select the control:

- To select a control that has a numeric value display or label, click on the value or the label.
- To select a control without a numeric value display, click on the control, being careful to click at the current control position. If you do not click at the current control position, the control will change values as a result of the mouse click.

To adjust a knob or slider using the keyboard:

- Press the - and + keys to decrease or increase the value of the selected control by the smallest amount
- Press the [and] keys to decrease or increase the value of the selected control by steps of 10

Grouping Controls

SONAR lets you create groups of StudioWare controls. When several controls are in a single group, you can move a single control and have the remaining controls in the group adjust automatically. This is useful for many different mixing and crossfade applications.

When you create a group of controls, each control in the group has a starting and an ending value. Here's how these values are used:

- When you move any control in the group to its starting value, all controls in the group are set to their starting value
- When you move any control in the group to its ending value, all controls in the group are set to their ending value
- When you position any control in the group somewhere between its starting and ending value, all controls in the group are set to the same relative position between their starting and ending value

The initial range for each control is set based on the position of the controls at the time you group them.

You can adjust the range for any individual control, even if it is part of a group, simply by holding the SHIFT key while you move the control. When you adjust an individual control by holding the SHIFT key, its maximum or minimum is adjusted, depending on whether the entire group is closer to its minimum or maximum value.

To Create a Group of Controls

1. Select any control by clicking on it with the mouse.
2. Hold down the CTRL key and click on one or more additional controls.

SONAR creates a group from the selected controls.

To Remove Controls from a Group

1. Hold down the CTRL key and click on any control in the group.

SONAR removes the control from the group.

To Adjust a Single Control in a Group

1. Hold down the SHIFT key and drag the control to a new value.

The range for the control is adjusted so that its current position corresponds with the current position of other controls in the group.

Example: To Set Two Faders for a Crossfade

1. Move the two faders to their midpoint.
2. Click on the first fader, and then CTRL-click on the second to create a group.
3. Move both faders to their highest position.
4. SHIFT-drag the second fader to its lowest position.
5. Drag the first fader to its lowest position.
6. SHIFT-drag the second fader to its highest position.

These two controls are now grouped so that they move in opposite directions.

The minimum and maximum values of the faders look like this:

Fader	Starting value	Ending value
#1	0	127
#2	127	0

Table 184.

To set faders that are always the same distance apart, set the ranges something like this:

Fader	Starting value	Ending value
#1	0	63
#2	64	127

Table 185.

To set faders to move over different ranges of values, set them something like this:

Fader	Starting value	Ending value
#1	0	127
#2	0	100

Table 186.

Recording Control Movements

You can move the controls in a StudioWare panel while playing back a project to adjust the levels or other MIDI activity that the panel is designed to accommodate. In addition, you can record changes that you make to the controls in a panel so that these changes become a part of your project. Recording changes so that they play back automatically is known as **automation**.

There are two general approaches to recording control movements, as indicated in the following table:

Approach	How it works
Snapshot	You set all the controls to the values you want, and then create a snapshot of these settings at a particular Now time. When you play back the project later, all the controls will snap back to these settings when you reach the appropriate Now time.
Real-time recording	You move controls in any way you like, recording the series of changes you make so they become part of your project. When you play back the project later, the controls move exactly as you recorded them.

Table 187.

The first approach is useful, for example, when your project contains a variety of distinct sections and you want to make a sudden change in one or more settings between the sections.

The latter approach is most useful when you want to create smooth transitions from one section to another. For example, you could slowly add modulation to a MIDI piano or move the faders on a digital mixing console. Once you record these changes, they will play back along with your project automatically.

StudioWare lets you record and re-record automation data as many times as necessary. When you record new movements for a control, any old events for that control are replaced by the newer ones. Movements of other controls are unaffected. You can re-record moves again and again until you've got the movement exactly the way you want it. You can also edit automation data using the Notes pane in the Piano Roll view.

There are three tools in the **StudioWare** toolbar that are used to control recording and automation:

Icon	Tool	What it's for
	Update	Makes the controls in the panel update automatically during playback or when MIDI data is received by the panel
	Snapshot	Records a snapshot of the current position of all controls
	Record	Activates real-time recording of all control movements

Table 188.

Most StudioWare panels are designed to both send and receive MIDI data. This means two things:

- If you move the controls on your external MIDI device, the StudioWare panel will be notified of the changes
- When you play back a project containing automation data, the StudioWare panel is notified of the automation changes

The **Update** button in the **StudioWare** toolbar indicates whether these changes are played back visually on the StudioWare panel. Press this button to make sure that automation parameters and changes made on the external MIDI device are displayed in the StudioWare panel. Turn this option off if you do not want to see these changes.

If you are recording a snapshot while playback is in progress, you should probably disable Update. Otherwise, some of the controls may move as a result of previously recorded automation events, even while you are trying to position them correctly.

When you are recording real-time control movements, you probably want Update enabled, so that the controls will show the events that have already been recorded.

If you record automation data on a track that contains linked clips, SONAR automatically unlinks the clips so that the automation data do not apply to other instances of the linked clip. As an example, suppose you have four repetitions of a particular riff, stored in four linked clips that play in sequence. When you record a fade-out over these four clips, SONAR automatically splits the clips into four independent clips, each with automation data representing some portion of the fade.

If you record a snapshot of control positions on a track that contains linked clips, the clips remain linked, and the snapshot applies to all copies of the linked clip.

If you are not happy with the automation data you recorded, you can always use the **Edit > Undo** command to remove it.

The automation data you record using a StudioWare panel can be displayed and edited using either the Notes pane in the Piano Roll view or the Event List view. For more information about the Controller pane, see "Controllers, RPNs, NRPNs, and Automation Data" on page 510. For more information about the Event List view, see "The Event List View" on page 512.

To Record a Snapshot While Playback Is Stopped

1. Set the Now time to the point in the project where you want the settings to take effect.

2. Move the controls to the settings you desire.

3. Click .

SONAR records a snapshot of the current control settings.

If the Now time is the very beginning of the project, then the snapshot will change the track parameters to match the controls in the panel instead of recording automation events.

To Record a Snapshot While Playback Is in Progress

1. Make sure the button in the **StudioWare** toolbar is not pressed so that Update is disabled.
2. Change the Now time to a few bars or seconds before the time you wish to take the snapshot.
3. Start playback.
4. When you have reached the appropriate time, click on the **Snapshot** button.

SONAR records a snapshot of the current control settings.

To Record Control Changes in Real Time

1. Make sure the button in the **StudioWare** toolbar is pressed so that **Update** is enabled.
2. Make sure the button in the **StudioWare** toolbar is pressed so that **Recording** is enabled.
3. Set the Now time to a few bars or seconds before the time at which you want to record control movements.
4. Click or press SPACEBAR to start playback.

Note: *Do not press the **Record** button in the **Transport** toolbar!*

5. Adjust the controls as you wish while playback is in progress. Each time you adjust a control, the Record tool is activated.
6. When you are done, click or press the SPACEBAR to stop playback.
7. Click the button in the **StudioWare** toolbar to turn off real-time recording.

SONAR records the control changes that you entered while playback was in progress.

Control Settings

The controls in a StudioWare panel are designed to send and receive various types of MIDI information. This information can be transmitted to two possible destinations:

- A specific track in your project
- A MIDI output

When you want to record the movements of controls within a panel, you must make sure that MIDI data from the control are directed to a MIDI track.

StudioWare Panel Drawing Speed

Some StudioWare panels use bitmap graphics to enhance their appearance. These graphics can slow down the speed with which a panel is displayed on some slower PCs. You can turn off these bitmap graphics by adding this line to the `[WinCake]` section of the `Cakewalk.ini` file, as follows.

```
PanelsShowWidgetBitmaps=0
```

To turn bitmap graphics on again, change the entry to:

```
PanelsShowWidgetBitmaps=1
```

For more information about the `Cakewalk.ini` file, see the online help topic: Initialization Files.

Using CAL

Cakewalk Application Language (CAL) is an event-processing language that you use to extend SONAR with custom editing commands.

See:

Running CAL Programs

Sample CAL Files

Running CAL Programs

To interrupt a CAL program while it is running, press the Esc (Escape) key. Press **OK** to confirm that you want to interrupt the CAL program. As a rule, you shouldn't interrupt a CAL program in this way unless you suspect it is stuck in an infinite loop.

To Open a CAL Program

1. Select the MIDI data you want to edit.
2. Choose **Process > Run CAL**.

   The **Open** dialog box appears.
3. Navigate to the folder that contains the CAL program you want to run.
4. Choose the file you want to open and click **Open**.

The CAL program you chose runs and modifies the selected MIDI data.

Sample CAL Files

The following is a description of the sample CAL programs that come with SONAR. You can use these programs as is or modify them to suit your own needs.

See:

SPLIT NOTE TO TRACKS.cal

SPLIT CHANNEL TO TRACKS.cal

RANDOM TIME.cal

THIN CONTROLLER DATA.cal

THIN CHANNEL AFTERTOUCH.cal

THIN PITCH WHEEL.cal

MAJOR CHORD.cal, MINOR CHORD.cal

SPLIT NOTE TO TRACKS.cal

This program splits individual notes to separate tracks. It is useful if you have one drum track but want to split each drum to a separate track (for more flexible editing).

SPLIT CHANNEL TO TRACKS.cal

This program splits a track by channel into 16 new tracks. This can be useful for Type 0 MIDI files, which may have data recorded on many channels but only one track.

To use the program

1. Select only one track.
2. Set the From and Thru markers for any part of the track (you don't have to split the whole track).
3. Run the `Split Channel to Tracks.cal` program.

   SONAR displays a dialog box.
4. Select the first track for the 16 split-channel tracks (preferably, the first of 16 blank tracks).
5. Click **OK**.

RANDOM TIME.cal

This program randomizes event starting times. It asks you for a number of ticks. The program then changes each event time by an amount that is randomly between plus or minus one-half the number of ticks that you supply.

For example, if you type the number 4, each event time will have -2, -1, 0, 1, or 2 added to it.

THIN CONTROLLER DATA.cal

This thins continuous Controller data. It prompts you for two numbers.

- The number of the Controller that you want to thin. For example, MIDI assigns the Volume controller to number 7.

- A thinning factor. For example, if you specify the number 3, the program deletes every third Controller event of the kind you've specified.

This program never deletes Controllers with the values 0, 64, or 127, because the goal is to thin the data without destroying the fundamental shape of it.

THIN CHANNEL AFTERTOUCH.cal

This works almost exactly like the previous program, but it thins channel aftertouch (ChanAft) events. It asks you for the thinning factor.

THIN PITCH WHEEL.cal

This works almost exactly like the previous two programs, but it thins pitch-wheel events. It asks you for the thinning factor.

This program never deletes wheel events with these special values:
-8192, 0, and 8191.

MAJOR CHORD.cal, MINOR CHORD.cal

These two CAL programs and the three other chord-building CAL programs that come with SONAR build chords using existing events in the track(s) as chord roots.

For instance, if you select a single note as the region and run `Major_chord.cal`, two notes are added above the original note. The resulting chord is a major triad.

Normally, you'll use these programs on a region containing a single note. You can, however, apply these to tracks containing many notes. Each original note will become the root of a chord.

Troubleshooting

If you're having a problem with SONAR, don't panic. This chapter lists some common problems and how to solve them.

If you don't find an answer here, there are two other important places to look for help:

- Check the ReadMe file that came with your software. It contains additional information that wasn't available when this *User's Guide* was printed. To view the Readme file, select **Help > View README.RTF**.
- Visit our website at www.cakewalk.com, where you'll find answers to frequently asked questions, tech support documents, program patches and updates, and more.

Frequently Asked Questions

Audio dropouts or crash when playing back large files at maximum latency

When I Play a File, I Don't Hear Anything

I Can't Record from My MIDI Instrument

When I Play a File Containing Audio, the Audio Portion Doesn't Play

I Can't Record Any Audio

The Music Is Playing Back with the Wrong Instrument Sounds

My Keyboard Doubles Every Note I Play

I Don't See the Clips Pane in the Track View

Why Can't SONAR Find My Audio Files?

Why Do I Get Errors from the Wave Profiler?

My Track or Bus Fader is Maximized, But There's No Sound or Level

How Do I Use SONAR to Access All the Sounds on My MIDI Instrument?

I Hear an Echo When I Record

Dropouts Happen in High Bit-depth or High Sample Rate Audio

Patching an Effect into SONAR Causes a Dropout

I Can't Open My Project

Audio Distorts at Greater than 16 Bits
No Sound from My Soft Synth
My Pro Audio 9 Files Sound Louder/Softer When I Open Them in SONAR
SONAR Can’t Find the Wavetable Synth or MPU401
I Get an Error Message When I Change a Project to 24-bit Audio
Bouncing Tracks Takes a Long Time
The GUI is not Smooth During Playback
Plug-in windows flicker or don't display properly
File Recovery mode

Audio dropouts or crash when playing back large files at maximum latency

Symptom: after several seconds of playback the audio begins to cut out, although the transport appears to keep rolling. If the project file is loaded with several plug-ins you may experience a crash.

Solution: if you ever set the **Buffers Size** field on the **General** tab of the **Audio Options** dialog so that the buffer size exceeds the disk buffer size, audio won't play properly. If you want latency that high you must also increase the disk buffer size: in the **Audio Options** dialog, on the **Advanced** tab, try increasing the **I/O Buffer Size (KB)** field by blocks of 128 KB.

More Frequently Asked Questions.

When I Play a File, I Don’t Hear Anything

Open a project (.cwp) and click the **Play** button. If you don’t hear any music, try the following suggestions:

Possible problem	What to do
Your speakers aren’t connected properly or the volume is turned down.	Make sure your speakers are on and the volume is turned up.
Your sound card isn’t hooked up correctly.	See if other programs play sound correctly through your speakers. A good program to try is the Media Player (**Start > Programs > Accessories > Entertainment > Windows Media Player**). If other programs do not work, check your sound card documentation to make sure the card is properly installed and configured.

Table 189.

Possible problem	What to do
You don't have Bank and Patch settings in your MIDI track	Check the Bank and Patch settings for each track. Make sure that each track has a Bank and Patch assigned to it.
You don't have an Output setting	Check Output settings for each track. Make sure that each MIDI track is assigned to a MIDI output which is connected to a MIDI device capable of playback. Make sure each audio track is assigned to an output that is connected to your speaker system.
No MIDI output device is selected.	Choose **Options > MIDI Devices**, and check the Output device list. Make sure that your computer sound card is highlighted and at the top of the list. If this doesn't work, try choosing different output devices, one at a time, to see if any of them produces sound.
Your sound card or MIDI interface is not set up correctly.	Make sure you have installed and tested each card according to the manufacturer's instructions.
You may have too many MIDI drivers.	Make sure you only install the drivers that you need, and remove any old or unused drivers. To access the driver list, choose **Start > Settings > Control Panel,** then double-click **Multimedia** and click on the **Advanced** tab.
Your MIDI driver is incorrect or outdated.	Make sure that the driver you have installed is the correct driver for your hardware. Also try downloading and installing the latest driver release from your hardware manufacturer.
Your MIDI driver is configured incorrectly.	Make sure the driver's IRQ and port address settings match the physical settings on the card.

Table 189.

If none of these suggestions works, check our website for additional suggestions or contact technical support.

More Frequently Asked Questions.

I Can’t Record from My MIDI Instrument

If you are unable to record music from your electronic keyboard, synthesizer, or other MIDI instrument, first test to see if you are able to play back a project through the keyboard. Then try the following:

Possible problem	What to do
No MIDI input device is selected.	Choose **Options > MIDI Devices**, and check the Input device list. Make sure that the MIDI input on your computer sound card is highlighted.
Your MIDI cables are reversed.	Make sure that the MIDI Out plug is connected to the MIDI In jack on your keyboard and that the MIDI In plug is connected to the MIDI Out jack on your keyboard.
SONAR is not receiving MIDI data.	Check the MIDI Input/Output Activity monitor on the Windows Status bar. Check to see if the left LED is flashing red. If not, then SONAR is not receiving MIDI data. Check you connections and try again.
You have not set up SONAR to record.	Make sure that 1) you have chosen an input for the track; 2) you have armed the track for recording; and 3) you have pressed the **Record** button, and not the **Play** button.

Table 190.

If none of these suggestions works, check our web site for additional suggestions or contact technical support.

More Frequently Asked Questions.

When I Play a File Containing Audio, the Audio

Portion Doesn’t Play

Open a bundle file (.cwb) and click the **Play** button. Do you hear the audio tracks in the project (there may be MIDI tracks in the bundle file, so you must mute them). If not, try the following:

Possible problem	What to do
Your speakers aren’t connected properly, or the volume is turned down.	Make sure your speakers are connected properly and the volume is turned up.
Your sound card isn’t hooked up correctly.	Run the Microsoft Sound Recorder (**Start > Programs > Accessories > Entertainment > Sound Recorder**). Open any wave file and see if it plays sound correctly through your speakers. If not, check your sound card documentation to make sure the card is properly installed and configured.
The volume setting is turned down on your software mixer.	Double-click on the yellow speaker icon in the Windows task bar to display the mixer, and make sure all the volume settings are turned up and that none are muted.
Your audio tracks are assigned to the wrong output.	Check the output assignment for your audio tracks in the Track pane.
SONAR doesn’t recognize your sound card.	Choose **Options > Audio**, click the **General** tab, and then click the **Wave Profiler** button to test your audio hardware. Then, re-open the bundle file and try again.

Table 191.

If none of these suggestions works, check our website for additional suggestions or contact technical support.

More Frequently Asked Questions.

I Can’t Record Any Audio

If you are unable to record audio through your sound card, try the following suggestions:

Possible problem	What to do
The track is not set up to receive audio input.	Make sure that the input for the track you are recording (in the Track view) is set to an Audio input before recording.
The software mixer is not set up properly.	Double-click on the speaker icon in the Windows task bar to display the mixer. Choose **Options > Properties**, select **Adjust Volume for Recording**, and click **OK**. Make sure the appropriate **Select** boxes have checkmarks and the input volume is turned up.

Table 192.

Possible problem	What to do
Your sound card isn't hooked up correctly.	Try recording audio using the Microsoft Sound Recorder (**Start > Programs > Accessories > Entertainment > Sound Recorder**). If it fails, check your sound card documentation to make sure it is properly installed and configured.
You have not set up SONAR to record.	Make sure that 1) you have chosen an input for the track; 2) you have armed the track for recording; and 3) you have pressed the **Record** button, and not the **Play** button.

Table 192.

If these suggestions don't work, check our website for additional suggestions or contact technical support.

More Frequently Asked Questions.

The Music Is Playing Back with the Wrong Instrument Sounds

If the tracks in your project are assigned to the same MIDI output and channel, the same sound will be used for all of them. To fix this problem, simply assign each track to a different channel (using the Channel control in the Track view), and then choose the sound (or patch) you want to use for each one. If you are playing songs through your MIDI keyboard or synthesizer, you need to 1) check that your instrument is able to receive MIDI data on multiple channels, and 2) configure your instrument to play a different patch on each channel (this is called Multi Mode on many instruments). See the documentation for your instrument for more information.

Another possibility is that you are playing back a GM (General MIDI)-authored MIDI file on a non-GM compatible device.

More Frequently Asked Questions.

My Keyboard Doubles Every Note I Play

When your keyboard doubles the notes, each note seems heavier or thicker than usual, as if two notes of the same pitch are emitted when you press the key. Also, you may find that you can play only half as many notes at one time before some of the held notes drop out.

This can occur when MIDI echo is enabled. The keyboard plays the note for the key you've pressed. At the same time, the note is sent through the MIDI interface and echoed back to the keyboard, where it is played a second time.

The best way to resolve the problem is to disable Local Control on the keyboard, following the instructions that came with the keyboard. This stops the keyboard from playing independently. The keys you play still produce sound on the keyboard because they are echoed back by the MIDI

interface. In many cases, SONAR disables local control automatically when the program is started, but this is not always possible.

It's also possible that your keyboard is transmitting information on two channels at once. To see if this is so, create a new project and record two notes from the keyboard. Then look at what you've recorded in the Event list view. If you see four notes displayed instead of two, then your keyboard is transmitting on two channels. See the documentation for your keyboard to learn how to correct the problem.

More Frequently Asked Questions.

I Don't See the Clips Pane in the Track View

The splitter bar may be so far to the right that the Track pane fills the entire Track view. Here's how to solve the problem:

1. Place your cursor over the splitter bar. It is located on the far right side of the Track view, just to the left of the vertical scroll bar. When you place the cursor over the splitter it changes to a double-headed arrow.
2. Click and drag the splitter bar to the left. You should be all set.

More Frequently Asked Questions.

Why Can't SONAR Find My Audio Files?

SONAR looks for all audio data in a certain directory or folder, called the Data Directory, in Cakewalk Projects (or the WaveData Directory in previous versions of Cakewalk products). If you have renamed or moved either SONAR or the Data Directory, SONAR may not be able to find your audio files. If you know where the audio files are stored, choose **Options > Audio**, click **Advanced** and enter the full path name of the directory in the **Data Directory** box. If you don't know where the audio data are stored, choose **Start > Find > Files or Folders** and search for files named *.wav.

For more information about the wavedata folder, see Audio File Management.

More Frequently Asked Questions.

Why Do I Get Errors from the Wave Profiler?

Audio devices such as voice modems or speakerphone devices can cause an error message when running the Wave Profiler. Sometimes these errors are harmless; on other occasions you need to disable the voice modem or speaker-phone device before running the Wave Profiler. To do so:

1. Choose **Options > Audio** and click the **Drivers** tab.
2. Make sure that the voice modem or speaker-phone device is not selected in both the **Input** and **Output** device lists.

3. Click **OK**.
4. Choose **Options > Audio**, click the **General** tab, and run the **Wave Profiler** again.

My Track or Bus Fader is Maximized, But There's No Sound or Level

SONAR has two modes that govern how fader levels function: Envelope Mode and Offset Mode. In Envelope Mode, any envelopes in the track or bus control the level, and ignore any movements you make to the fader. In Offset mode, any envelopes in the track or bus *add* their level to any level that the fader contributes. For example, the level you see in the **Vol** field of a track's properties combines with the levels that any volume envelope in that track produces as the track plays. When you switch back to Envelope mode, any level that the **Vol** field displays while in Offset mode continues to combine with any envelope in the track, but does not show in the **Vol** field while you're in Envelope mode. So, if you have a large negative value such as **-INF** in the **Vol** field, even though the volume envelope is at its maximum level, the sum of the two values is still inaudible because the negative value is so large.

Whenever you have mysterious levels in a track or bus, click the **Envelope/Offset Mode** button that is in the **Automation** toolbar to switch modes (or press O in the Track or Console views), and then look in the track or bus property fields to see what values show. Change the values to neutral ones if you don't want them to affect your levels.

How Do I Use SONAR to Access All the Sounds on My MIDI Instrument?

SONAR is normally set up to access the 128 sounds that are part of the General MIDI standard. SONAR also includes custom instrument definitions that match the sounds on many popular instruments. To use a custom instrument definition:

1. Choose **Options > Instruments** to display the **Assign Instruments** dialog box.
2. Click the **Define** button to display the **Define Instruments and Names** dialog box.
3. Click **Import**, and then choose the file for the manufacturer of your instrument.
4. Choose your instrument from the list and click **OK**.
5. Click **Close** to return to the **Assign Instruments** dialog box.
6. Select from the **Output/Channel** list all the outputs and channels that are being sent to that instrument.
7. Click on the instrument in the **Uses Instrument** list.
8. Click **OK** when you are done.

If your manufacturer or instrument doesn't appear, check our web site to see if an updated instrument definition is available. You can also create your own instrument definition. For more information about instrument definitions, see the online help topic: Instrument Definitions.

More Frequently Asked Questions.

I Hear an Echo When I Record

If you have input monitoring enabled, when you play an instrument that is plugged into your sound card, you hear the direct signal that goes straight through your sound card, and an instant later you hear the sound that is processed by SONAR, including any plug-in effects you may be using. Only the processed sound is recorded.

You can eliminate the echo in either of two ways:

- Mute the direct signal so you only hear the sound that is processed by SONAR. If you choose this method, you may hear too much of a lag between the time you play your instrument and the time you hear it, depending on the latency of your system (using WDM audio drivers is a great way to achieve lower latency).
- Disable input monitoring so you only hear the raw signal that's coming through your sound card. If you choose this method, you won't hear any plug-in effects you may be using.

To disable input monitoring:

- On the track where you want to disable input monitoring, click the track's **Input Echo** button so that it is in the off position:

To mute your sound card's direct sound:

1. Open the software mixer that controls your sound card. If your sound card uses the Windows mixer, open the mixer by using the **Start > Programs > Accessories > Entertainment > Volume Control** command, or by double-clicking the speaker icon on the Windows taskbar.
2. In the Play Control window of the mixer, check the Mute check box in the Line-In column, or in the column of whatever jack your instrument is plugged into, and close the mixer window.

More Frequently Asked Questions.

Dropouts Happen in High Bit-depth or High Sample Rate Audio

If you are hearing consistent dropouts/clicks in your audio and if your project contains high bit depth (32/64 bit) or high sample rate audio (88.2K or higher), it may be indicative of a too small I/O buffer size. If so try a higher I/O buffer size like 256 or 512. If audio problems persist, reset to 128 and try a different remedy.

Use the **Options > Audio** command to open the **Audio Options** dialog, click the **Advanced** tab, and in the **I/O Buffer Size (KB)** field, enter **256** or **512**.

Patching an Effect into SONAR Causes a Dropout

You may have simply reached the maximum number of tracks and effects your CPU can handle. However, if your CPU meter doesn't appear to be maxed out, or other plug-ins seem to work, you may need to address the problem by editing a line in the `Aud.ini` file.

Using Notepad, open the `Aud.ini` located in the directory where you installed SONAR. The default value of the `ExtraPluginBufs` variable is **0**. Try changing that value to 1, saving `Aud.ini` and patching in the effect that caused the dropout. If it still causes a dropout, try changing the value in `ExtraPluginBufs` to **2**. Continue to double the value in this variable until you reach 128 (4, 8, 16, 32). If a value of 128 does not fix the problem, it is time to try something else. See Dropouts and Other Audio Problems for more information about potential reasons for dropouts.

More Frequently Asked Questions.

I Can't Open My Project

Your project may have become corrupted. You can attempt to open the project using Safe Mode.

To Use Safe Mode

- If you are opening a file from the **Most Recently Used files** list in the **File** menu, hold down the SHIFT key while selecting file name.
- If you are opening the file from the **Open** dialog, select the file in the dialog and hold down the SHIFT key while clicking the **OK** button.

  Safe Mode does the following:

  - Opens only the Track view.
  - Prompts you if you want to open the plug-ins saved with your project. Each plug-in gets a prompt, so you can open some and not open others.

See:

File Recovery mode

Audio Distorts at Greater than 16 Bits

There are several settings in the **Audio Options** dialog box (**Options > Audio** command) you need to set before using audio formats greater than 16. See "System Configuration" on page 843.

More Frequently Asked Questions.

No Sound from My Soft Synth

Use the following table to troubleshoot problems hearing a synth in SONAR:

Possible problem	What to do
Synth doesn't sound when a recorded MIDI track is sent to it.	• Make sure you select a MIDI channel in the MIDI track's **Output** field; you may also need to select a **Patch** and **Bank**. • Make sure that neither the MIDI track nor the audio track that contains the synth are muted. • Make sure the MIDI notes are in the right range for the synth's patch.
Synth patched into a main out or bus doesn't sound.	• Make sure that at least one audio track is configured to send data to that bus. • Make sure that the **Audio Engine** button in the **Transport** toolbar is depressed.
Soft synth doesn't sound when you play a MIDI controller.	• Make sure that the **Audio Engine** button in the **Transport** toolbar is depressed. • Make sure that the MIDI track that has the focus lists the soft synth in its **Output** field. • If you patched the soft synth into an audio track, make sure that track is not muted. • If you patched the soft synth into a bus, make sure that at least one audio track is configured to send data to that bus. • Make sure you're playing in the right range for the soft synth's patch.
I hear more than one sound when I play a soft synth.	• Make sure your MIDI controller is set to local off.

Table 193.

More Frequently Asked Questions.

My Pro Audio 9 Files Sound Louder/Softer When I Open Them in SONAR

Pro Audio 9 has a setting in the **Audio Options** dialog box called **MIDI Volume Mapping**. This setting determines how many dB that a movement of a volume fader produces. This setting is not stored in each project file, so SONAR can't tell precisely what dB scale was used to produce the file you're opening. If the volume sounds incorrect:

1. Open SONAR's `Aud.ini` file (find it in your SONAR folder and double-click it).
2. Change the line that says `VolMethod=n`. If n=1, change n to 0; if n=0, change n to 1.
3. Save the file and close it.

4. Reopen the Pro Audio file in SONAR. If the volume sounds correct, save the file in SONAR.

If other Pro Audio 9 files were opening correctly in SONAR, change the `VoMethod=n` line in SONAR's `Aud.ini` file back to what it originally was, and re-save the file.

More Frequently Asked Questions.

SONAR Can't Find the Wavetable Synth or MPU401

Follow this procedure:

1. Open the **Audio Options** dialog (**Options > Audio** command), and on the **Advanced** tab, check the **Always Use MME Interface, Even When WDM Drivers Are Available** option.
2. Click **OK** to close the dialog.
3. Close SONAR and reopen it.
4. Use the **Options > MIDI Devices** command to open the **MIDI Devices** dialog.
5. Highlight the Wavetable synth and/or the MPU401 (or whatever synth your sound card contains).
6. Click **OK** to close the dialog.

Now your sound card synth and/or the MPU401 should appear in the drop-down menus of the **Output** fields of your MIDI tracks.

I Get an Error Message When I Change a Project to 24-bit Audio

Some audio devices, especially USB devices that use WDM drivers, can not operate in 24-bit mode unless a variable in SONAR's `Aud.ini` file is set to 1. The variable is Use24BitExtensible=<0 or 1>, which goes in the `[name of your audio device ('n' in, 'n' out)]` section.

For more information, see AUD.INI.

More Frequently Asked Questions.

Bouncing Tracks Takes a Long Time

By default, SONAR uses a buffer for bouncing tracks that is the same size as the **Mixing Latency** value that you set in the **Audio Options** dialog. But with some projects, especially ones that use certain soft synths, the bounce buffer needs to have its own value. You can set the value in the `Aud.ini` file with the `BounceBufSizeMsec=0` line in the **Wave** section. At a value of 0, the bounce buffer is the same size as the **Mixing Latency** value that you set in the **Audio Options** dialog. You can set the bounce value to 100, or some value between 0 and 350 so that the bounce buffer will use a more efficient size for bouncing, which has different requirements from normal playback latency.

For more information, see AUD.INI.

More Frequently Asked Questions.

The GUI is not Smooth During Playback

If the GUI does not update smoothly during playback, press the Pause key to make sure you didn't inadvertently put SONAR in CPU conservation mode. If the Pause key has been pressed, SONAR will display the letter **P** in the status bar.

For more information, see "Reduce GUI updates to improve playback performance" on page 856.

More Frequently Asked Questions.

Plug-in windows flicker or don't display properly

X-Ray Windows is not compatible with plug-ins that use DirectDraw to create their windows, such as many recent plug-ins by Waves. If a plug-in is not compatible with X-Ray, the plug-in's window will either flicker or not display properly. If you have any plug-ins that are affected by this, you can exclude the plug-n(s) from X-Ray by following the instructions below:

1. Open the Cakewalk Plug-in Manager (**Tools > Cakewalk Plug-in Manager**).
2. In the Plug-in Categories window, select the category that the plug-in you want to exclude is in.
3. In the Registered Plug-ins window, select the plug-in that you want to exclude.
4. If the plug-in is a DirectX effect or an MFX, write down (or select and copy) the CLSID value that's in the CLSID field at the bottom of the dialog.
5. If the plug-in is a VST or VSTi, write down the VST ID value that's in the **VST ID** field at the bottom of the dialog.
6. Close the **Plug-in Manager** dialog.
7. Use Notepad to open the XRayExclude.ini file that's in your SONAR program folder (`C:\Documents and Settings\<username>\Application Data\Cakewalk\SONAR 8 Producer Edition`).

   Note: *If you use SONAR Studio, substitute "Producer" with "Studio".*

8. At the end of the file, find the `[EffectProps View]` section.

   You will see entries such as the following:

```
; Waves SSL EQ Stereo
XRayExclude11=1397510483
XRayExclude12={E451379E-F7E1-4E82-98D9-BEB87AC45E90}
```

9. Exclude your plug-in by creating a blank line below the last entry in the `[EffectProps View]` section, and then typing:

```
;[name of your plug-in, but without brackets]
XRayExclude[type the next available number in XRayExclude list, but without brackets]=[VST ID number, with no brackets, or CLSID number, with curly braces at start and finish]
```

For example, if the last entry in the [EffectProps View] section was:

```
; Waves SSL EQ Stereo
XRayExclude11=1397510483
XRayExclude12={E451379E-F7E1-4E82-98D9-BEB87AC45E90}
```

If you wanted to exclude the Cakewalk FxDelay from the X-Ray Windows feature, after creating a blank line you would type:

```
; Cakewalk FxDelay
XRayExclude13={985DAF67-589F-4B8D-8BBC-D7AD651B9022}
```

If there was also a VST version of the Cakewalk FxDelay, you would add another line:

```
XRayExclude14=[some VST ID number, with no brackets]
```

10. Save and close the `XRayExclude.ini` file, and restart SONAR to implement your changes.

File Recovery mode

SONAR 5 introduced a special diagnostic mode called Safe Mode to fix problems with project files that would not open. Safe mode is activated when you open a file while the **SHIFT key** is pressed.

In certain rare circumstances, on attempting to open a project file you may see the following error message:

"This file you are trying to open is not compatible with this version of SONAR".

This message indicates that SONAR detected errors in the project file and was unable to open it. This normally indicates that your project file has data corruption.

Data corruption on a DAW can occur due to various reasons, a few of which are listed below:

- Your hard drive might suffer data loss.
- Windows delayed writes might fail leading to data corruption.
- Many hard disks have a "write through cache" buffer for efficiency. Occasionally this write through buffer might not get flushed due to a driver error or system crash. In such cases data might not be flushed to your hard driver causing corrupt files (SONAR requests Windows to flush this buffer after a file save operation).
- A plug-in can corrupt the SONAR's memory space causing invalid data to be written to disk when the project is saved.
- During a file save the system can crash. In such situations you will have a truncated file on disk.

You save a “recovery file” through SONAR's crash exception dialog. When a crash occurs in SONAR you are presented with this dialog allowing you to **attempt** to save a recovery file. While this works most of the time, occasionally SONAR may be in a compromised state due to memory corruption. Under these circumstances, saving a file might cause a crash or the file might contain invalid data.

In general, the best insurance against the data corruption scenarios above is to follow standard safe computing practices to guard against data loss (keep regular backups, use autosave with versioning, etc.). However, occasionally you may be faced with a situation where you do not have a backup copy of a critical project that now fails to open.

SONAR's File Recovery Mode offers a means to help recover data from damaged project files.

To use File Recovery mode

Do *one* of the following:

- If you are opening a file from the **Most Recently Used files** list in the **File** menu, hold down the SHIFT key while selecting file name.
- If you are opening the file from the **Open** dialog, select the file in the dialog and hold down the SHIFT key while clicking the **OK** button.

What does File Recovery mode do?

File Recovery Mode applies the following behavior when opening a project file:

- Opens only the Track view, skipping all other opened views in the project including effects windows, Console View etc.
- Prompts you if you want to open the plug-ins saved with your project. Each plug-in gets a prompt, so you can open some and not open others.

Important: *If you choose to not open a plug-in, that plug-in is stripped out of the project, so resaving the file will cause a loss of any project specific settings for that plug-in.*

- Ignores various strict error checks that would normally prevent a file from loading (only applies when the original project fails to load normally).
- Detects corrupt data and skips over "chunks" that are found to be invalid. E.g., if a track/event is detected to contain invalid data, SONAR will attempt to skip over that track/event and proceed to load the next track/event (only applies when the original project fails to load normally).

In many cases, File Recovery Mode may be able to open damaged projects with minimal data loss. However, the level of success depends on the nature and extent of the data corruption, so the results are not predictable. As a result of this, after opening a damaged project in File Recovery Mode, you must carefully observe whether your settings have been retained or if the project exhibits

other problems. If you notice problems you should copy and paste the critical data from the recovered file into a brand new empty project to start clean.

Important: *Since File Recovery Mode ignores many critical error checks while loading a file, depending on the nature of the data corruption in the file, it is possible that opening a file with File Recovery Mode might cause SONAR to crash or become unresponsive. Please ensure that you save all your current work and close all open projects* ***before*** *attempting to open a file with File Recovery Mode.*

After loading a file with File Recovery Mode, it is recommended that you resave the file—preferably with a new name—and then shut down and restart SONAR before proceeding.

Hardware Setup

This appendix contains additional details on configuring your equipment for use with SONAR.

See:

Connect Your MIDI Equipment

Set Up to Record Digital Audio

Connect Your MIDI Equipment

If you are using a MIDI interface (such as an MPU-401 or Sound Blaster MIDI option) with an external MIDI keyboard, you need to connect the equipment using MIDI cables.

It is possible to connect your equipment in some rather complex ways that may cause problems. If you call for technical support with a problem concerning equipment that doesn't seem to be responding, we'll probably suggest that you reconnect things in one of the ways listed below before we explore the problem further. Also be sure to check the Troubleshooting chapter before calling us.

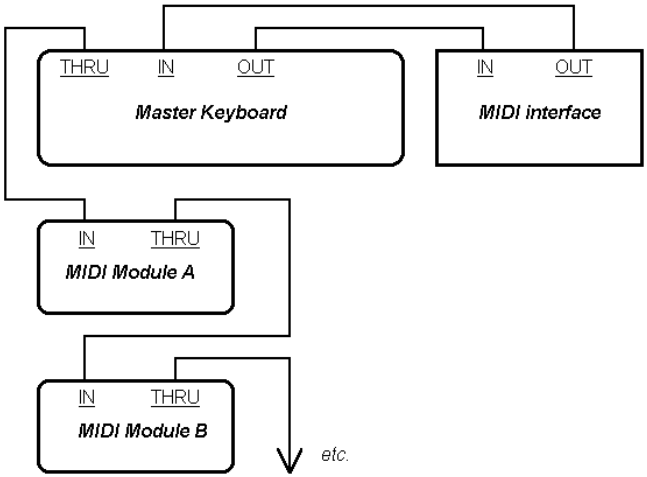
There are two methods that fit many circumstances. The one you choose depends on whether your keyboard has:

- All three types of MIDI jacks: In, Out, and Thru
- Only two types of MIDI jacks: In and Out

If you have only one keyboard, read "If Your Keyboard Doesn't Have a MIDI Thru Jack" on page 923 (regardless of whether you have MIDI Thru or not).

If Your Keyboard Has a MIDI Thru Jack

If your keyboard has three MIDI jacks—In, Out, and Thru—then use the following diagram.



If you are using a 15-pin joystick adapter cable that splits into two MIDI cables:

- Connect the 15-pin jack to your computer's joystick port.
- Connect the In cable to your instrument's MIDI Out jack.
- Connect the Out cable to your instrument's MIDI In jack.

Here's a checklist:

Connect this	To this
Master keyboard Out	MIDI interface In
MIDI interface Out	Master keyboard In
Master keyboard Thru	Another MIDI module's In
That MIDI module's Thru	Yet another MIDI module's In

Table 194.

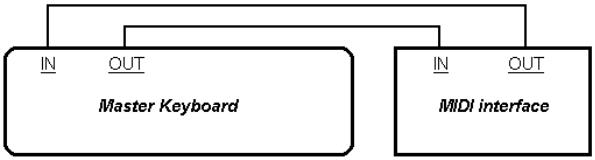
Continue the sequence, repeating the last connection for each of your sound modules.

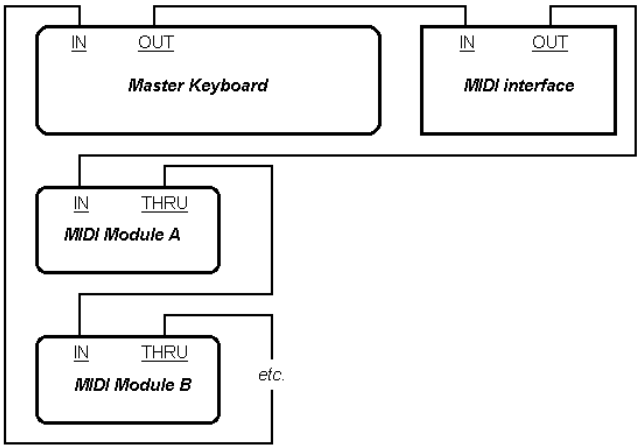
Each MIDI device should be set to a unique MIDI channel or range of channels to avoid note-doubling. Refer to the manuals for your MIDI devices for information on how to set their MIDI channels.

Your MIDI interface may have a Thru jack as well as In and Out jacks. If your master keyboard lacks MIDI Thru, you can add more MIDI modules to your setup by connecting the MIDI interface's Thru to the first module's In. You can then chain subsequent modules onto the first module, as described earlier.

If Your Keyboard Doesn't Have a MIDI Thru Jack

If your keyboard has only two MIDI jacks—In and Out—or if you have only one keyboard, use the following diagrams instead:





Each MIDI device should be set to a unique MIDI channel or range of channels to avoid note-doubling. Refer to the manuals for your MIDI devices for information on how to set their MIDI channels.

If your master keyboard now seems to double notes (they sound thicker), or if you can play only one half as many at once, first make sure that no MIDI channel is being used by more than one of your MIDI devices. If no MIDI channel is assigned to duplicate devices and you hear doubling or only half as many notes as you should, see "My Keyboard Doubles Every Note I Play" on page 910.

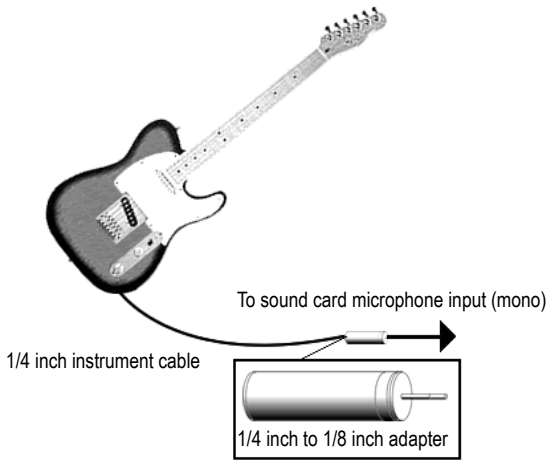
Set Up to Record Digital Audio

In general, the inputs of sound cards take 1/8 inch stereo mini-jacks. Sound cards usually have two inputs—one for line level inputs and the other for microphones (at mic level). The line level input is stereo; the mic input could be either stereo or mono. If your final output does not terminate in a 1/8 inch jack (and it probably doesn't), you will need an adapter to plug it into your sound card.

Most sound cards use the Windows Volume Control to adjust the master input and output volumes and to control which recording inputs are active. If you don't hear audio tracks, or if you can't easily control the audio volume in SONAR, go to **Start > Programs > Accessories > Entertainment > Volume Control** and check the settings there. See your sound card's documentation for more.

Electric Guitar Direct-In

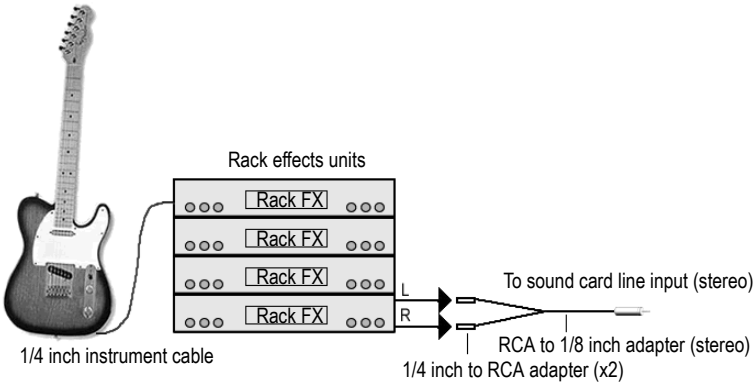
You can connect an electric guitar directly to your sound card using a 1/4 inch mono to 1/8 inch stereo adapter. The following diagram shows this setup:



The 1/8 inch jack should be plugged into the sound card's mic input, although plugging into the line input may also work.

Electric Guitar Through Effects Rack

You can also plug an electric guitar into an effects rack, then send the output of the rack to the sound card's input, as shown in the following diagram:

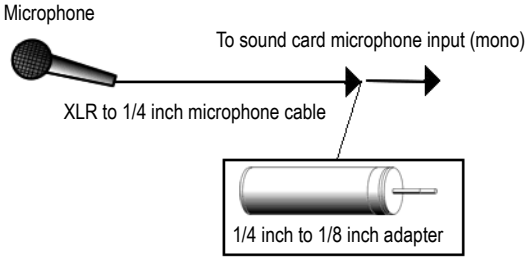


This diagram assumes that the output of the rack is at line level. If it is at pro level instead (+4 dB), and your card does not accept a +4 db input, you will need to attenuate (lower) the F/X rack's signal. To do this, use a mixer between the rack's output and the Y-adapter. If the rack has only a mono output, a 1/4 inch mono to 1/8 inch stereo adapter should be used instead of a Y-adapter.

If you want to connect a guitar amplifier's direct output to the sound card, you should base your setup on this example.

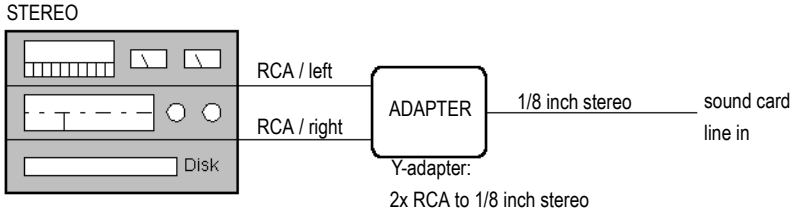
Microphone Direct-In

Microphones can be plugged into the sound card's mic input. Some inexpensive microphones are made especially for use with sound cards and come equipped with 1/8 inch jacks. However, better quality microphones take better quality cables, which do not terminate in 1/8 inch jacks.



Home Stereo, CD Player, Radio Tuner, Preamp Output

The output of a stereo component can be connected to the sound card's line in, using a dual RCA to 1/8 inch stereo mini Y-adapter. Many portable cassette players come with this kind of adapter, or even with a single cable with all the necessary jacks. In the following diagram, a stereo component is connected to the Y-adapter using standard RCA cables:

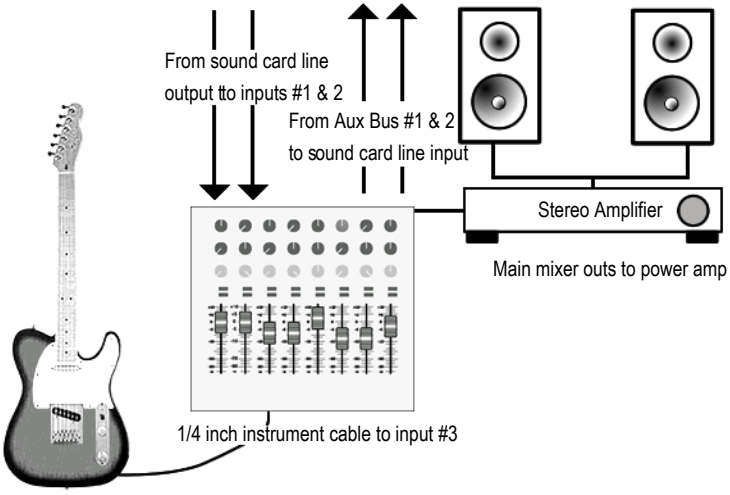


Internal CD Player

If you are using your computer's internal CD player, and it does not have its audio outs connected internally to the sound card, run a cable from the CD player's Headphone jack to the card's Line In jack. If there is no Headphone jack, you'll need to use an external CD player.

Mixer

You can connect a mixer to the sound card with a setup of the following kind:



Note: *If your mixer has buses, use them! This helps to avoid feedback.*

Initialization Files

Many Windows applications, as well as Windows itself, use files to store information about your preferences and configuration. Often applications store values to these files when you make selections in the program using menus or dialog boxes. However, you can also change these files directly. In some cases, there is no way to change the settings in the application, and changing the file directly is the only way.

See:

Initialization Files

Initialization File Format

Variables in the [Options] Section

Variables in the [MIDI Input Devices] Section

Variables in the [MIDI Output Devices] Section

Variables in AUD.ini

Initialization Files

This appendix documents three initialization files, which are stored in the SONAR program folder (by default, C:\Program Files\Cakewalk\SONAR 8.5.

- `Cakewalk.ini`
- `TTSseq.ini`
- `Aud.ini`

To view and edit the `Cakewalk.ini` file, choose **Options > Initialization File**. Use the Windows Notepad to open and alter any of the three files. There are several other .ini files in the SONAR folder, but you should not attempt to edit or modify these files in any way. Changes to these other files could cause SONAR to stop operating properly.

Before making any changes to any of the .ini files, you should make a backup copy in case you make a mistake. After you have made your changes, save the file and close Notepad. SONAR reads

the settings in these files only when it first starts up. Therefore, if you change any settings while SONAR is running, you should exit and restart SONAR in order for the changes to take effect.

See:

Initialization File Format

Variables in the [Options] Section

Variables in the [MIDI Input Devices] Section

Variables in the [MIDI Output Devices] Section

Variables in AUD.ini

Cakewalk.ini

TTSSEQ.INI

AUD.INI

Initialization File Format

Initialization files all follow a common format. They are divided into sections whose names appear in the file in brackets, like this:

```
[Section Name]
```

Within each section, variables are of the form:

```
<variable name>=<value>
```

For example, the `DrawPlayingAudio` variable belongs in the `[Wincake]` section in `Cakewalk.ini`, and determines whether the audio waveform is redrawn or not when the display is scrolling during playback. If the value is 0 (FALSE), then the waveforms are not redrawn. If the value is 1 (TRUE), then waveforms are redrawn. To redraw waveforms when scrolling during playback, the entry in the file looks like this:

```
[Wincake]
DrawPlayingAudio=1
```

The variable names contain no spaces. They are not case sensitive.

See:

Cakewalk.ini

TTSSEQ.INI

AUD.INI

Cakewalk.ini

Many of the items in `Cakewalk.ini` are set using SONAR menus and dialog boxes. However, some items can be changed only by using the **Options > Initialization File** command or by directly editing this file using the Windows Notepad.

`Cakewalk.ini` is divided into different sections. Unless otherwise noted below, all entries should appear in the section that starts with the line:

```
[Wincake]
```

For example, if you want to add the line PanicStrength=1 to `Cakewalk.ini`, you should put it on the line under [Wincake], like this:

```
[Wincake]
PanicStrength=1
```

The following section lists the different variables you can change in `Cakewalk.ini`.

Variable	Type	Default value	What it does

JogPosTimer=<milliseconds> (default=120)
PauseOnJog=<0 or 1> (default=0; off)
			There are two variables that control the behavior of using a control surface jog wheel to change SONAR's Now time:
			JogPosTimer is the period of the now time throttle. When a jog message comes in, SONAR sets the transport time immediately but will not set the transport time again for this length of time. During the time, SONAR just remembers the latest jog time received.
			PauseOnJog is the main switch. 1 does a pause and invokes the throttle timer. 0 just sends the now time with no pause and no throttle timer. If 0, the setting of JogPauseTimer is "don't care."
			For example:
			`[Wincake]`
			`JogPosTimer=120`
			`PauseOnJog=0`

WavePreviewSampleFrequency=<1-10>	Integer	1	By default, waveform previews take a meter sample for each meter frame. The default interval between meter frames is 40 milliseconds. The `WavePreviewSampleFrequency` `Cakewalk.ini` variable lets you specify how frequently samples are taken. The value can be an integer between 1 and 10, and represents the number of frames to sample. It goes in the `[Wincake]` section of `Cakewalk.ini`. For example: `WavePreviewSampleFrequency=1` With the default value (1), every meter frame gets written to the history file. With higher values (2-10), frames will be skipped, causing fewer history frames to be written to the history file. Higher values may be desirable if the waveform previews are affecting playback performance.

Table 195.

Variable	Type	Default value	What it does
WavePreviewInputBuffers=< 1-4>)	Integer	4	This variable allows control of the number of Waveform preview input buffers. The input buffers allow more efficient access to the recorded meter history on disk, and greatly speeds up performance access to previews while zooming and scrolling the clips view when waveform preview is active. You can control the actual number of history page buffers with this variable. This value is an integer and the minimum value is 1 and the default is 4 buffers. 2-4 buffers should be sufficient for most usage scenarios. Each buffer consumes approx 32K per preview track. Lower values consume less memory but may cause more disk access when scrolling or zooming large projects when preview is active.
DrawPlayingAudio= < 0 or 1>	Boolean	0 (disable)	This line controls whether the audio waveform is redrawn or not when the display is scrolling during playback. By setting the value to 1, you can force the Track view to always redisplay audio data, even during playback. This is recommended only for very fast machines.
HyphenDir=<drive:path name>	Path	<installation directory>\ttshyph.dll	This determines the location of the Hyphenator extension .dll used by SONAR, and is written during installation. This should never need to be changed.
PanelsShowWidgetBitmaps= <0 or 1>	Boolean	1 (enable)	This line controls whether SONAR hides (n=0) or shows (n=1) all widget bitmaps while in Use mode (except those in Image widgets).
PanicStrength=<0 or 1>	Boolean	0 (controller 123 only)	The **Panic/Reset** button stops playback and turns off any stuck notes. There are two ways a MIDI note can be turned off: By a note-off message (n=1) or by MIDI controller number 123 (all notes off). By default, Panic uses controller 123 only (n=0).
StaffViewChanSeparateVoices=<0 or 1>	Boolean	1 (enable)	This line specifies whether or not SONAR should treat channels assigned to each note as separate voices. This is useful if you want to force note stems up or down for different voices.

Table 195.

Variable	Type	Default value	What it does
TVWidgetsStickInHeader=<0 or 1>	Boolean	0	By default, Track view controls (widgets) will only appear in the track header bar if the track is minimized and there is enough room to display at least one control. When TRUE (value=1) widgets stay in the header bar regardless of the height of a track. **Note**: the following controls will never appear in the track header bar: Send widgets, Meters, and Vertical FX Bin.

VelocitySolidWidth=<1..4>	Integer	1	By default, note velocity tails are displayed as 1 pixel wide solid vertical lines in the Piano Roll view. To make the velocity tails wider (2-4 pixels wide), add the following line to `Cakewalk.ini` in the `[WinCake]` section:
			`VelocitySolidWidth=<pixel size; 1-4>`
			For example:
			`VelocitySolidWidth=2`

VelocityAutoshrinkWidth= <0 or 1>	Boolean	0	If you set this to 1, solid velocity tails will become narrower by one pixel if the vertical zoom is such that notes are less than 5 pixels high. For example, with:
			`[Wincake]`
			`VelocitySolidWidth=2`
			`VelocityAutoshrinkWidth=1`
			you get bigger velocity tails (ala SONAR 4) when the notes are big enough to edit, but really thin velocities tails when the notes are too small to edit.

VelocityAsBargraph= <0 or 1>	Boolean	0	By default, note velocity tails are displayed as thin vertical lines in the Piano Roll view, and the color is the same as note events. If “Notes/ Velocity” is not the current edit type, this color will be slightly lightened. To override this and use bar graph indicators for velocity tails, add the following line to the `[WinCake]` section: `VelocityAsBargraph=1`

Table 195.

Variable	Type	Default value	What it does
VelocityBargraphFullWidth=<0 or 1>	Boolean	0	When displaying velocity tails as bar graphs (see above), you can specify whether the velocity tails should be fixed at 3 pixels wide (default), or extend the full width of the note event. To display full-width velocity tails, add the following line to the `[WinCake]` section: `VelocityBargraphFullWidth=1`
PRVUseForegroundColor=<0 or 1>	Boolean	1	The Piano Roll view and Inline Piano Roll note event colors are based on the track color. By default, note events use a track's foreground (data) color instead of the background (clip) color. To override this and use background colors instead, add the following line to the `[WinCake]` section: `PRVUseForegroundColor=0`
PRVColorizeVelocity=<0 or 1>	Boolean	1	By default, note events in the Piano Roll are colorized based on velocity. Darker colors indicate higher velocityes. To override this and use the static track color instead, add the following line to the `[WinCake]` section: `PRVColorizeVelocity=0`
MicroscopeHZoomThreshold=<1..20>	Integer	8	By default, the Microscope mode begins horizontal magnification when a 32nd note is narrower than 8 pixels. This line lets you specify the horizontal zoom threshold (1-20 pixels).
MicroscopeHZoomMax=<2.0 - 8.0>	Integer	3.0	This line specifies the highest horizontal magnification that will result when using Microscope mode.
ShowClipShadow=<0 or 1>	Boolean	0	By default, a drop shadow is not displayed on clips in the Track view. To always display a drop shadow on clips, add this to the `[Wincake]` section: `ShowClipShadow=1`

Table 195.

Variable	Type	Default value	What it does
PauseDuringSave= <0 or 1> f	Boolean	0	By default, when saving a project file during playback, SONAR saves the file asynchronously while playback continues. While this is not a problem with most projects, complex projects under high CPU load conditions (particularly while running under low latency) may take longer to save than if the transport was not playing. Setting `PauseDuringSave` to a value of 1 in the `[Wincake]` section changes the default behavior and pauses playback temporarily for the duration of the file save. This allows the file save to proceed as fast as possible before playback resumes.
StaffViewPreScanMeasures = <num>	Integer	16 (measures)	This line specifies how far back (in measures) SONAR should search for long elements in order to display them in the Staff view. If a long element does not start within the specified time, then it will not be displayed in the Staff view (although it will print).
ToolTempFileDir= <drive:path name>	Path	<Windows TEMP directory>	This line specifies where to store temporary .wav files when launching a third party wave editor from the **Tools** menu.
ProgressiveWavePictures=< 0 or 1> f	Boolean	1	This option enables progressive display of waveform pictures. When enabled you will see pictures being displayed in the clips view dynamically as they are being computed. The waveforms will update in the background when the application is idle. If the `ComputePicturesWhilePlaying` flag is set to 1, waveforms will continue being displayed progressively even while audio playback is in progress. This can save time waiting for a complete picture to be finished before you can see it.
CtrlSurfaceRefreshMS= <50 - 5000>	Integer	75	You may wish to increase the value of this `Cakewalk.ini` variable if you are experiencing sluggish UI responsiveness when using a control surface and playing back high CPU projects. Also, if you are using a control surface that is not bi-directional, the surface does not need to be refreshed at all and you can safely increase the value.

Table 195.

Variable	Type	Default value	What it does
AutoLoadAudioSnapPalette= <0 or 1>	Boolean	1	By default, the AudioSnap palette appears automatically whenever you enable AudioSnap on a clip. If you prefer to never auto-show the AudioSnap palette, you can change this behavior by setting the value to 0.
AlphaStretchIndicator= <0 or 1>	Boolean	1	When an audio clip is slip-stretched, a yellow alpha-blended bar is displayed on the clip. This may affect performance on some systems if there are many slip-stretched clips. To disalbe the alpha-blended bars, and instead only show the percent value in the lower right corner of the clip, set the value to 0.
DrawToolbarGradient= <0 or 1	Boolean	1	Global and view toolbars are drawn with a background gradient. If you prefer a flat background, set the value to 0.
TVControlHeight= <number of pixels>	Integer	17	Specifies the height of controls in the Track view. The value shouldn't be changed more than 1 or 2 from the default value, or you may experience unexpected results.
TVControlWidth= <number of pixels>	Integer	41	Specifies the width of controls in the Track view.
TVControlSpacingX= <number of pixels>	Integer	3	Specifies the horizontal space, in pixels, between controls in the Track view.
TVControlSpacingY= <number of pixels>	Integer	3	Specifies the vertical space, in pixels, between controls in the Track view.
TVSpacingXInCluster =<number of pixels>	Integer	2	Specifies the horizontal space between each button in a "cluster". The default value is 2 pixels. The following controls are grouped into clusters: • Mute, Solo, Arm for Recording (MSR) • Automation Read, Automation Write • Phase, Interleave (mono/stereo)
TVBoldStripNames= <0 or 1>	Boolean	1	Specifies whether track/bus names use bold (value=1) or regular (value=0) font style in the Track view.
TVLargeStripNames= <0 or 1>	Boolean	1	Specifies the size of track/bus names in the Track view. The default size is large (value=1).

Table 195.

Variable	Type	Default value	What it does
TransparentClipNames= <0 or 1>	Boolean	0	SONAR can write Clip Names with an alpha channel such that the waveform behind the clip name can be seen. To enable this effect, set the value to 1.
SmallIconHeight	Integer	32	This variable specifies the small track icon size. By default, small icons are 32x32 pixels.
LargeIconHeight	Integer	48	This variable specifies the large track icon size. By default, large icons are 48x48 pixels.
IconTopLeftPixelTransparent	Boolean	1	By default, track icons support transparency. The top left pixel in the BMP determines the transparent color. If you prefer to not have transparent icons, set the variable value to 0. **Note:** When transparency is enabled, the global color entry (**Options > Colors**) called "Track View Icons Background" determines the background color ("Console Strips Icons background" does the same for the Console view and Track Inspector).
CPUMeterMode= <0 - 2>	Integer	0	This variable specifies how the CPU meter appears in the status bar on multiprocessor systems. The values are as follows: 0 = The peak thread load is displayed as the bar and a yellow indicator shows the average of all audio threads. This the default mode. 1 = The average audio thread load is displayed as the bar and a yellow indicator shows the peak thread. 2 = A bar is shown for each audio thread. This is the same display as previous versions of SONAR.

Table 195.

Variable	Type	Default value	What it does
CreateNewGroupsOnPaste= <0 or 1>	Boolean	1	When you copy and paste clips that belong to a clip group, this variable specifies if the pasted clips should be placed in a new clip group or continue to be grouped with the original clip group. By default, a new clip group is created. The values are as follows: 0 = The pasted clips will belong to the same clip group as the clips that were copied. 1 = A new clip group is created for the pasted clips. This is the default behavior.
EnablePluginCancelButton= <0 or 1>	Boolean	0	In SONAR 4.0.2 and earlier, opening the property page of a VST plug-in during playback could result in a slight disruption in playback. The cause for this problem has its roots in the little **Cancel** button that sits in the top right corner of the plug-in's property page. The purpose of this button is to allow the user to cancel out of any changes they might have made to the plug-in, restoring back to whatever state the plug-in was in before they opened the GUI window. To make this work, SONAR would need to take an initial snapshot of the plug-in's state, and some plug-ins with large amounts of preset data could cause an audio hiccup if the data was captured for the **Cancel** button. To address this issue, SONAR 4.0.3 (and later) does not take a snapshot of the plug-in's state by default, and the Cancel button is not available.

Table 195.

TTSSEQ.INI

The `TTSseq.ini` file can only be changed using Windows Notepad.

Variables in the [Options] Section

Variable	Type	Default value	What it does
MfxLookAhead=<ticks>	Integer	960*4	Defines how much extra MIDI data is sent to MFX plug-ins, so that they have extra room to quantize events into the future. Lower values mean MFX plug-ins can work more "just in time." Example: `MfxLookAhead=480`.
SendResetsToSoftSynths= <0 or 1>	Boolean	0	This variable controls (globally) whether SONAR sends MIDI controller resets to DXi's. This variable should be set in the `[OPTIONS]` section. Legal values are: 0 (default): Resets are not sent to DXi's 1: SONAR will send MIDI controller resets to DXi's. This is what SONAR already does for hardware synths. For example: If you are freezing synth tracks that have MIDI controller messages, setting this variable to TRUE (1) will ensure that synths will have their MIDI controllers reset before a freeze operation.
GeneralMidiSMFs=<0 or 1>	Boolean	1 (enable)	This line controls whether or not SONAR creates a General MIDI setup measure when loading Standard MIDI Files.
LyricTrack=<num>	Integer	3 (track 4)	This line specifies which track is to contain lyrics from Type 0 Standard MIDI files. A zero means track 1, a 1 means track 2, and so on.
SendLocalOff=<0 or 1>	Boolean	1 (enable)	This line determines whether or not SONAR should send a Local Control OFF message during startup.
SendLocalOn=<0 or 1>	Boolean	0 (disable)	This line determines whether or not SONAR should send a Local Control ON message at exit.

Table 196.

Variable	Type	Default value	What it does
IgnoreMidiInTimeStamps= <0 or 1>	Boolean	0 (disable)	This line determines whether or not SONAR ignores any MIDI time stamping that a MIDI driver does. If you're experiencing increasing delays between the time you play a MIDI note on a controller and the time you hear SONAR echo it, setting this line to 1 may help. Also, if you find that SONAR is recording MIDI data at a different time from when the data was played, setting this line to 1 may help. If the MIDI driver is using a different clock from SONAR, the time discrepancy increases the longer that the MIDI driver is open, so you need to tell SONAR to ignore the timestamp that the MIDI driver adds to the data (set the value to 1).
SysxDelayAfterF7=<0 or 1>	Boolean	1 (enable)	This setting causes SONARSONAR to delay Sysx transmission for a certain amount of time if it encounters an F7 in a Sysx bank. This gives some instruments a required amount of delay time that is necessary to process the Sysx transmission. The default delay is 1/18 of a second, but can be changed by also adding the `SysxSendDelayMsecs=<n>` line (see below). The possible values are 0 and 1. Their significance is as follows: 0: no delay 1: delay between each Sysx string (F0 … F7)
SysxSendDelayMsecs= <num>	Integer	60	This setting causes SONAR to delay a specified number of milliseconds if it encounters an F7 in a Sysx bank.
SysxSendPacketSize= <num>	Integer	1024	This line specifies the number of bytes between Sysx transmit delays. Sysx bytes are transmitted in packets, with a 1/18 second delay between each packet. Setting this value smaller will help slower MIDI devices (synthesizers, etc.) avoid overflowing their internal buffers.
UseCableMetaEvents= <0 or 1>	Boolean	1 (enable)	This line specifies whether or not SONAR should use nonstandard "Cable" meta-events for storing Sysx bank output number into Standard MIDI files (by default, n=1).

Table 196.

Variables in the [MIDI Input Devices] Section

Variable	Type	Default value	What it does
MaxInPort=<num>	Integer	15 (16 outputs)	This variable determines the maximum number of MIDI inputs. The value is 0 based, so a value of 15 means that the limit is 16 outputs.

Table 197.

Variables in the [MIDI Output Devices] Section

Variable	Type	Default value	What it does
MaxOutPort<num>	Integer	15 (16 outputs)	This variable determines the maximum number of MIDI outputs. The value is 0 based, so a value of 15 means that the limit is 16 outputs.

Table 198.

AUD.INI

To edit `Aud.ini`, do the following:

1. On SONAR's **Options** menu, select **Audio** and then click the **Advanced** tab.
2. Under **Configuration Settings**, click **Edit Config File.**

   The `Aud.ini` file opens in the default Windows text editor.
3. Edit `Aud.ini` as desired.
4. Save `Aud.ini` and close the Windows text editor.
5. Click **Reload Config Settings** to reload the current audio configuration settings from `Aud.ini`.

Variables in AUD.ini

Variable	Type	Default Value	What it does

MeterFrameSizeMS= <10-200>	Integer	40	Meters in SONAR show peak (or RMS) values at a given instant in time. The actual peak value displayed by a meter is the highest peak recorded in an interval of time referred to as a "Meter Frame." The default size for a meter frame is 40 milliseconds, which is an accuracy of 25 FPS. The `MeterFrameSizeMS` variable allows you to change the size of this interval. It goes in the `[Wave]` section. For example:
			`[Wave]`
			`MeterFramSizeMS=40`
			Setting this value to a lower value will make the meters record peak info for smaller time slices. However this can also increase the metering CPU and memory cost. **Note**: although SONAR doesn't enforce a fixed value range, the recommended range should be between 10 and 200 milliseconds.

PicCacheMB=<size in MB>	Integer	20	This variable specifies the maximum size of the picture cache. The picture cache is located in the directory specified by the `PictureDir=<path>` variable (defaults to `<Cakewalk Folder>\Picture Cache`).
PictureDir=<drive:path name>	Path	<Cakewalk directory>\Picture Cache	This line specifies where to store the picture cache.
ComputePicturesWhilePlaying=< 1 or 0>	Boolean	1	This option allows waveform pictures to be computed in the background while audio playback is in progress. Most modern computers should be able to handle this load with no problems. Note that work is only done while new pictures are actually being computed—once the pictures are finished rendering there is no overhead.
EnablePicCacheThreads= <1 or 0>	Boolean	1	This option creates extra background worker threads for the generation of wave pictures when you load a project. One worker thread is automatically created per CPU/core. Setting `EnablePicCacheThreads=0` reverts back to only using a single thread for picture computation. If you are running a system with multiple CPU's or cores setting this to 1 can greatly speed up the computation of pictures.

Table 199.

Variable	Type	Default Value	What it does
FlushWriteBeforeRead=<1 or 0>	Boolean	0	The default setting causes SONAR to perform disk reads (for audio playback) before attempting any disk writes (for audio recording). Overriding this value by setting it to 1 causes SONAR to attempt disk writes first. This yields the best results when you are attempting to record a large number of tracks at high latency.
FlushMultiple=<0 or 1>	Boolean	1	This variable determines how SONAR performs writes to disk in cases where multiple inputs are being recorded simultaneously. The default setting causes SONAR to write all the data for all inputs all at once, and then wait for the entire set of writes to complete. Overriding this value by setting it to 0 causes SONAR to perform each input's write separately, and wait for each individual write to complete before proceeding to the next one.
ExtraPluginBufs=<0 to no upper limit>	integer	0	It instructs SONAR to set aside extra audio data buffers, to accommodate plug-ins which do large amount of internal buffering and therefore "keep" data buffers to themselves. Recommended maximum setting of 64 or 128.
Use24BitExtensible=<0 or 1>	Boolean	0	This line goes in the section of the `Aud.ini` file under [*name of your sound card* ('n' in , 'n' out)]. If you get an error message when you try to change the audio driver bit depth to 24, try setting this line to 1. Most USB audio devices that use WDM drivers need this line set to 1.

Table 199.

Variable	Type	Default Value	What it does
GapDezipperUsec=<0-1000>	Integer	500	The audio engine will now render a smooth fade in whenever audio playback is interrupted and there is a abrupt transition in gain. The purpose of doing this is to dezipper (smooth out) the gain transition due to the discontinuity. For example, if you click on the time ruler to jump to a new time location during playback, the engine will smoothly render the transition to the new gain level as a fade in. This smoothing also takes place whenever playback gapping occurs. You can control the fade in time via the `GapDezipperUsec` variable, which is expressed in microseconds per dB and controls the speed of the fade in to the new gain value. (default = 500 microseconds. i.e. the fade will take 500 microseconds per change in dB at the transition point). You may increase or shorten the time of the fade by increasing or decreasing this value. The normal legal value range for this variable is 0 to 1000 microseconds. This variable should be set in the `[Wave]` section. A value of zero turns off dezippering on gapping completely.
MixDezipperUsec=<0-1000>	Integer	50	This variable is similar to `GapDezipperUsec` except that it controls how the mixer itself renders abrupt gain transitions due to envelopes in the project. This variable is expressed in microseconds per dB and controls the speed of the fade in to the new gain value (default = 50 microseconds). The normal legal value range for this variable is 0 to 1000 microseconds. This variable should be set in the `[Wave]` section. **Important:** Changing the value of this variable will affect how envelopes are rendered by the mixer and may cause your mixes to sound slightly different. Setting `MixDezipperUsec` too low can cause clicks while rendering abrupt gain changes due to envelopes.
AllowOfflineRenderMixThreads= <0 or 1>	Boolean	1	A value of 1 (default) allows multiprocessing during fast bounce when multiprocessing is enabled in SONAR. Set to 0 to temporarily disable multi-threaded mixing mixing during a fast bounce operation.
LinkPFSendMute=<0 or 1>	Boolean	0	If this is set TRUE, pre fader sends on both tracks and buses are automatically muted when the track/bus is muted. Also if another track is soloed the pre fader sends on other tracks will be muted. This basically conforms to pre SONAR 4 behavior.

Table 199.

Variable	Type	Default Value	What it does
DefaultEqPosition=<0 or 1>	Boolean	0	The integrated channel EQ is pre FX bin by default, but you can change the position of any channel EQ by right-clicking the EQ plot and choosing the desired position from the context menu. The `DefaultEqPosition` `Aud.ini` variable lets you specify the default EQ position for all new tracks/buses. This variable lives in the `[Aud]` section of `Aud.ini`, and legal values are: 0 (pre FX) or 1 (post FX).
BounceBufSizeMsec= <0 to 350>	Integer	0	This is a line in the Wave section of the `Aud.ini` file that sets the buffer size for bouncing tracks. At a value of 0, the bounce buffer is the same size as the Mixing Latency value that you set in the **Audio Options** dialog. If you find that bouncing tracks, especially with certain soft synths, takes a very long time, you can set this value to 100, or some value between 0 and 350 so that the bounce buffer will use a more efficient size for bouncing, which has different requirements from normal playback latency. **Note**: on larger projects, setting this variable to a large value can cause out-of-memory errors.
DropoutMsec=<num>	Integer	250	Under high system load conditions, the SONAR audio pump mechanism may become starved. When this condition is detected, SONAR drops out. The DropoutMsec variable allows you to configure the tolerance time in milliseconds. This variable applies to all driver modes. Setting DropoutMsec to a positive value > 0 specifies the actual time in milliseconds to tolerate before dropping out due to starvation. Setting DropoutMsec to a negative value < 0 means we use a multiple of the audio buffer size as the tolerance. i.e. -2 means we use twice the audio buffer size. Note that setting this value too low (e.g. 0) can result in more frequent dropouts in the program. If you notice too many dropouts, try raising it in buffer multiples or by explicitly specifying a millisecond value.
SuspendPluginsOnBounce=<0 or 1>	Boolean	1	This is a line in the `[Wave]` section of the `Aud.ini` file that controls whether VST plug-ins are suspended and resumed prior to starting a bounce operation. When set to 1 (default), VST plug-ins are suspended and resumed both before and after the bounce process. This flushes any residual buffers that might be present from plugins that have internal latency.

Table 199.

Variable	Type	Default Value	What it does
ShowMultiChannelInputs = <0 or 1>	Boolean	1	This is a line in the Wave section of the `Aud.ini` file that specifies whether SONAR uses multichannel audio devices as multiple stereo pairs or just a single stereo pair.
ShowMultiChannelOutputs= <0 or 1>	Boolean	1	This is a line in the Wave section of the `Aud.ini` file that specifies whether SONAR uses multichannel audio devices as multiple stereo pairs or just a single stereo pair.
MinimizeDriverStateChanges =<0 or 1>	Boolean	1	This is a line in the Wave section of the `Aud.ini` file that controls whether or not audio devices are reset in response to transport changes (play/stop). Valid values are as follows: 0 = off. 1 = On for ASIO only (default). 2 = On for WDM only. 3 = On for both ASIO and WDM.
MMCSSTaskKey= <task name>	Name	Pro Audio	By default, SONAR uses the MMCSS task profile named ***Pro Audio***. If desired, you can instruct SONAR to use a custom MMCSS task profile.
ManageASIOThreadPriority= <0 or 1>	Integer	1	This determines whether SONAR manages the ASIO thread priority when necessary. This defaults to 1.
EnableCacheWriteThru= <0 or 1>	Boolean	1	This variable enables disk write thru caching. When write thru caching is on, data recorded to wave files is written to the hard disk immediately, circumventing the hardware disk cache. Having write thru caching off can be more efficient for disk I/O but can result in data loss if your system crashes.
RealtimePreroll=<0 or 1>	Boolean	0	This variable specifies whether preroll buffers are pumped as fast as possible or in real-time. Prerolling in realtime may improve buffering and CPU load when using hardware DSP solutions such as the Universal Audio UAD-1 or Focusrite Liquid Mix.
WaveInBuffers=<2 - 8>	Integer	8	When using the External Insert plug-in alongside the original dry signal in WDM mode, you might notice a flanging or flamming effect. To minimize this effect, we recommend that you set the `WaveInBuffers` `Aud.ini` variable to 2. **Note:** Setting the value to 2 might have an adverse effect with certain audio hardware, causing recording to drop out. If this occurs, reset the value to 8 and try using ASIO drivers if your hardware has ASIO support.

Table 199.

Variable	Type	Default Value	What it does
ThreadSchedulingModel= <0 - 2>	Integer	1	This variable goes in the `[Wave]` section and controls the interaction of the main audio thread and worker threads on multiprocessor systems when the **Use Multiprocessing Engine** option is enabled. Depending on the system, a particular model may result in less glitching and better overall performance. The values are as follows: 0 = Same as previous versions of SONAR. 1 = (default) Better thread balance. Model is more efficient and can provide cycles for other tasks. 2 = Additional worker thread is created. This may result in improvement with Quad processor systems or higher. Not recommended for Dual processor systems.
UseHardwareSamplePosition=< 0, 1>	Boolean	0	This variable applies to ASIO mode only and controls whether SONAR internally compute the sample position based on buffer switch calls or uses the ASIOGetSamplePosition reported value to retrieve the driver reported value. Some drivers change the reported sample position based on how long a buffer switch took to complete and this can cause problems since SONAR expects the reported position to be in sync with the number of buffers actually streamed.

Table 199.

MIDI Files

The Standard MIDI file format is a file interchange format defined by the MIDI Manufacturers Association (MMA). The purpose of the format is to allow for the exchange of MIDI data between different programs. Any program that can read and write MIDI files has a common language with which to talk to other MIDI software. The compact size of MIDI music files makes them particularly useful for delivering music online.

SONAR can open standard MIDI files, and can save your projects in standard MIDI file formats. Note that only the MIDI portion of your projects is saved in a standard MIDI file. If your projects contain digital audio, the audio portion of the project will be lost when you save it to a standard MIDI file.

Note: *If you load a standard MIDI file into SONAR, SONAR strips out any initial volume and pan settings and sets the volume and pan controls for any affected tracks to those values. Initial volume and pan settings in a standard MIDI file are those that occur within the first measure. Any affected volume and pan controls will show the initial values that SONAR loaded from the standard MIDI file. Any volume and pan controls that are not affected, in other words that don't have initial values stored in the file, will show their current values in parentheses. These controls are disabled until you move one of them and therefore give it a value, at which point the control becomes enabled and the parentheses disappear. If you save a file as a standard MIDI file, SONAR saves the values of all enabled controls as initial values. However, as a project plays, SONAR's controls do not display MIDI controller values that change throughout the track—SONAR's controls only display automation values, i.e. shapes. If you want SONAR's controls to display MIDI controller values throughout the project, use the* ***Edit > Convert MIDI to Shapes*** *command.*

SONAR supports two different MIDI file formats, MIDI Format 0 and MIDI Format 1. Format 0 MIDI files contain a single track, with all events stored in that track. Format 1 MIDI files can store up to 7256 tracks, just like SONAR project files. When you load a MIDI Format 0 file, SONAR splits it into 16 separate tracks, based on the MIDI channels assigned to each event. When you save a project to a MIDI Format 0 file, SONAR collapses MIDI information from all of its tracks into one single track.

SONAR also lets you save and load files in the RIFF MIDI file format. This is a standard Resource Interchange File Format specification that encapsulates a Standard MIDI File of either format 0 or format 1. These files typically have an extension of *.rmi*.

A disadvantage of MIDI files is that the way the file sounds on playback varies based upon the sound reproduction hardware you are using. The same project sounds very different on two different synthesizers or two different sound cards. Another problem is that the Standard MIDI File specification leaves some details open to interpretation by software and hardware manufacturers.

To Save a Project as a Standard MIDI File or RIFF MIDI File

1. Choose **File > Save As** to display the **Save As** dialog box.
2. Choose the desired format from the **Save as Type** list.
3. Enter a file name and click **Save**.

See:

Timebases

Supported MIDI File Meta-Events

Features Not Supported by MIDI Files

Other MIDI File Handling Notes

Special Handling of GM, GS, and XG MIDI Files

If You Have Problems Playing MIDI Files

If You Plan to Publish Your Songs

Timebases

MIDI files can be expressed in any of a number of timebases (ppq resolutions). It is likely that most MIDI files you will encounter use a common timebase, such as 96 or 120. Although SONAR supports many timebases, it is possible that a MIDI file may use a timebase that SONAR does not support. In that case, the times will be converted into whatever timebase is currently the default.

Supported MIDI File Meta-Events

MIDI files can contain meta-events. The types of meta-events that SONAR supports are listed in the following table:

MIDI File Meta-event	How it is represented in SONAR
Meter and key signature	Meter/key signature map entry
Tempo	Tempo change
General text	Track name
General text in the conductor track of a Format 1 file	Markers view markers

Table 200.

MIDI File Meta-event	How it is represented in SONAR
Track name	Track name
Port number (format 1)	Port assignments are maintained. Only available when the Write Cable Meta Events to MIDI Files (Output Select)

Table 200.

Features Not Supported by MIDI Files

While the MIDI file format is very flexible and extensive, it cannot store the following parameters that are part of a standard project file: key offset, velocity offset, time offset, and forced channel.

When you save a project to a MIDI file, most of these parameters are applied to the individual events. For instance, if you have assigned track 1 to channel 10 in the Track view, SONAR will write the MIDI file so that every event on track 1 has a channel number of 10. When you subsequently load the MIDI file all of those Track view parameters will have vanished. But the music will sound the same, because SONAR has made these changes to the events themselves.

Other MIDI File Handling Notes

Here are a few specific points about how SONAR works with MIDI files:

- SONAR places Lyric events found in Format 0 MIDI files into Track 4, in accordance with conventions used by karaoke players.
- SONAR inserts any Text or Lyric events found at time 0 in a track into the **Comments** field in the **File Info** dialog box, unless the Text or Lyric event is preceded by a Note event.
- SONAR automatically enables the **Zero Controllers when Play Stops** option (available through the **Options > Project** command, on the **MIDI Out** tab) whenever a MIDI file is loaded.
- If a general MIDI file contains a copyright notice, the File Info window will be displayed automatically when the file is opened.

Special Handling of GM, GS, and XG MIDI Files

General MIDI compatibility of a song file is indicated by the presence of a special System Exclusive message at the beginning of the song. When SONAR finds a GM, GS or XG reset message, it assumes that you would like to work within the GM Score Production guidelines. This causes SONAR to use special timing for program change information when writing MIDI Files, and allows it to search more aggressively for track parameters when reading MIDI files. The result is that it is easier than ever to create and use General MIDI song files with SONAR.

SONAR does not enforce or even verify compliance with the GM guidelines for your music data. But SONAR does comply with them when generating events that represent track parameters. If necessary, SONAR will insert blank setup measures at the start of your song. This makes space for certain events to be inserted at the correct times at the start of each track: bank changes, patch changes, volume, and pan. This means that you can use SONAR's track parameters for these

settings when composing songs: When you save your work as a MIDI File, SONAR will place these events in the track at the specific clock ticks recommended by the guidelines.

You can tell SONAR to follow the GM guidelines by loading the “Turn GM System On” Sysx bank in the Sysx View (*gmsystem.syx* in your Cakewalk directory), and then either inserting a sysx event at time 1:1:0 or using the Auto setting for that bank.

When loading a GM file, each track’s bank, patch, volume and pan parameters are lifted from the data stream and placed in SONAR’s Track view for you to see and edit onscreen. The GM mode ensures that all patches, banks and controllers are placed at specified times throughout a setup measure when you save a MIDI file. This ensures that all setup information can be digested by your synthesizer before it starts playback. If you don't have a setup measure in your project, SONAR will insert one for you.

If there is no GM, GS, or XG reset System Exclusive message present at the start of your project, SONAR will not operate in this GM mode.

If You Have Problems Playing MIDI Files

A MIDI file can cause playback problems if all of the following are true:

- The MIDI file is a GM-compatible Standard MIDI Format 1
- All patches, banks and/or controllers are stored in one track
- All related note events are stored in a different track

When SONAR loads such a file, it may try to optimize the program changes, causing incorrect selection of synthesizer voices during playback (the GM, GS, and XG specifications all recommend the use of Standard MIDI Format 0 for distribution of music data, which would make this problem irrelevant). If you encounter this problem, simply re-select your instruments and re-save the file.

If You Plan to Publish Your Songs

If you plan to publish your own songs, we encourage you to follow the General MIDI authoring guidelines. These guidelines are quite detailed about the exact layout of many types of song data, and a complete discussion of them can be found on the World Wide Web at www.midi.org. However, SONAR can help you to conform with the GM guidelines if you follow these practices:

- Always save your master copy of any work in progress in SONAR project (.cwp) file format. When you are ready to publish your work, use the **File > Save As** command to create a Standard MIDI Format 0 file.
- All of the major publishing guidelines recommend that you use Standard MIDI File Format 0 instead of Format 1. Some sequencers cannot read the more complex Format 1 files, particularly sequencers embedded in some types of hardware such as karaoke players.
- Load the “Turn GM System On” system exclusive bank (*gmsystem.syx* in your Cakewalk directory) in the Sysx view, and set the bank to Auto Send. This message will not only re-initialize a General MIDI compatible sound module to a known state, but will also tell SONAR to generate GM setup measures for your program changes when you save the project in Standard MIDI Format. See “Variables in the [Options] Section” on page 940 for information on disabling setup measure.

- For best results, you should always place program changes and other MIDI messages in the same tracks as the notes they affect. This keeps the data for each track together as a single unit, and avoids problems that might occur when SONAR cannot easily correlate the program changes with the note events.

New features in SONAR 8.5

SONAR 8.5 has many new features (some features are in SONAR Producer only). The following is a list and description of each new feature.

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VX-64 Vocal Strip 959
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PX-64 Percussion Strip

Note: *The PX-64 Percussion Strip plug-in is only available in SONAR Producer.*

Figure 139. *PX-64 Percussion Strip*

PX-64 Percussion Strip is a multi-functional plug-in that combines a series of effects specifically optimized and streamlined for drum and percussion processing. Combining transient shaping, compression, expansion, equalization, delay and tube saturation in one convenient plug-in, *PX-64 Percussion Strip* is designed to make it fast and easy to enhance any drum or percussion track.

For more information, see the *PX-64 Percussion Strip* online Help.

See:

"New features in SONAR 8.5" on page 955

VX-64 Vocal Strip

Note: *The VX-64 Vocal Strip plug-in is only available in SONAR Producer.*

Figure 140. *VX-64 Vocal Strip*

VX-64 Vocal Strip is a multi-functional plug-in that combines a series of effects specifically optimized and streamlined for vocal processing. Combining compression, expansion, equalization, deessing, doubling, delay and tube saturation in one convenient plug-in, *VX-64 Vocal Strip* is designed to make it fast an easy to enhance any vocal track.

VX-64 Vocal Strip features include:

- 5 professional quality effect modules, each with its own bypass toggle.
- All modules are specifically tuned for vocal processing.
- Advanced tube saturation modeling available on input, output and EQ modules.
- Deesser with switchable center frequency and threshold.
- Configurable effect chain routing.
- Smooth, zipperless automatable parameters.
- Library of presets.

For more information, see the *VX-64 Vocal Strip* online Help.

See:

“New features in SONAR 8.5” on page 955

Session Drummer 3

Note: *The Session Drummer 3 synth is only available in SONAR Producer.*

Figure 141. *Session Drummer 3*

Session Drummer 3 is a professional drum sampler and pattern player. It features Cakewalk's patented *Expression Engine* technology, an anti-aliased, real-time sound production system for multisample audio playback. *Session Drummer 3* accurately replicates the sound of its real-world counterpart and features a highly-detailed user interface as well as simple but powerful controls. You can load single samples (Wave or AIFF files), or multisamples (SFZ files) which already contain key mapping and velocity switching assignments. You can load samples in any bit depth and sample rate, in mono or stereo, in looped or unlooped format. Wave and AIFF files can be loaded directly, or as a sample inside an SFZ definition file.

Samples can be of any bit depth (8 to 32-bit), any sample rate, and either mono or stereo. Each sample in a multisample can be a standard PCM Windows Wave file (.wav), an Apple audio format (.aiff) or a compressed file in the standard, high-quality, open and royalty-free ogg-vorbis format (.ogg).

Alternatively, it is possible to open multisample definition files (.sfz) or individual samples by dragging them to an instrument pad.

Session Drummer 3 features include:

- MIDI pattern playback.
- Multi-velocity acoustic and electronic drum kits.
- A comprehensive collection of presets and MIDI-based loop files, providing you with a creative jump-start.

- An animated user interface (UI).
- Controls for volume, pan and tuning of each drum kit piece.

For more information, see the *Session Drummer 3* online Help.

See:

"New features in SONAR 8.5" on page 955

Alias Factor

Figure 142. *Alias Factor*

Alias Factor combines bit crushing and low pass filtering in a unique way, allowing you to decimate your audio to create tones as varied as vintage samplers, cell phones, or old video games. Decimator effects are nothing new, but *Alias Factor* generates this effect using a special technique that generates aliasing without the unwanted harsh effects provided by other options, offering sounds that are grainy in a "smooth" and organic way. *Alias Factor* also allows for further creation of attention grabbing new timbres by linking a low pass resonant filter to the decimator for a new means of tweaking your sound.

For more information, see the *Alias Factor* online Help.

See:

"New features in SONAR 8.5" on page 955

Classic Phaser

Figure 143. *Classic Phaser*

This is a classic phaser effect that uses a modulating notch filter with a feedback loop. The "Quadra" mode provides extra wide imaging and animation.

For more information, see the *Classic Phaser* online Help.

See:

"New features in SONAR 8.5" on page 955

HF Exciter

Figure 144. *HF Exciter*

HF Exciter lets you enhance the higher end of the frequency spectrum. This produces the psycho-acoustic affect that the signal is brighter and clearer. This is done by adding harmonic content that is not present in the original signal.

For more information, see the *HF Exciter* online Help.

See:

"New features in SONAR 8.5" on page 955

Mod Filter

Figure 145. *Mod Filter*

Mod Filter produces a dynamic filtering effect, in that the actual filter can respond to incoming signal or follow the cycle of a tempo-synchronized LFO. The filter itself is a low-pass filter type, which filters out higher frequencies.

For more information, see the *Mod Filter* online Help.

See:

"New features in SONAR 8.5" on page 955

Multivoice Chorus/Flanger

Figure 146. *Multivoice Chorus/Flanger*

Chorus/Flanger lets you add depth and thickness to the signal. The EQ section in the feedback path allows you to create some truly unique sounds.

For more information, see the *Multivoice Chorus/Flanger* online Help.

See:

"New features in SONAR 8.5" on page 955

Para-Q

Figure 147. *Para-Q*

Para-Q is a two-band true parametric EQ that can be used to boost or attenuate generally high or low bands of the signal. It consumes very little processing power, which allows you to use it on many tracks simultaneously.

For more information, see the *Para-Q* online Help.

See:

"New features in SONAR 8.5" on page 955

Stereo Compressor/Gate

Figure 148. *Stereo Compressor/Gate*

Stereo Compressor/Gate combines a compressor and a gate into a single effect, so you can increase the overall dynamic level of an audio signal, without distorting the loud parts, and without excessively boosting low-level noise. You can manually trigger the gate via MIDI, which makes it simple to produce stuttering effects.

For more information, see the *Stereo Compressor/Gate* online Help.

See:

"New features in SONAR 8.5" on page 955

Stereo Delay

Figure 149. *Stereo Delay*

Stereo Delay produces a tempo-synchronized echo on whichever channel it is patched to. The three-band EQ section in the feedback path allows you to create some truly unique sounds.

For more information, see the *Stereo Delay* online Help.

See:

"New features in SONAR 8.5" on page 955

Studioverb2

Figure 150. *StudioVerb2*

Studioverb2 provides very dense and warm reverberation with 32-bit floating point implementation. This eliminates the digital grunge and harshness that occurs even in the best studio reverberation systems, which are implemented using less advanced fixed point processing. The Studioverb2 provides extremely high efficiency, typically using half of the CPU load of other premium reverb plug-ins.

For more information, see the *StudioVerb 2* online Help.

See:

"New features in SONAR 8.5" on page 955

New Impulse Responses for Perfect Space

SONAR 8.5 includes many new impulse responses for *Perfect Space*. For information about using impulse responses, see the *Perfect Space* online Help.

See:

"New features in SONAR 8.5" on page 955

Step Sequencer 2.0

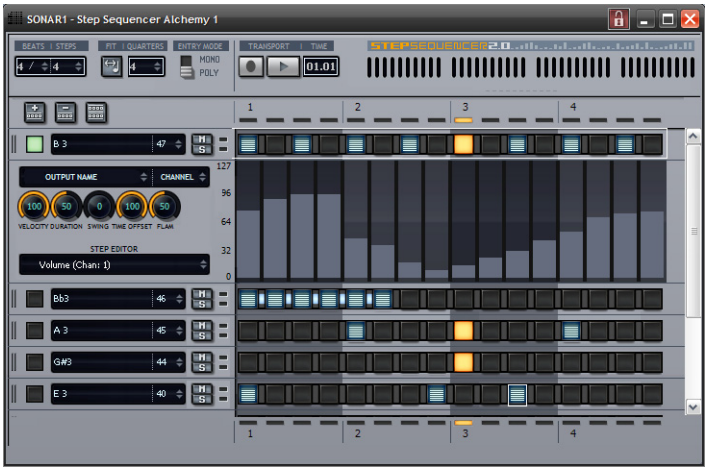
The enhanced Step Sequencer makes it easier than ever to compose patterns using a grid.

New enhancements include:

- The Step Sequencer interface has been streamlined to be more efficient and powerful.
- The Step Sequencer is no longer dependent on drum maps, and rows can be assigned directly to the track output, or any available software instrument.
- Option to preserve the original timing of note events when converting a MIDI clip to a step sequencer clip.
- Per note flam and time offset.

- Style settings, such as Duration, Swing, Time offset, Flam, and Slide/Portamento can be adjusted per row.
- Velocity is now displayed as a vertical bar inside the step.
- Ability to edit multiple rows simultaneously.
- All modulation controls are per row.
- Dedicated **Step Recording** button.
- Preview Step Sequencer patterns in the Media Browser view.

Figure 151. *Step Sequencer*



Some of the editing gestures have changed slightly, so be sure to see Step Sequencer View for complete details.

Integrated arpeggiator

Each MIDI and instrument track has its own integrated arpeggiator, visually located in the Track view. The arpeggiator lets you play intricate patterns of notes that would otherwise be extremely difficult or impossible to play manually and at speeds and octave ranges that exist beyond the physical limitations of the player or keyboard range.

Arpeggiated events are new events that are based on notes that you play on your controller keyboard. The new events are rhythmically and harmonically specified by the arpeggiator's preset, allowing you to "play" an endless variety sophisticated musical passages with simple key pressing.

The most significant capability of the arpeggiator is its ability to apply algorithmic variations on your input as well as MIDI-based patterns.

Figure 152. *Each MIDI and instrument track has an integrated arpeggiator.*

See:

Arpeggiator

Support for more MIDI ports

The maximum number of MIDI ports that can be used simultaneously has been increased from 64 to 256.

See:

Setting up output devices

Matrix view

Note: *The Matrix view is only available in SONAR Producer.*

The Matrix view lets you trigger individual or multiple audio and MIDI patterns, either with a computer keyboard, mouse or via MIDI remote control. The Matrix view consists of a grid, with unlimited rows and columns. You can drag audio, MIDI Groove Clips, Step Sequencer patterns and Project5 patterns to cells in the grid, and each row can be routed to any track in your project. You can record the Matrix performance to the Clips pane.

The Matrix view can be used as a stand-alone pattern trigger, or it can be synchronized with your project during playback.

There are many uses for the Matrix view, including:

- Experiment with different arrangements or combinations of loops, then record the performance

into the Clips pane.

- Trigger any combination of loops in real-time

Figure 153. *The Matrix view*

See:

Matrix view

REX file import

Note: *REX file import is currently not supported under SONAR x64.*

Like ACIDized WAVE files, REX files are audio files that are designed to be looped and follow the project's tempo. The time stretching technology that REX files use is well suited for percussive sounds, such as drums.

You can import REX files into a SONAR project. Once imported, you can work with REX files just as if they were regular Groove Clips (see Working Groove Clip audio).

See:

Working with REX files

Freeze and Archive buttons in Track view

SONAR 8.5 makes it easier than ever to archive and freeze tracks by providing per-track **Archive** A and **Freeze** buttons in the Track view.

You can also right-click any **Freeze** button to open the **Freeze Options** dialog.

Figure 154. ***Freeze*** *and* ***Archive*** *buttons have been added to the Track view*

A. *Archive button* ***B.*** *Freeze button*

See:

To archive or unarchive tracks

Freeze Tracks and Synths

New Freeze option

The **Freeze Options** dialog has a new **Track FX** option, which allows you to either include or exclude track FX bins during freeze operations.

When freezing AudioSnap clips in order to conserve CPU resources, it is often desirable to not render track FX bins.

See:

Freeze Options dialog

Freeze Tracks and Synths

Solo track/bus from plug-in window

When tweaking an effect, it is often desirable to only hear the audio that is passing through the effect.

A **Solo** button S is available on all plug-in property pages, which allows you to quickly solo the track or bus that the effect is inserted on while adjusting the plug-in. The **Solo** button functions the exact same way as the **Solo** button on the source track/bus.

Figure 155. *A **Solo** button is available on each plug-in property page*

A. *Solo button*

Note: *If you solo a software instrument in the Synth Rack, the **Solo** button will also affect all associated MIDI and audio tracks.*

See:

Soloing tracks

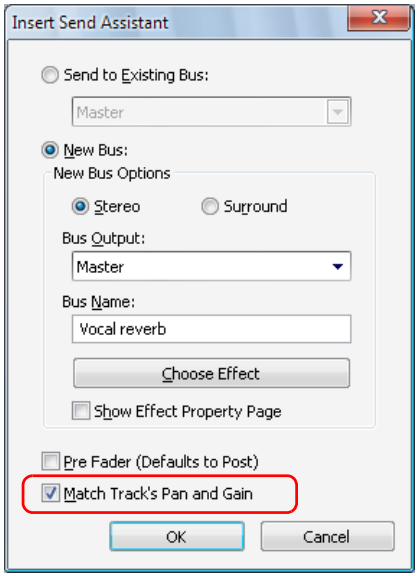
Muting and Soloing Soft Synth Tracks

Audio Effects (Audio Plug-ins)

Insert Send Assistant enhancements

The **Insert Send Assistant** dialog has an improved layout and a new **Match Track's Pan and Gain** option that makes it easier to create headphone mixes.

Figure 156. *The **Insert Send Assistant** dialog*



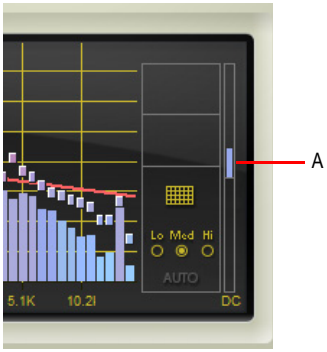
When **Match Track's Pan and Gain** is selected, the newly created send will have Gain and Pan settings that match those of the strip's Main Gain and Pan. As a result, the headphone mix matches the main mix, and from there you can adjust the headphone mix as desired.

Note: *The **Match Track's Pan and Gain** setting does not affect sends that are assigned to surround buses.*

See:

Insert Send Assistant

DC offset meter in Analyst



A. *DC offset meter*

The DC offset meter is a bi-directional bargraph meter that lets you detect DC offset in audio. There are various ways DC offset can be introduced into a mix. DC offset can come from recording sources, software instruments, or it could be present in imported wave files. Although the effect of DC offset is normally impossible to hear, it can produce some very unwanted side-effects, including:

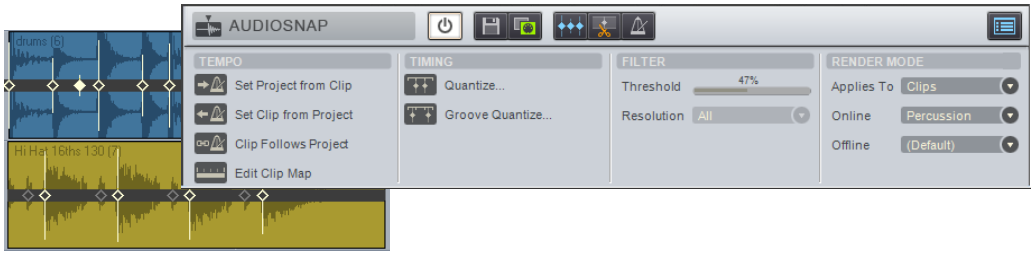
- Loss of apparent loudness in mix. Because the audio in the final mix is skewed positive or negative, you run out of headroom sooner and must reduce gain to compensate.
- Loss of quality when using mastering compression. Because the waveform is off-center, a compressor will asymmetrically alter the waveform producing low frequency harmonic distortion.
- The DC is essentially sub-sonic information that will affect the lowest band of any multi-band processing.

To check your audio for DC offset in real-time before exporting/mastering, patch Analyst in a mix bus. Ideally, the DC offset meter should appear as a small dot in the middle of the scale. As the DC offset in the input signal moves away from 0dB, the DC offset meter bar lengthens up or down, indicating either a positive or negative DC offset. As the DC offset becomes larger, the color of the meter bar changes from blue to red. The scale of the meter is -50% to +50% dbFS.

For information about removing DC offset, see Removing DC Offset.

AudioSnap 2.0

AudioSnap 2.0 provides simplified workflow and introduces many enhancements that make it easier to fix timing problems in audio and align audio with the project tempo.



AudioSnap 2.0 highlights include:

- Audio clips are always ready to be processed via AudioSnap, without having to first enable AudioSnap on clips.
- A dedicated Transient tool that makes it easier to select and edit transient markers.
- A streamlined AudioSnap palette.
- Each audio clip has an internal tempo map that can be edited.
- Synchronize audio to the project tempo in one simple step.
- Synchronize the project tempo to an audio clip's tempo map in one simple step.
- Simplified workflow for fixing multi-track audio while maintaining phase relationships.
- Enhanced TAB to transients.
- Improved real-time stretching algorithms.
- Ability to stretch multiple transients proportionally.
- You can snap edits to any transient marker (no longer limited to the Pool).

For more information, see "AudioSnap" on page 355.

TAB to transients

You can use the TAB and SHIFT+TAB keys to jump to audio transients, and MIDI Note events.

In SONAR 8.5, TAB to transients is always available when the transport is idle, and is no longer dependent on AudioSnap.

TAB to transients is now selection-based, which means tabbing will go to the next/previous transient amongst all selected clips. If there is no selection, tabbing operates on the current track.

To move the Now Time to the next transient, press TAB.

To move the Now Time to the previous transient, press SHIFT+TAB.

See:

TAB to transients

Auto Scroll Lock in Clips pane

While editing, you can prevent the Clips pane from scrolling horizontally during playback. This allows you to focus on the edit location without worrying that the screen will eventually scroll away from the edit location.

When the **Left Click Locks Scroll** option is enabled (default behavior), the Clips pane will not scroll if you click any object in the Clips pane. When you are done with the edit and want the Clips pane to scroll again during playback, click in the background of the Clips pane to clear auto scroll lock.

See:

Auto Scroll Lock in Clips pane

Clips pane vertical grid lines

Vertical rules in the Clips pane can be hidden, shown behind clips or shown in front of clips.

See:

Showing gridlines

Clip View Options dialog

Draggable Now Time marker

You can drag the Now Time marker during playback. When the mouse button is released, the transport immediately jumps to the new location.

Note: *You can only drag the Now Time marker during playback, not while recording.*

See:

"The Now time and how to use it" on page 172

"The Now time marker" on page 174

Change I/O devices without restarting SONAR

You can add or remove USB/FireWire audio and MIDI devices while SONAR is running, and the audio and MIDI engines will dynamically respond to any changes.

When a device is added or removed, SONAR prompts you to confirm or cancel the change. If you click **Yes**, playback stops and the audio and MIDI engines reload.

See:

Changing I/O devices

Hardware Setup

VST plug-in compatibility options

The Cakewalk Plug-in Manager has two new per plug-in properties to address some common VST operational and performance issues:

- **Always suspend on play.** When **Always suspend on play** is selected, the plug-in will reset when playback starts. Select this option for any VST instruments that have problems with stuck notes when stopping the transport. The **Always suspend on play** property is also useful for effects that generate a tail, such as delays and reverbs. The effect is that you will hear the tails when the transport stops, but not when the transport rolls again. **Always Suspend on play** is disabled by default.
- **Serialize Host Access.** When **Serialize Host Access** is selected, communications with the plug-in are serialized as far as possible. The default behavior is OFF, which allows asynchronous calls to the plug-in.

  When **Serialize Host Access** is disabled, SONAR's audio engine runs more efficiently and allows the UI thread to interact independently with the plug-in GUI without impacting the audio engine.

  The only reason to enable **Serialize Host Access** would be for a plug-in that has thread safety problems leading to crashes or glitches when changing plug-in presets.

BitBridge enhancements

Cakewalk's BitBridge technology allows you to use 32-bit VST effects and instruments when using the x64 version of SONAR.

Earlier versions of SONAR x64 could load only up to 4GB worth of 32 bit plug-ins. SONAR can now use all addressable RAM in your computer.

BitBridge now also supports VST's that generate MIDI.

jBridge support

Similar to BitBridge, jBridge allows you to use 32-bit VST effects and instruments when using the x64 version of SONAR, as well as use 64-bit plug-ins when using the x86 version of SONAR. jBridge can also bridge 32-bit plug-ins in the x86 version of SONAR, allowing your computer to overcome the memory limitations of a single 32bit process.

To enable jBridge, select the **Load using jBridge wrapper** check box in the **VST Plug-In Properties** dialog. This check box is only enabled on systems where jBridge is installed.

For information about adjusting VST settings, see “To set options for individual VST plug-ins (DD2; new S8.5)” on page 640 and the Cakewalk Plug-in Manager online Help.

See:

Organizing Plug-ins

VST Configuration

Media Browser enhancements

Note: *The Loop Explorer view is now called the Media Browser view.*

The Media Browser view has the following new enhancements:

- You can preview Project5 patterns (.ptn), step sequencer patterns (.ssp) and REX loops (.rex).
- You can preview MIDI and audio files simultaneously.
- You can simultaneously preview multiple files in different folders.
- You can save and recall Content Location presets to quickly access you favorite folders.
- You can drag video files to the Video Thumbnail pane.

See:

Media Browser enhancements

TS-64 Transient Shaper plug-in

Note: *The TS-64 Transient Shaper plug-in is only available in SONAR Producer.*

The *TS-64 Transient Shaper* plug-in provides powerful control over the dynamics of audio tracks and mixes.

In a musical context, the term *transient* refers to a sudden increase in sound output that occurs for a short period of time. For example, the attack portion of a drum hit is a transient.

Unlike a typical compressor, *TS-64 Transient Shaper* lets you shape the audio signal's attack phase *independently* of the decay/sustain phase.

TS-64 Transient Shaper is primarily designed for drums and percussion, but can also be useful on other percussive sounds, such as guitar and electric piano.

TS-64 Transient Shaper features include:

- Powerful envelope/transient-detection.
- Linear-phase filtering.
- Gain-shaping.
- Shape the transients independently of the tail or ambience.
- Automatable parameters.
- Smooth, zipperless output.

Figure 157. *TS-64 Transient Shaper*

For more information, see the *TS-64 Transient Shaper* online Help.

TL-64 Tube Leveler plug-in

Note: *The TL-64 Tube Leveler plug-in is only available in SONAR Producer.*

The *TL-64 Tube Leveler* plug-in is a preamp/processor that employs advanced analog vacuum-tube circuit modeling, which allows you to apply ultra-high-quality analog warmth and saturation to tracks and mixes.

TL-64 Tube Leveler provides complete models of entire vacuum-tube circuits. Under the hood are dynamic, virtual vacuum-tubes that mimic the “animated” nature of their real, analog counterpart as they respond to different input audio. The result is the coveted warm, lively and realistic analog sound of classic vacuum-tube processors and amplifiers.

Digital audio recordings can sometimes sound sterile and lifeless. Use *TL-64 Tube Leveler* to add just the right amount of warm tube saturation to individual tracks or full mixes.

Figure 158. *TL-64 Tube Leveler*

For more information, see the *TL-64 Tube Leveler* online Help.

Beatscape

Note: *The Beatscape synth is only available in SONAR Producer.*

SONAR 8 introduces an exciting new way to create inspired beats from loops and samples. *Beatscape* combines a sophisticated 16-pad REX file player and beat slicer with per-pad effects, a step generator, extensive MIDI control, and more.

Beatscape makes it easy to conform multiple loops to the same tempo, to reorder slices without changing the groove, or to break a loop up into a construction kit. Creating remixes is as simple as loading the stems and a few choice loops onto pads-*Beatscape* tempo-matches them all as you trigger, mute, process, reorder, deconstruct, and recombine the elements into your unique vision. Most importantly, using *Beatscape* feels like playing an instrument. It's intuitive, creative, and a lot of fun.

Figure 159. *Beatscape*

For more information, see the *Beatscape* online Help.

Dimension Pro

Note: *The Dimension Pro synth is only available in SONAR Producer.*

At *Dimension Pro's* core is a powerful sample-playback engine paired with advanced synthesis capabilities. It draws on a comprehensive library of sounds covering every aspect of contemporary music. *Dimension Pro* is also expandable, meaning more sounds can be added to the instrument via expansion packs, or user multisamples based on standard PCM wave files.

Besides sample-playback, *Dimension Pro* is capable of Wavetable synthesis, and Physical Modeling (Waveguide) synthesis. These two synthesis methods allow a broad sound palette, ranging from synthesized analog sounds, to plucked instruments, to precise reproductions of acoustic instruments.

Figure 160. *Dimension Pro*

For more information, see the *Dimension Pro* online Help.

Channel Tools plug-in

The *Channel Tools* plug-in provides easy and powerful channel processing for gain, Mid-Side decoding, delay and stereo panning. *Channel Tools* is ideal for enhancing and adjusting stereo separation for stereo tracks and full mixes.

With *Channel Tools* you can:

- Use intuitive controls to easily place the left and right channels individually anywhere in the stereo space.
- Automatically decode Mid-Side channel recordings.
- Enhance the spatial characteristics of your mixes.
- Adjust for phase problems due to microphone placement.
- Swap the left and right channels.
- Invert the polarity (phase) of each channel.
- Fine-tune the timing of recordings by delaying the left and/or right channel by a specific number of samples or milliseconds.

Figure 161. *Channel Tools*

For more information, see the *Channel Tools* online Help.

Native Instruments GUITAR RIG 3 LE

Note: *The GUITAR RIG 3 LE plug-in is only available in SONAR Producer.*

GUITAR RIG 3 LE is built on the latest award-winning guitar amp modeler from Native Instruments. This special edition contains 3 amps and cabinets, 11 effects, tuner, metronome and over 50 presets.

Figure 162. *GUITAR RIG 3 LE*

For more information, see the *GUITAR RIG 3 LE* online Help.

TruePianos Amber Module VSTi plug-in

Note: *The TruePianos Amber Module synth is only available in SONAR Producer.*

One of four modules that currently ship with the full version of 4Front Technologies' *TruePianos VSTi*, the *TruePianos Amber Module* provides world-class, playable piano sounds through its combination sampling, modeling, and synthesis sound design. *TruePianos* sounds and feels great, just like a real acoustic piano, with all the important characteristics: sympathetic resonance, inter-string harmonics, repedalling and more.

- Designed to blend transparently with the musician's hands through its unique capabilities of matching to the players own playing style (and characteristics of his/her MIDI keyboard) with the help of intuitive controls.

- Optimized for real-time performance, with low CPU usage even at 96khz host sampling rates and advanced polyphony levels.

Figure 163. *TruePianos VST*

For more information, see the *TruePianos* VST online Help.

Digital Sound Factory Volume 2 Classic Keys for Dimension Pro

Note: *The Digital Sound Factory Classic Keys expansion pack is only available in SONAR Producer.*

The Digital Sound Factory Classic Keys expansion pack for Dimension Pro contains 1GB of classic electric piano sounds, created by the sound designer for the original E-Mu Proteus 2000 and Vintage Keys sound modules.

Hollywood Edge FX for Dimension Pro

Note: *The Hollywood Edge FX library is only available in SONAR Producer.*

The Hollywood Edge FX library is a collection of world-class sound effects from the critically acclaimed The Hollywood Edge sample collection, programmed specifically for Dimension Pro.

Dimension Pro expansion packs

Note: *The Dimension Pro expansion packs are only available in SONAR Producer.*

SONAR 8 includes two expansion packs for Dimension Pro.

Expansion pack 1

- 350 new programs and over 120 MB of new samples and wavetables.
- New programs expand the factory sound set with new digital and FM sounds, dimensions, electric pianos, guitars, leads and keys, orchestral sounds, organs, real and synth basses, clusters and harmonies, splits and layers, sweeps, analog sounds, pads, twisted waveguide patches, and world sounds.
- Includes a new emulation of the legendary Hammond B3™ organ. Each component of the original organ, including all drawbar levels, percussion level, keyclick, the rotary speaker, drive, and cabinet simulator were precisely crafted to recreate all characteristics of this legendary instrument.
- The pack includes new wavetables, multisamples, and cabinet/speaker simulations.

Expansion pack 2

- 350 new professional sound programs by Frank Genus and René Ceballos.
- 120 MB of new multisamples.
- New programs expand the factory sound set with new digital and FM sounds, dimensions, drums, electric pianos, drum n' bass breaks, hip hop breaks, guitars, leads and keys, orchestral sounds, organs, real and synth basses, reeds and brass, sweeps, analog, pads, and more.
- Loopmasters sample content includes hip-hop and drum n' bass grooves in REX2 format.

Assign tracks to mono hardware outputs

SONAR 8 lets you assign audio track and bus outputs to individual (mono) hardware outputs in addition to stereo pairs.

This is very useful, for example, if you record in SONAR but want to use an external mixing console to mix.

To show mono hardware outputs

SONAR does not show mono hardware outputs by default. To show mono outputs, do the following:

1. On the **Options** meny, click **Audio** and then click the **Drivers** tab.
2. Select the **Show Mono Outputs** check box and then click **OK** to close the **Audio Options** dialog.

   Mono hardware outputs are now available in all locations that display audio output ports, with the exception of the Media Browser view, Loop Construction view and **Import Audio** dialog. Each available audio port exposes Left, Right and Stereo channels.

Note: *The **Show Mono Outputs** option only affects the display of mono hardware outputs in SONAR; it does not affect current output port assignments on tracks and buses. Existing mono output assignments are retained even if you disable the **Show Mono Outputs** option.*

Assigning stereo tracks to mono outputs

When a stereo track is assigned to a mono hardware output, the left and right channels are downmixed to mono. All track/bus gain and pan settings are applied prior to mono conversion.

Backward compatibility

Loading a SONAR 8 project with mono output assignments in an earlier version SONAR will cause the mono assignments to be lost.

Enhanced CPU performance

SONAR 8's CPU performance has been optimized in many different areas, including:

- Faster program start time.
- Improved performance when using many tracks and low latency settings.
- Reduced screen flicker when resizing windows.
- Better meter performance.
- More responsive zoom and scroll.

Audio driver changes without restart

You can now change audio driver settings in the **Audio Options** dialog without having to restart SONAR before the changes take effect.

Note: *If you switch from ASIO to WDM, WASAPI or MME, or from WDM to MME, you will be prompted to re-profile the hardware just as if you restarted the application.*

Minimize driver state changes

SONAR 8 has a new option to no longer reset audio devices each time playback or recording starts. This option minimizes device state transitions in response to transport operations. When enabled, SONAR attempts to keep the device in a running state as far as possible.

To configure the MinimizeDriverStateChanges option

1. On SONAR's **Options** menu, select **Audio** and then click the **Advanced** tab.
2. Under **Configuration Settings**, click **Edit Config File.**

   The `Aud.ini` file opens in the default Windows text editor.
3. In `Aud.ini`, locate the entry called `MinimizeDriverStateChanges` and set it to the desired value. For example:

   ```
   MinimizeDriverStateChanges=1
   ```

   Valid values are as follows:

   - 0 = off.
   - 1 = On for ASIO only (default).
   - 2 = On for WDM only.
   - 3 = On for both ASIO and WDM.
4. Save `Aud.ini` and close the Windows text editor.
5. Click **Reload Config Settings** to reload the current audio configuration settings from `Aud.ini`.

Note: *The* `MinimizeDriverStateChanges` *variable only applies when using ASIO or WDM driver modes, not when using the MME driver mode.*

Vista audio enhancements

SONAR 8 introduces several enhancements for communicating with audio devices in Windows Vista, including:

- Support for WASAPI, which is the new standard for audio in Windows Vista and future Windows operating systems.
- MMCSS task profile support.
- Optimized WaveRT streaming.

See:

WASAPI support

MMCSS task profile support

WaveRT updates

WASAPI support

SONAR 8 introduces support for WASAPI (Windows Audio Session API), which is the new standard for audio in Windows Vista and future Windows operating systems. Windows Vista SP1 or higher is required to use WASAPI.

The primary advantages of WASAPI are:

- Better compatibility with consumer audio devices:
  - Supports a wide variety of audio devices, including newer WaveRT devices and legacy Windows audio devices.
  - Lets you use consumer audio devices that don't have ASIO drivers or drivers that don't work well under WDM.
- Provides low latency access to audio devices.

Using WASAPI in Windows Vista

WASAPI has four different modes of operation. SONAR supports WASAPI *Exclusive* mode using event signaling, because this mode is best suited for audio programs.

In order to use WASAPI in SONAR, your audio device must have WDM drivers that Windows can successfully communicate with, and the audio device must be enabled to work in Exclusive mode.

Exclusive mode is the default in Windows Vista and can be configured from your audio device's taskbar or **Properties** dialog in Device Manager. Consult your audio device's manual if you need further information.

Exclusive mode requires exclusive access to the audio device. Another program will not be able to use the audio device simultaneously with SONAR.

Tip: *If you select **Share Drivers With Other Programs** in **Options > Audio > Advanced**, SONAR will relinquish control of the audio device when the program loses Windows focus.*

To enable WASAPI mode SONAR

1. On the **Option** menu, select **Audio** and then click the **Advanced** tab.
2. In the **Driver Mode** list, select **WASAPI**.
3. Click the **Drivers** tab.
4. In the **Input Drivers** and Output **Drivers** lists, select the desired input and output ports.
5. Click **OK** to close the **Audio Drivers** dialog.

Note: *The WASAPI driver mode is only available when using Windows Vista SP1 or a later operating system.*

See also:

WaveRT updates

MMCSS task profile support

The Multimedia Class Scheduler Service (MMCSS) provides Windows multimedia programs, including SONAR, with prioritized access to CPU resources for time-sensitive processing.

By default, SONAR uses the MMCSS task profile named *Pro Audio*. If desired, you can instruct SONAR to use a custom MMCSS task profile.

To use a custom MMCSS task profile in SONAR

1. Determine the name of the MMCSS task profile that you want to use. MMCSS task profiles are listed in the Windows registry under **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Multimedia\SystemProfile\Tasks**. Ensure that the registry entry exists for the profile you want to use.
2. If you have added any new profiles, reboot your computer to allow the MMCSS service to see the new profiles.
3. On SONAR's **Options** menu, select **Audio** and then click the **Advanced** tab.
4. Under **Configuration Settings**, click **Edit Config File.**

   The `Aud.ini` file opens in the default Windows text editor.
5. In `Aud.ini`, locate the entry called `MMCSSTaskKey` and set it to the the desired profile name. For example:

```
MMCSSTaskKey=Pro Audio
```

6. Save `Aud.ini` and close the Windows text editor.
7. Click **Reload Config Settings** to reload the current audio configuration settings from `Aud.ini`.

   SONAR will now use the new task profile for MMCSS.

WaveRT updates

SONAR's WaveRT driver support has been updated and enhanced to work properly with Vista SP1.

SONAR supports WaveRT in two ways:

WDM driver mode. WaveRT event mode access is available in SONAR when you are using WDM as a driver mode and a WaveRT capable audio device is detected. A [WaveRT] suffix is added to the driver name in this case.

WASAPI driver mode. Event mode WaveRT drivers are automatically listed and available in WASAPI mode.

Instrument track

SONAR has a new track type called *instrument track*, which makes it very simple to work with soft synths. An instrument track is essentially two tracks—a MIDI track and an audio track, both associated with the same soft synth—contained in a single track strip. An instrument track allows you to control the MIDI data that is sent to a soft synth and the audio signal that is returned from the soft synth.

To create an instrument track

In order to create an instrument track, you must first insert a new soft synth.

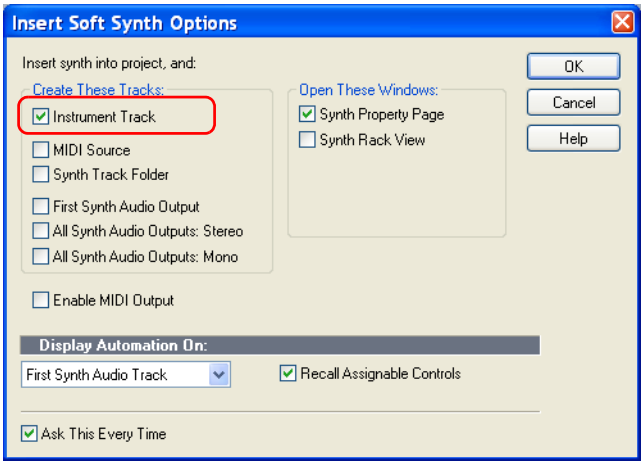
- Click the **Add Track** button , then point to **Instrument Track** and select the desired soft synth.

-or-

1. Do *one* of the following to insert a new soft synth:
   - On the **Insert** menu, point to **Soft Synths** and select the desired soft synth.
   - In the Synth Rack view, click the **Insert Soft Synth and ReWire devices** button and select the desired soft synth from the pop-up menu.

   The **Insert Soft Synth Options** dialog appears.

Figure 164. *The **Insert Soft Synth Options** dialog*

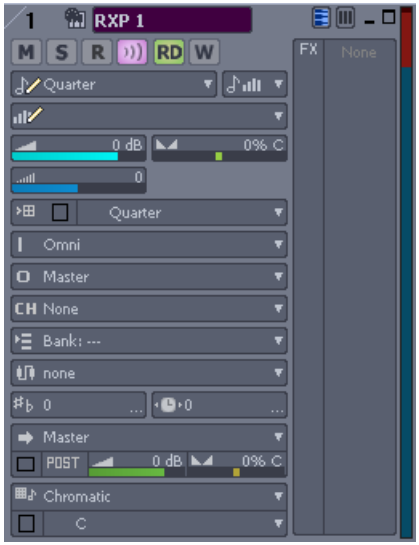


2. Select the **Instrument Track** check box, then click **OK** to close the **Insert Soft Synth Options** dialog.

   A new instrument track is inserted.

Instrument tracks have a unique track icon and track name color. The track name defaults to the soft synth name.

Figure 165. *Instrument track strip*



Instrument track controls

Because an instrument track is a hybrid between an audio and a MIDI track, an instrument track strip contains both audio and MIDI controls.

The instrument track strip exposes MIDI input and audio output controls. Internally, the MIDI output is assigned to the soft synth's MIDI input, and the audio input is assigned to the soft synth's main output.

The following table shows all controls that are availalbe on an instrument track, and indicates if a control applies to audio or MIDI data.

Control type	Audio	MIDI
Mute	X	
Solo	X	
Arm		X
Input Monitor	X	
Automation Read/Write	X	

Table 201.

Control type	Audio	MIDI
Inline Piano Roll		X
Volume	X	
Pan	X	
Trim		X
Input Quantize		X
Input	(Internally assigned to synth output)	X
Output	X	(Internally assigned to synth input)
MIDI Channel		X
Bank		X
Patch		X
Time+		X
Pitch+		X
Sends	X	
Snap to scale		X
FX bin	X	
Meter	X	
Track scale	(When track is frozen)	X

Table 201.

Editing in the Clips pane

By default, MIDI clips are displayed and can be edited in the Clips pane. MIDI track and clip envelopes are not available.

If an instrument track is frozen, audio clips are displayed and can be edited in the Clips pane. Audio track and clip envelopes are also available.

Note: *The inline Piano Roll is not available on a frozen instrument track.*

Exporting and bouncing

When exporting or bouncing an instrument track, both MIDI and audio data are taken into account. The result is the same as if the track is frozen.

Converting an audio and MIDI track to a single instrument track

If an existing audio track and MIDI track are assigned to the same soft synth, you can convert the two tracks to a single instrument track.

1. Select the audio and MIDI tracks that you want to combine into a single instrument track.
2. Right-click one of the selected track strips and select **Make Instrument Track** from the pop-up menu.

   The audio and MIDI tracks and combined into an instrument track.

Splitting an instrument track to separate audio and MIDI tracks

You can split an instrument track into separate audio and MIDI tracks. The audio and MIDI tracks will remain assigned to the same soft synth.

- In the Track view, right-click the track strip and select **Split Instrument Track** from the pop-up menu.

  The instrument track is converted to separate audio and MIDI tracks, both assigned to the soft synth.

Media Browser enhancements

The Media Browser view allows you to browse and preview your audio files (.wav, .mp3, .wma, etc.), MIDI loops (.mid), Project5 patterns (.ptn), step sequencer patterns (.ssp) and REX loops (.rex) before you drag them into your project. If you preview a Groove clip, it plays back at tempo and in the key of your current project.

Audio files can be auditioned through any bus and MIDI files can be auditioned through any soft synth.

You can also drag video files to the Video Thumbnails pane.

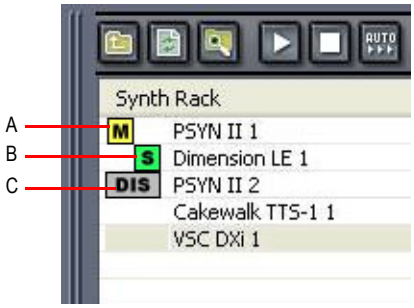
Media Browser interface

The Media Browser view is divided into three panes. From left to right, the panes are as follows:

Synth Rack pane. Lists all soft synths in a project. This pane shows the same synths as the Synth Rack view.

Each synth has a corresponding instrument track in the Track view. If the instrument track is muted or soloed, the Synth Rack pane displays a small Mute M or Solo S icon next to the corresponding synth name. If the synth is disabled, a Disabled DIS icon is displayed.

Figure 166. *The Synth pane is a mirror of the Synth Rack view*



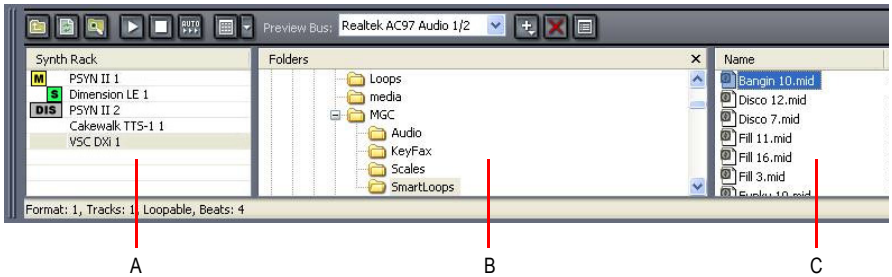
A. *Mute* ***B.*** *Solo* ***C.*** *Disabled*

Folders pane. Lists folders on your computer's hard disk. Select a folder to show all audio and MIDI files in that folder.

Tip: *If you don't see the Folders pane, click the* ***Views*** *arrow* *and select* ***Folders*** *from the shortcut menu.*

Content List pane. Lists all files in the selected folder. Select an audio or MIDI file to audition the file. The Media Browser view status bar shows information about the selected file.

Figure 167. *Media Browser view*



A. *Synth Rack pane* ***B.*** *Folders pane* ***C.*** *Content List pane*

Media Browser view toolbar

The **Media Browser view** toolbar contains the following controls:

- **Move Up** . Move up one folder level.
- **Refresh Views** . Refresh the contents of the Media Browser view.
- **Windows Explorer** . Opens the selected folder in a standard Windows Explorer window.

- **Play** . Play the selected file.

Note: *Playback stops if you change the directory or close the Media Browser view.*

- **Stop** . Stop playing the selected file.
- **Auto Play** . When enabled, you can simply click a file to play the file.
- **Views** . Lets you change how you view items in a folder. Content can be displayed as Large Icons, Small Icons, List, Details or Folders.
- **Content Location preset list.** Lets you select a saved Content Location preset.
- **Delete Content Location preset.** Lets you delete the selected Content Location preset.
- **Save Content Location preset.** Lets you save the current folder as a Content Location preset.
- **Preview Bus.** Lets you specify the bus to use when auditioning audio files. The selected preview bus is saved with the project.
- **Insert Synth** . Insert a new soft synth, which can be used to audition MIDI files.
- **Delete Synth** . Delete the selected soft synth.
- **Open Synth Properties Page** . Open the user interface for the selected soft synth.

Figure 168. *Media Browser view toolbar*

A. *Move Up* ***B.*** *Refresh views* ***C.*** *Windows Explorer* ***D.*** *Play* ***E.*** *Stop* ***F.*** *Auto Play* ***G.*** *Views* ***H.*** *Content location* ***I.*** *Delete Content Location preset* ***J.*** *Save Content Location preset* ***K.*** *Preview bus* ***L.*** *Insert synth* ***M.*** *Delete synth* ***N.*** *Open synth property page*

Auditioning loops during playback

You can audition loops during playback and when the transport is idle.

If you audition a loop during playback, the loop jumps to the current Now time and remains synchronized with SONAR's transport until you stop playback. After you stop playback, the loop restarts.

Auditioning audio files

You can audition regular audio files, Groove Clips, ACIDized files and REX files.

To audition an audio file

1. Click the **Preview Bus** arrow and choose the desired bus that you want to audition the audio file through.
2. Browse to the folder that contains the file you want to audition.
3. Select the desired file. If you want to audition multiple files simultaneously, either in the same or in different folders, hold down the CTRL or SHIFT key and select each file you want to audition.
4. Click the **Play** button .

Tip: *If **Auto Play** is enabled, you can simply click a file to audition the file.*

See also:

To Preview a Groove Clip

To drag an audio file into a project

1. Drag the audio file from the Media Browser view to the Track view.
2. Drop the Wave file in the track and at the time in which you want it in your project.

Tip: *You can double-click a file in the Media Browser to insert the file on a new track at the current Now time.*

A new audio track is created if:

- There are no audio tracks in the project.
- An audio track is not selected.
- You double-click a file in the Media Browser.
- You drop the file after the last track in the project.

See also:

The Media Browser View

To Drag a Loop into a Project

To Drag Multiple Loops into a Project

Auditioning MIDI files

You can audition standard MIDI files, MIDI patterns, MIDI Groove Clips, Project5 patterns and step sequencer patterns.

You can audition multiple MIDI files simultaneously, either through the same synth or through multiple synths.

Note: *MIDI Groove Clips loop indefinitely, but standard MIDI files play only once and do not repeat.*

To audition a MIDI file

1. In the Synth Rack pane, select the desired synth that you want to audition the MIDI file through.

Note: *If the are no synths in the project, click **Insert Synth** to insert a new soft synth.*

2. Browse to the folder that contains the file you want to audition.
3. Select the desired file. If you want to audition multiple files simultaneously, either in the same or in different folders, hold down the CTRL or SHIFT key and select each file you want to audition.
4. Click the **Play** button.

Tip: *If **Auto Play** is enabled, you can simply click a file to audition the file.*

To audition through a different synth

1. Hold down the CTRL key and click the file that you want to audition through a different synth.

   The MIDI file is no longer associated with the synth.
2. In the Synth Rack pane, select the new synth that you want to audition the MIDI file through.
3. Select the MIDI file again.

   The MIDI file now plays through the new synth, without affecting any MIDI files that may be playing through other synths.

To drag a MIDI file into a project

1. Drag the MIDI file from the Media Browser view to the Track view.
2. Drop the MIDI file in the track and at the time in which you want it in your project.

Tip: *You can double-click a file in the Media Browser to insert the file in the current track at the Now time.*

A new MIDI track is created if:

- There are no MIDI tracks in the project.
- You drop the file after the last track in the project.

To insert a soft synth

- Clik **Insert Synth** and select the desired synth from the shortcut menu.

To delete a soft synth

1. Select the synth you want to delete.
2. Clik **Delete Synth**.

To open a soft synth property page

- In the Synth Rack pane, do one of the following:
  - Double-click the desired synth.
  - Select the synth and click the **Open Synth Properties Page** button.

Using Content Location presets

The Media Browser allows you to save and recall presets to quickly access your favorite folders.

Any folder that you can navigate to in the Media Browser can be saved as a Content Location preset, which allows you to instantly return to a specific folder by simply selecting a preset from the **Content Location** list.

As you navigate in the Folders pane, the **Content Location** box automatically displays the current folder name or the first preset that matches the selected folder location.

To save a Content Location preset

1. In the Folders pane, navigate to the folder that you would like to save as a preset.

   The selected folder name is displayed in the **Content Location** box.
2. If you want to specify a new friendly preset name, type the desired name in the **Content Location** box.
3. Click the **Save Content Location Preset** button.

To select a Content Location preset

- In the **Content Location** box, select the desired preset.

  The Media Browser automatically navigates to the appropriate folder location.

To delete a Content Location preset

1. In the **Content Location** box, select the preset you want to delete.
2. Click the **Delete Content Location Preset** button.

See also:

The Media Browser View

To Drag a Loop into a Project

To Drag Multiple Loops into a Project

Arm tracks during playback/recording

SONAR is now able to arm and disarm tracks during playback and recording. This allows you to record to different tracks while the transport is rolling, without first having to stop playback in order to arm a track for recording.

To allow arming during playback

1. On the **Transport** menu, click **Record Options** to open the **Record Options** dialog.
2. Select the **Allow Arm Changes During Playback/Record** check box.

Note: *The **Allow Arm Changes During Playback/Record** option is disabled by default. When enabled, SONAR must keep all hardware input ports open so that it can dynamically arm tracks on the fly. With some drivers in WDM mode, this can add significant overhead if there are many input devices enabled in the **Audio Options** dialog (**Options > Audio > Drivers**). This may lead to more frequent drop outs. When using this option in WDM mode, it is recommended that you disable all unused input drivers in the **Audio Options** dialog to minimize this overhead. Disabling unused inputs is not required when using ASIO mode.*

See:

Dynamic Arm enhancement

Insert Send Assistant

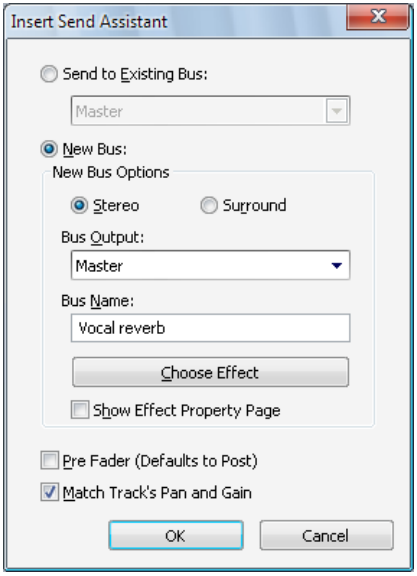
The Insert Send Assistant makes it fast and easy to create headphone mixes, effect buses and insert sends to new or existing buses.

To open the Insert Send Assistant

- Right-click on a track or bus and select **Insert Send > Insert Send Assistant** from the pop-up menu.

  The **Insert Send Assistant** dialog opens.

Figure 169. *The **Insert Send Assistant** dialog*



The **Insert Send Assistant** dialog has the following options:

Send to Existing Bus. This option lets you assign a new send to an existing bus in the current project. Select the desired bus from the drop-down list.

The **New Bus Options** section is unavailable when **Send to Existing Bus** is selected.

New Bus. This option lets you assign a new send to a new stereo or surround bus. When selected, you can use the **New Bus Options** section to specify stereo or surround, the bus name and other settings (see New bus options).

Note: *Surround buses are only supported in SONAR Producer.*

Pre Fader. When **Pre Fader** is selected, the send signal is *before* the channel volume fader. As a result, the send level going to the bus does not change when the channel fader changes. **Pre Fader** is preferred when you want to create separate mixes, such as unique headphone mixes for different performers. By default, the send signal is post fader and comes *after* the channel volume fader. As a result, the send level going to the bus changes when the channel fader changes. Use post fader if you want to create an effect bus. Doing so allows you to maintain a consistent balance between the “wet” and “dry” signals as you adjust the channel fader.

Match Track’s Gain and Pan. When **Match Track’s Pan and Gain** is selected, the newly created send will have Gain and Pan settings that match those of the strip's Main Gain and Pan. As a result,

the headphone mix matches the main mix, and from there you can adjust the headphone mix as desired.

Note: *The **Match Track's Pan and Gain** setting does not affect sends that are assigned to surround buses.*

New bus options

When you select **New Bus**, the following settings can be configured:

Stereo. This option lets you assign a new send to a new stereo bus.

Surround. This option lets you assign a new send to a new surround bus.

Bus Output. Specify the desired output for the new bus. The drop-down list shows all available output destinations.

Bus Name. Specify the desired name for the new bus. This name will be shown in the Track view and Console view.

Choose Effect. Click the button to choose the desired effect plug-in to insert on the new bus. When an effect has been selected, the plug-in name is displayed on the button face.

Show Effect Property Page. When **Show Effect Property Page** is selected, the chosen effect plug-in's user interface (UI) appears when you click **OK** to close the **Insert Send Assistant** dialog.

To insert a send to an existing bus

1. Right-click on a track or bus and select **Insert Send > Insert Send Assistant** from the pop-up menu.

   The **Insert Send Assistant** dialog opens.
2. Click **Send to Existing Bus** and select the desired bus from the drop-down list.
3. Click **OK** to close the **Insert Send Assistant** dialog.

   A new send is inserted and assigned to the specified bus.

To insert a send to a new stereo bus

1. Right-click on a track or bus and select **Insert Send > Insert Send Assistant** from the pop-up menu.

   The **Insert Send Assistant** dialog opens.
2. Under **New Bus Options**, select **Stereo** and specify any other desired options (see New bus options).
3. Click **OK** to close the **Insert Send Assistant** dialog.

   A new send is inserted and assigned to the new bus.

To insert a send to a new surround bus

1. Right-click on a track or bus and select **Insert Send > Insert Send Assistant** from the pop-up menu.

The **Insert Send Assistant** dialog opens.

2. Under **New Bus Options**, select **Surround** and specify any other desired options (see New bus options).
3. Click **OK** to close the **Insert Send Assistant** dialog.

   A new send is inserted and assigned to the new surround bus.

To insert a send to a new effect bus

1. Right-click on a track or bus and select **Insert Send > Insert Send Assistant** from the pop-up menu.

   The **Insert Send Assistant** dialog opens.
2. Under **New Bus Options**, select **Stereo** or **Surround**.
3. Click **Choose Effect** and choose the desired effect plug-in.

   The chosen effect plug-in name is display on the button face.
4. Make sure **Pre Fader** is not selected.
5. [Optional] If you want to see the effects UI, select the **Show Effects Property Page** check box.
6. Specify the desired output in the **Bus Output** list.
7. Click **OK** to close the **Insert Send Assistant** dialog.

   A new send is inserted and assigned to the new bus. The new bus contains the chosen effect plug-in.

To insert a send on multiple tracks simultaneously

1. Select all the tracks that you want to insert a send on.
2. Right-click any selected track and select **Insert Send > Insert Send Assistant** from the pop-up menu.

   The **Insert Send Assistant** dialog opens.
3. Under **New Bus Options**, select **Stereo** or **Surround** and specify any other desired options (see New bus options).
4. Click **OK** to close the **Insert Send Assistant** dialog.

   A new send is inserted on all selected tracks and assigned to the new bus.

See:

Audio track parameters

Exclusive Solo mode

By default, SONAR allows you to solo multiple tracks and buses simultaneously. With the new Exclusive Solo mode, you can only solo one track and one bus at a time.

When you solo a track or bus in Exclusive Solo mode, all other soloed tracks or buses are automatically unsoloed. This allows you to quickly listen to individual tracks and buses in isolation without having to manually unsolo other tracks or buses.

To enable/disable Exclusive Solo mode

- Do one of the following:
  - On the **Track** menu, click **Exclusive Solo**.
  - On the **Playback State** toolbar, click the **Exclusive Solo** button .

  When Exclusive Solo mode is enabled, the **Exclusive Solo** button is lit.

Note: *When you enable Exclusive Solo mode, currently soloed tracks and buses are not affected until the next time you solo a track or bus.*

There are several situations where soloing one track actually solos more than one track, even when Exclusive solo mode is enabled:

- If you solo a track folder, all tracks within the folder are soloed.
- If you solo a track that is assigned to a soft synth, all other tracks that are assigned to the same soft synth are also soloed.
- If multiple tracks are selected when you select **Tracks > Solo**, all selected tracks are soloed.
- If you solo a track or bus that belongs to a Quick Group, all other tracks or buses are also soloed.

Tip: *If you want to quickly solo all tracks that are assigned to the same bus, hold down the ALT key and click on the bus' **Strip Selector** button. This creates a Quick Group for all tracks that are assigned to the bus. You can then solo any of the tracks in the Quick Group and all other tracks will also be soloed. For more details, see Quick Group enhancement.*

See also:

Solo Override

Solo Override

When you enable Solo Override on a track or bus, that track/bus will never be muted as a result of soloing any other track/bus.

This is a very useful feature when you want to always hear a particular track regardless of which other tracks are soloed. For example, you may want to always hear the vocal track while you solo other instrument tracks. This can be accomplished easily by using Exclusive Solo mode (see “Exclusive Solo mode” on page 1005) and enabling Solo Override on the vocal track.

To enable/disable Solo Override

- Hold down the SHIFT key and click a track’s or bus’ **Solo** button.

  The **Solo** button is displayed in a cyan color S to indicate that **Solo Override** is enabled. **Solo Override** prevents the track or bus from being muted when other tracks or buses are soloed.

Note: ***Mute*** *always takes precedence over* ***Solo****. A track or bus can still be muted even if* ***Solo Override*** *is enabled.*

Live input bounce

When using the **Bounce to Track(s)** command to bounce audio in real-time, you can now choose to include any live audio input in the bounce.

To allow live input during bounce

1. On the **Edit** menu, click **Bounce to Track(s)** to open the **Bounce to Track(s)** dialog.
2. Under **Mix Enables**, clear the **Fast Bounce** check box and select the **Live Input** check box.

See:

“Real-time bounce” on page 666

Clip selection groups

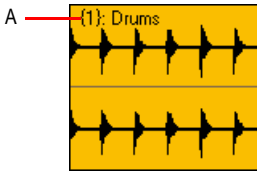
SONAR lets you treat multiple clips as a single unit. By grouping clips, you can select and edit an entire group of clips by simply selecting or editing any group member. A group can contain both audio and MIDI clips from a single track or from multiple tracks.

Clip groups are very useful, for example, when editing multitrack drums and you want to synchronize edits on all clips from the same recording take.

You can instruct SONAR to automatically group clips after recording multiple tracks simultaneously, or you can add and remove clips from a group after the clips have been recorded.

Grouped clips are indicated by a group number before the clip name.

Figure 170. *Grouped clips*



A. *The group number is displayed next to the clip name*

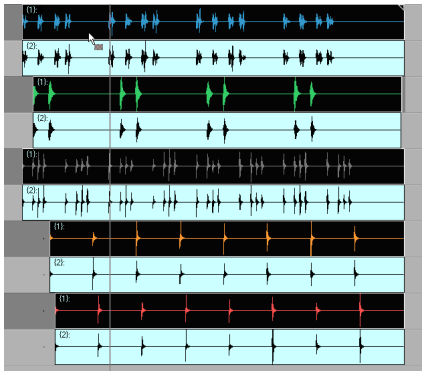
To group clips during multitrack recording

1. On the **Transport** menu, click **Record Options** to open the **Record Options** dialog.
2. Under **Clip Groups**, select the **Group Clips Across Tracks** check box.

After recording is complete, all new clips are grouped together. When loop recording, each pass of the loop gets placed in its own group.

Two discrete steps are placed in the Undo history. The first step is the actual recording and the second step is for Create Clip Group. This allows you to undo the clip group, if desired, without losing the recording.

The following example shows two takes of a five track loop recording. The first clip group is selected.



Note: *The **Group Clips Across Tracks** setting is stored with each project.*

See:

Editing clips in a group

To create a clip selection group

1. Select all the clips you want to group together.
2. Right-click any selected clip and choose **Create selection group from selected clips** from the pop-up menu.

   A new selection group is created and the group number is displayed next to each clip name.

Note: *A clip may only belong to one selection group at a time. If any of the selected clips already belong to another clip group, they will be removed from the other group and placed in the new group.*

To add clips to an existing selection group

1. Click on any clip in the existing group.

   All clips in the group are selected.
2. Hold down the CTRL key and click the clips that you want to add to the group.
3. Right-click any selected clip and choose **Create selection group from selected clips** from the pop-up menu.

All selected clips are placed in a new selection group.

Note: *A clip may only belong to one selection group at a time. If any of the selected clips already belong to another clip group, they will be removed from the other group and placed in the new group.*

To temporarily ignore grouping

You can temporarily override a clip group if you only want to select or edit a single clip in the group.

To do so, do one of the following:

- Hold down the SHIFT key when you use the Select, Mute or Split tools.
- Click the Select tool arrow and choose **Select Single Clips** from the pop-up menu. You can now select or edit individual clips without affecting other clips in the group. To enable groups again, choose **Select All Clips in Groups** from the pop-up menu

To remove clips from a selection group

1. Select the clips you want to remove from the group.

   Tip: *To select only a single clip in a group, hold down the SHIFT key and click the clip that you wish to remove from the group.*

2. Right-click any selected clip and choose **Remove selected clips from selection groups** from the pop-up menu.

   The selected clips are no longer grouped.

To remove all clip groups

1. Do one of the following:
   - On the **Edit** menu, point to **Select** and choose **All**.
   - Press CTRL+A.

   All clips are selected.
2. Right-click any selected clip and choose **Remove selected clips from selection groups** from the pop-up menu.

   The selected clips are no longer grouped.

See:

Editing clips in a group

Editing clips in a group

When editing a clip that belongs to a group, you can specify whether the edit should apply to all group members or just the individual clip. By default, edits apply to all group members.

To specify the behavior, do the following:

1. On the **Options** menu, select **Global** and then click the **Editing** tab.
2. Under **Clip Groups**, do one of the following:
   - Select the **Select all clips in groups** check box if you want edits to affect all group members.
   - Clear the **Select all clips in groups** check box if you want edits to only affect a single clip. This option doesn't remove any clip groups, so existing groups are still preserved.

-or-

- Click the Select tool arrow and choose either **Select Single Clips** or **Select All Clips in Groups** from the pop-up menu.

Tip: *Regardless of whether **Select Single Clips** or **Select All Clips in Groups** is enabled, you can hold down the SHIFT key to momentarily toggle the behavior.*

Using editing tools on grouped clips

The Select, Mute and Split tools behave as follows when editing grouped clips:

- Select tool :
  - Clicking a clip in a group will also select all other clips in the same group.
  - Lasso-selecting will select clips that are touched by the lasso as well as other clips in the same group that intersect the lasso time range.
- Split tool :
  - Clicking an unselected clip will split that clip and all other clips in the same group that intersect the split time.
  - If a previous selection exists, clicking will split only the clips in the selection.
  - Selecting a range will split all clips in the group that intersect that range.
- Mute tool . The Mute tool has several modes of operation. The corresponding mode is indicated in square brackets.
  - [Mute Entire Clips mode] Clicking an unselected clip will mute that clip and all other clips in the same group.
  - [Mute Entire Clips mode] If a previous selection exists, clicking will mute only the clips in the selection.
  - [Mute Entire Clips mode] Lasso-selecting will mute clips that are touched by the lasso as well as other clips in the same group that intersect the lasso time range.
  - [Mute Time Ranges mode] Selecting a range will mute all clips in the group that intersect that

time range.

Note: *Muting a time range is limited to one track or layer at a time.*

- [Isolate mode] Clicking an unselected clip will isolate that clip and all other clips in the same group.
- [Isolate mode] Isolating a range will isolate all clips in the group that intersect that time range.

Caution: *Editing operations that are performed on any group member also affect any hidden clips that belong to the same group. Be careful that you don't unintentionally modify or delete hidden clips.*

Enhanced editing with keyboard

SONAR 8 supports advanced editing via the numeric keypad on standard QWERTY keyboards. You can perform the following operations:

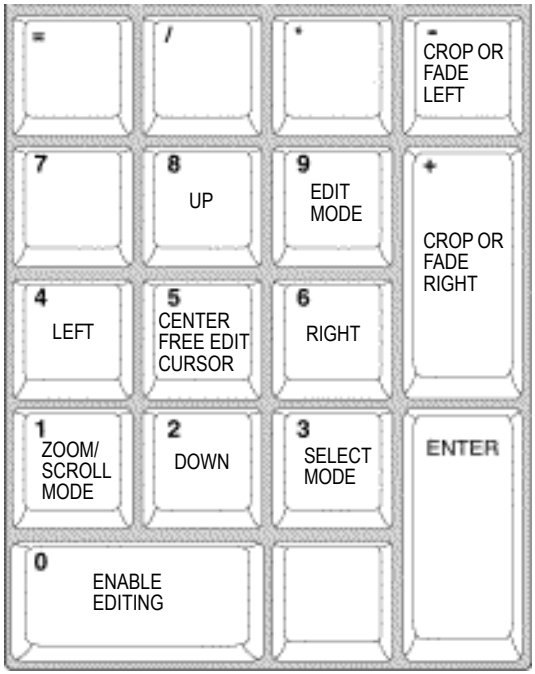
- Navigate (see “Navigating with a keyboard” on page 1014):
  - Scroll
  - Zoom
- Select (see “Selecting with a keyboard” on page 1015):
  - Clip select
  - Time select
- Edit (see “Editing with a keyboard” on page 1016):
  - Trim/crop
  - Fade

To enable/disable editing with a QWERTY keyboard

1. On your QWERTY keyboard, press the NumLock key to enable NumLock mode.
2. On the numeric keypad, press 0.
3. Select the desired mode:
   - **Zoom/Scroll mode.** Press 1.
   - **Select mode.** Press 3.
   - **Edit mode.** Press 9.

   The keys on the numeric keypad are mapped as follows:

Figure 171. *Numeric keypad (NumLock mode)*



Key	Function
0	Enable/disable keyboard editing (when NumLock is enabled)
1	Enable Zoom/Scroll mode
2	Down
3	Enable Select mode
4	Left
5	Center Free Edit cursor
6	Right
7	--
8	Up
9	Enable Edit mode

Table 202.

Key	Function
Volume knob (if keyboard has a rotary encoder)	Zoom/scroll/trim/crop depending on current mode
PLUS (+)	Crop or fade right in Edit mode
MINUS (-)	Crop or fade left in Edit mode

Table 202.

See:

Navigating with a keyboard

Selecting with a keyboard

Editing with a keyboard

Navigating with a keyboard

Scroll and Zoom are part of the same mode, which makes it fast to navigate around a project.

You can zoom both horizontally and vertically, in small or large steps.

You can scroll fast or slow in any direction, in small or large steps.

To zoom and scroll with a keyboard

1. On your QWERTY keyboard, press the NumLock key to enable NumLock mode.
2. On the numeric keypad, press 0 to enable keyboard editing.
3. On the numeric keypad, press 1 to enable Zoom/Scroll mode.

   The numeric keypad is mapped as follows:

Key	Function	CTRL+	ALT+	SHIFT+
0	Enable/disable keyboard editing (when NumLock is enabled)	--	--	--
1	Enable Zoom/Scroll mode	--	--	--
2	Scroll down in large steps	Zoom out vertically in large steps (based on selection)	--	--
3	Enable Select mode	--	--	--

Table 203.

Key	Function	CTRL+	ALT+	SHIFT+
4	Scroll left in large steps	Zoom in horizontally in large steps (based on selection)	--	--
5	Center Free Edit cursor	--	--	--
6	Scroll right in large steps	Zoom out horizontally in large steps (based on selection)	--	--
8	Scroll up in large steps	Zoom in vertically in large steps (based on selection)	--	--
9	Enable Edit mode	--	--	--
Volume knob (if keyboard has a rotary encoder)	Scroll horizontally	Scroll vertically	Scroll in small steps	Zoom (based on selection)

Table 203.

The zooming behavior depends on the current Edit or Select mode:

- **Zoom around the selection.** Will center and zoom on the mid-point of the selection.
- **Zoom around the Free Edit cursor.** Will center and zoom around the cursor.

The most appropriate zoom method is used automatically based on the following logic:

- The default zoom method is **Zoom around the selection**.
- If there is no selection, the next zoom method is **Zoom around the Free Edit cursor**.

Selecting with a keyboard

In Select mode, you can select either clips or time.

To enable selecting with a keyboard

1. On your QWERTY keyboard, press the NumLock key to enable NumLock mode.
2. On the numeric keypad, press 0 to enable keyboard editing.
3. On the numeric keypad, press 3 to enable Select mode.

The numeric keypad is mapped as follows:

Key	Function	CTRL+	ALT+
2	Move Free Edit cursor down	Move to closest clip on next track	Select down
4	Move Free Edit cursor left	Move to previous clip	Select left
5	Center Free Edit cursor	--	--
6	Move Free Edit cursor right	Move to next clip	Select right
8	Move Free Edit cursor up	Move to closest clip on previous track	Select up

Table 204.

To move the Free Edit cursor

- In Select mode, do one of the following:
  - **To move to the left.** Press 4.
  - **To move to the right.** Press 6.
  - **To move to the previous layer or track.** Press 8.
  - **To move to the next layer or track.** Press 2.
  - **To center the Free Edit cursor.** Press 5.
  - **To move to the previous clip.** Press CTRL+4.
  - **To move to the next clip.** Press CTRL+6.
  - **To move to the closest clip on the previous track.** Press CTRL+8.
  - **To move to the closest clip on the next track.** Press CTRL+2.

To select time with a keyboard

1. Move the Now Time to where you want to start the selection.
2. In Select mode, hold down ALT and move the Free Edit cursor left/right/up/down to make a time selection.

To select clips with a keyboard

- In Select mode, do one of the following:
  - **To select and edit clip under Free Edit cursor.** Press 9 to select clip and enable Edit mode.
  - **To extend the current selection.** Hold down SHIFT+ALT and press 2, 4, 6 or 8.

Editing with a keyboard

Edit mode lets you fade and crop all selected clips. If no clips are selected when you enter Edit mode, SONAR will automatically select the clip that is under the Free Edit cursor.

To enable clip editing with a keyboard

1. On your QWERTY keyboard, press the NumLock key to enable NumLock mode.
2. On the numeric keypad, press 0 to enable keyboard editing.
3. On the numeric keypad, press 9 to enable Edit mode.

   The numeric keypad is mapped as follows:

Function	Key
Select fade out for editing	2
Select left clip edge for cropping	4
Select right clip edge for cropping	6
Select fade in for editing	8
Fade or crop selected clips	Volume knob (if keyboard has a rotary encoder)
Crop or fade right in Edit mode	PLUS (+)
Crop or fade left in Edit mode	MINUS (-)

Table 205.

To fade clips with a keyboard

1. In Select mode, select the clips that you want to fade.
2. Press 9 to enable Edit mode.
3. Specify the clip property that you want to edit:
   - **Fade in.** Press 8.
   - **Fade out.** Press 2.
4. Do one of the following to adjust the selected fade:
   - Turn the rotary encoder.
   - Press PLUS (+) or MINUS (-).

Note: *Fades do not obey Snap to Grid.*

To crop clips with a keyboard

1. In Select mode, select the clips that you want to crop.
2. Press 9 to enable Edit mode.

3. Specify the clip edge that you want to crop:
   - **Left clip edge.** Press 4.
   - **Right clip edge.** Press 6.
4. Do one of the following to adjust the selected clip edge:
   - Turn the rotary encoder.
   - Press PLUS (+) or MINUS (-).

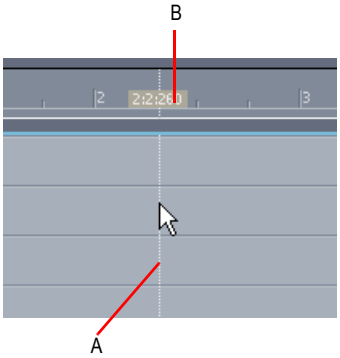
Note: *Crop obeys Snap to Grid.*

Aim Assist line

Aim Assist is a vertical white line that shows the mouse pointer's horizontal position in the Clips pane. The mouse pointer's time position is also shown in the time ruler.

Aim Assist is a helpful guide when editing in the Clips pane, making it easy to align the mouse pointer with events on different tracks or markers in the time ruler.

Figure 172. *The Aim Assist line is a helpful guide when editing in the Clips pane*



A. *Vertical Aim Assist line* ***B.*** *Time position*

To enable/disable Aim Assist

- Do one of the following:
  - Click the **Aim Assist** button in the **Track view** toolbar.
  - Press ALT+SHIFT+X.

  The vertical Aim Assist line is shown or hidden.

Tip: *You can also toggle Aim Assist on/off with a key binding. For information about assigning key bindings, see Key Bindings.*

To customize the Aim Assist color

1. One the **Options** menu, click **Colors** to open the **Configure Colors** dialog.
2. In the **Color Category** list, select **Track View**.
3. In the **Screen Element** list, select **Aim Assist line**.
4. Specify the desired color and click **OK** to close the **Configure Colors** dialog.

See:

AIM Assist enhancements

Free Edit tool

The new Free Edit tool allows you to perform both time based selection and clip selection.

To enable the Free Edit tool

- Do one of the following:
  - Click the **Free Edit Tool** button in the **Track view** toolbar.
  - Press SHIFT+E.

  The **Free Edit Tool** button is lit when enabled.

To select by time or by clip

A clip is divided into three zones when using the Free Edit tool. The mouse pointer changes depending on which clip zone the pointer is over:

Top. Click to select the clip.

Middle. Drag to select by time. A vertical I-beam cursor blinks to indicate the beginning of the time selection.

Bottom. Click to select the clip.

The Free Edit tool obeys Snap to Grid.

Tip: *You can also select by time when using the regular Select tool. To do so, hold down the ALT key while dragging.*

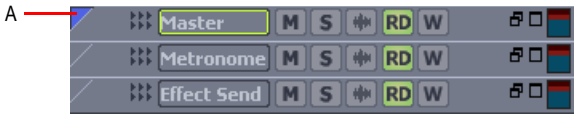
Quick Group enhancement

SONAR makes it easy to create a Quick Group of all tracks that are assigned to a particular bus.

To create a Quick Group for all tracks assigned to the same bus

- Hold down the ALT key and click on the bus' **Strip Selector** button in the Track view or Console view.

  All tracks that are assigned to the bus now belong to the same Quick Group.



A. *Strip selector*

See:

Quick Groups

Edit tools enhancements

The Split Tool and Mute Tool now support editing multiple clips simultaneously, including clips in selection groups (see "Using editing tools on grouped clips" on page 1010).

Transport enhancements

SONAR's transport has been updated with several convenient functions, including dedicated Pause, Rewind, Fast Forward and Audition controls.

Scrubbing is now also smoother and more responsive.

See:

Pause button

True Rewind and Fast Forward buttons

Audition button

Pause button

SONAR 8 introduces a true pause function that lets you temporarily pause playback without moving the Now Time cursor or the Now Time marker.

A new dedicated **Pause** button is available on the **Transport** toolbar

To pause playback

- Click the **Pause** button.

  Playback stops, but the Now Time cursor and the Now Time marker do not move.

To resume playback again

- Do one of the following:
  - Click the **Pause** button.
  - Click the **Play** button.
  - Press SPACEBAR.

  Playback resumes.

True Rewind and Fast Forward buttons

The **Transport** toolbar has new dedicated **Rewind** and **Fast Forward** buttons, which allow you to rewind and fast forward smoothly during playback.

To rewind or fast forward, click the **Rewind** or **Fast Forward** button and keep the button pressed until you want to resume playback.

Audition button

SONAR now has a dedicated **Audition** button in the **Transport** toolbar.

The **Audition** button allows you to preview multiple, non-contiguous clips across different tracks simultaneously.

To audition a selection

1. Select the clips that you want to audition.
2. Do one of the following:
   - Click the **Audition** button in the **Transport** toolbar.
   - On the **Transport** menu, click **Audition**.
   - Press SHIFT+SPACEBAR.

   Only the selected clips play back.

Control surface enhancements

SONAR 8 introduces several enhancements for using control surfaces.

See:

Synchronizing channel strips between SONAR and control surfaces

Control surfaces keep MIDI port assignments

Display logical VST parameter values

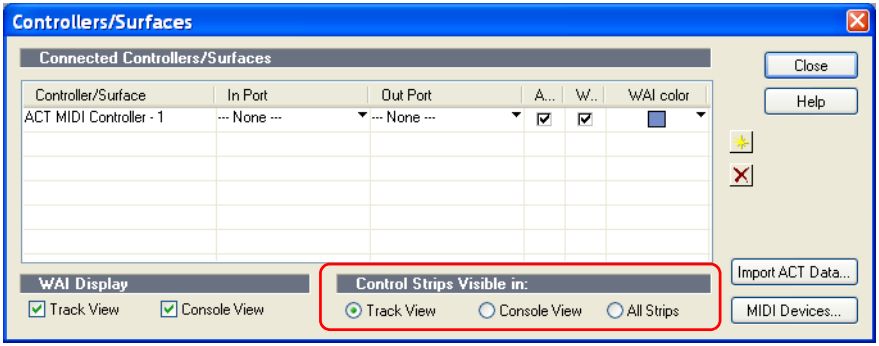
Synchronizing channel strips between SONAR and control surfaces

SONAR now allows control surfaces to display all channel strips in a project, or only the channel strips that are visible in the Track view or Console view.

1. On the **Options** menu, click **Controllers/Surfaces** to open the **Controllers/Surfaces** dialog.
2. Under **Control Strips Visible in**, click one of the following:
   - **Track View.** The controller/surface matches the channel strips that are visible in the Track view.
   - **Console View.** The controller/surface matches the channel strips that are visible in the Console view.
   - **All Strips.** The controller/surface shows all channel strips in the project.

   The controller/surface immediately refreshes and displays the specified channel strips.

Figure 173. *The **Controllers/Surfaces** dialog*



Control surfaces keep MIDI port assignments

In SONAR 8, control surfaces retain their current MIDI port assignments even if you add or remove MIDI devices.

If any assigned MIDI port is missing when you load a project, SONAR will let you remap each missing port to an available port. For more information, see “MIDI out port assignments are retained when adding/removing MIDI devices” on page 1024.

Display logical VST parameter values

SONAR is now able to display meaningful real-world parameter values for VST plug-ins instead of generic values (0.0 through 1.0). For example, an equalize plug-in might show 20kHz instead of 1.0.

Accurate parameter values are exposed in the following locations:

- ACT surfaces and property pages.
- Assignable controls in the Synth Rack and Console view.
- Envelope tooltips (only current value at Now Time). Envelope tooltips that are at some arbitrary value will still show 0.0 through 1.0.

Note: *All VST plug-ins do not expose the information that is required to show meaningful parameter values. SONAR will attempt to obtain the best parameter value information possible from the plug-in.*

MIDI out port assignments are retained when adding/removing MIDI devices

In SONAR 8, MIDI tracks and control surfaces retain their current MIDI output port assignments if you add or remove MIDI devices.

Changing output ports in the MIDI Devices dialog

Changing MIDI output ports in the **MIDI Devices** dialog has the following effect:

- **Enabling a new output port.** All MIDI tracks and control surfaces retain their current output port assignments.
- **Disabling an unassigned output port.** All MIDI tracks and control surfaces retain their current output port assignments.
- **Disabling an assigned output port.** The result is different for MIDI tracks and control surfaces:
  - **MIDI tracks.** The **Missing MIDI Ports** dialog appears and lets you remap the missing output ports to available output ports.

Note: *If you do not remap a missing device, the track’s Output control will display **MISSING: <name of missing device>**. If the missing device becomes available in the future, the track will automatically be assigned to the correct device.*

- **Control surfaces.** The control surface output port is assigned to **None**.

Figure 174. *The **Missing MIDI Ports** dialog lets you remap missing output devices*

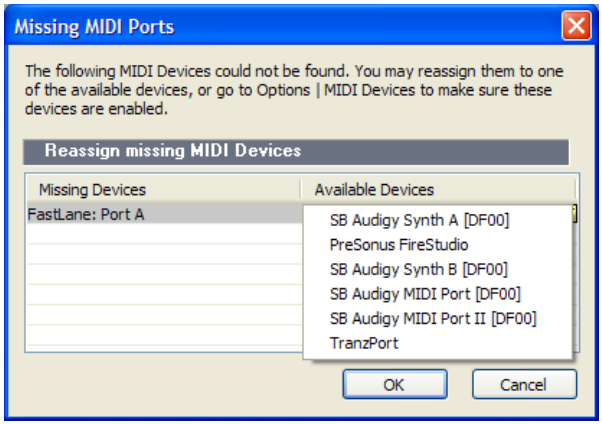
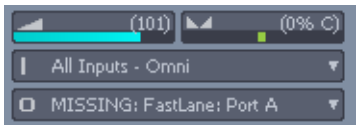


Figure 175. *A track's **Output** control shows the name of the missing device*



Opening projects after MIDI configuration has changed

If any assigned MIDI output devices are missing when you load a project, which is likely to happen if you transfer projects between different computers, SONAR will do the following:

- **MIDI tracks.** The **Missing MIDI Ports** dialog appears and lets you remap the missing devices to available devices.

Note: *If you do not remap a missing devices, the track's **Output** control will display **MISSING: <name of missing device>**. If the missing device becomes available in the future, the track will automatically be assigned to the correct device.*

- **Control surfaces.** Control surface output ports are assigned to **None**.

Audio Option configuration settings

SONAR's audio configuration settings are stored in a file named `Aud.ini`. SONAR 8 provides a convenient way to edit, reload and reset the audio configuration settings.

1. On the **Options** menu, select **Audio** and then click the **Advanced** tab.

2. Under **Configuration Settings**, click one of the following:
   - **Edit Config File.** Click to open `Aud.ini` in the default Windows text editor. Make any necessary changes in `Aud.ini`, then save and close `Aud.ini`. You must click **Reload Config Settings** to apply any external changes to `Aud.ini`.

Warning: *You should only change items in* `Aud.ini` *that are documented in the online Help or if you are instructed to by Cakewalk tech support. Undesirable changes to* `Aud.ini` *can result in loss of performance or malfunction of SONAR.*

   - **Reload Config Settings.** Click to reload the current audio configuration settings from `Aud.ini`.
   - **Reset Config To Defaults.** Click to reset the audio configuration settings to SONAR's default settings. The existing `Aud.ini` file is saved in case you wish to restore it later.

See also:

AUD.INI

Limit number of plug-in sidechain inputs

By default, a multi-channel VST plug-in always exposes the maximum number of input channels it supports.

You can limit the number of sidechain inputs that SONAR displays for any given VST plug-in. This is useful if you don't need to use all the input channels and you want to limit the number of audio input channels that are displayed in SONAR.

To limit the number of sidechain inputs

1. On the **Tools** menu, click **Cakewalk Plug-in Manager** to open the Cakewalk Plug-in Manager.
2. In the **Plug-in Categories** list, select **VST Audio Effects (VST)**.
3. In the **Registered Plug-ins** list, select the desired plug-in.
4. Under **VST Configuration**, click **Plug-in Properties** to open the **VST Plug-in Properties** dialog.
5. In the **Max used inputs** box, specify the max number of inputs you want to use for the plug-in.

Note: *The default value is the maximum number of mono input channels as exposed by the plug-in. The valid range is from 2 to the maximum number of channels exposed by the plug-in. With a value of 2, SONAR will not display any sidechain inputs for the plug-in. With a value of 4, SONAR will display 1 stereo sidechain input, etc.*

Select all AudioSnap/SlipStretched clips

SONAR 8 includes a new command to select all AudioSnap and stretched clips. The primary use of this command is to quickly select all stretched audio clips before you use the **Edit > Bounce to Clip(s)** command.

There are two common reasons why you may want to bounce AudioSnap and stretched clips:

- To free up CPU resources during playback.
- In order to save a bundle (.cwb) file, which does not support AudioSnap data.

To select all AudioSnap and stretched clips

- Do one of the following:
  - On the **Edit** menu, point to **Select** and click **All AudioSnap/SlipStretched**.
  - Press CTRL+ALT+A.

SurCode Dolby Surround encoders

SONAR 8 includes 14-day trial versions of SurCode's award-winning Dolby Digital and Dolby Pro Logic II encoders, allowing you to encode your surround projects in Dolby format directly from within SONAR.

See also:

Exporting Surround Mixes

QuickTime 7 import/export

SONAR 8 supports QuickTime 7, including H.264 support and the ability to import AAC audio files.

See also:

Video playback, import, and export

Updated ACT mappings and presets

SONAR 8 includes new and updated ACT mappings and presets for popular plug-ins and controllers/surfaces.

Live Input PDC override

While working with virtual instruments and live input monitored tracks, it is important for audio to be streamed at low latency in order to minimize delay.

Although SONAR supports streaming audio at very low latency, there are cases where internal buffering can cause additional latency. The most common scenario is when using plug-ins that require Automatic Plug-in Delay Compensation (PDC). PDC is the process of delay compensating other normal tracks so they are synchronized with the delayed audio produced by the plug-ins.

Whenever delay compensation takes place on a track that has a live input (an input monitored track or synth track), it is delayed by the required amount to synchronize it with other tracks. In some cases, the delay can be noticeable and make live tracking difficult.

The **Live Input PDC Override** toggle lets you disable delay compensation on live tracks, thereby removing the latency during playback and recording of such tracks. Since it's a toggle, you can quickly turn it on to complete your tracking at low latency, and turn it off when finished to hear the track compensated as normal.

Regardless of whether **Live Input PDC Override** is enabled or disabled, recorded audio is placed on the timeline at the correct position as recorded.

Live Input PDC Override is ignored during a bounce/export or freeze operations.

Tip: *You can control which tracks are delay overridden by enabling input monitoring only for those tracks. For more information, see Input Monitoring.*

To enable/disable live input PDC override

- Do one of the following:
  - On the **Transport** menu, click **Live Input PDC Override**.
  - Press CTRL+D.

Delay compensation is enabled/disabled on all live input tracks in the project. All other tracks have normal delay compensation applied.

When **Live Input PDC Override** is enabled, the status bar shows an orange “D” indicator in the engine status area.

You can also disable **Live Input PDC Override** by clicking the **D** indicator.

Note: *If the live track being monitored also contains track data (or MIDI data in the case of a synth track), the streamed track data will not be delay compensated. As a result the recorded track data will not be in sync with other tracks. You should either mute any clips on the live tracks, work with an empty region of the track, or use an entirely new track while recording.*

Some signal routings can cause tracks to be out of sync when **Live Input PDC Override** is enabled. To prevent any potential sync problems, follow these suggestions:

- Output the live input tracks directly to the final bus in the signal flow.
- Send live tracks directly to a hardware main.

Multiprocessor load balancing

SONAR's audio engine has enhanced multicore performance and load balancing.

The CPU meter in the status bar shows the peak processor with an average indicator for all processors. To see all processors, refer to the CPU meter on the **Large Transport** toolbar shows.

To specify the CPU meter mode

You can specify how the CPU meter appears in the status bar on multiprocessor systems by adding this line to the [WinCake] section of the `Cakewalk.ini` file:

```
[WinCake]
CPUMeterMode=0
```

The value determines the CPU meter mode:

0 = The peak thread load is displayed as the bar and a yellow indicator shows the average of all audio threads. This the default mode.

1 = The average audio thread load is displayed as the bar and a yellow indicator shows the peak thread.

2 = A bar is shown for each audio thread. This is the same display as previous versions of SONAR.

To view and edit the `Cakewalk.ini` file, choose **Options > Initialization File**.

For more information about the `Cakewalk.ini` file, see Initialization Files.

AIM Assist enhancements

When Snap to Grid is enabled, the Aim Assist line (see Aim Assist line) follows the current Snap to Grid settings rather than the mouse pointer position.

The following rules apply when selecting and moving a clip with the Select tool:

Click the front/left portion of a clip. The Aim Assist line snaps to the start of the clip boundary and travels with the clip as it is dragged.

Click the rear/right portion of a clip. The Aim Assist line snaps to the end of the clip boundary and snap operates on the clip's end. The AimAssist line travels with the clip as it is dragged.

See:

Aim Assist line

Snap to Grid enhancements

You can save and recall Snap to Grid presets and specify if snap landmarks should be obtained from all visible tracks, or only the current track.

To save Snap to Grid presets

1. Do one of the following to open the Snap to Grid window:
   - In the **Track view** toolbar, click the **Snap to Grid** arrow .
   - Press SHIFT+N.
2. Type a name in the **Preset** box and click the **Save** button .

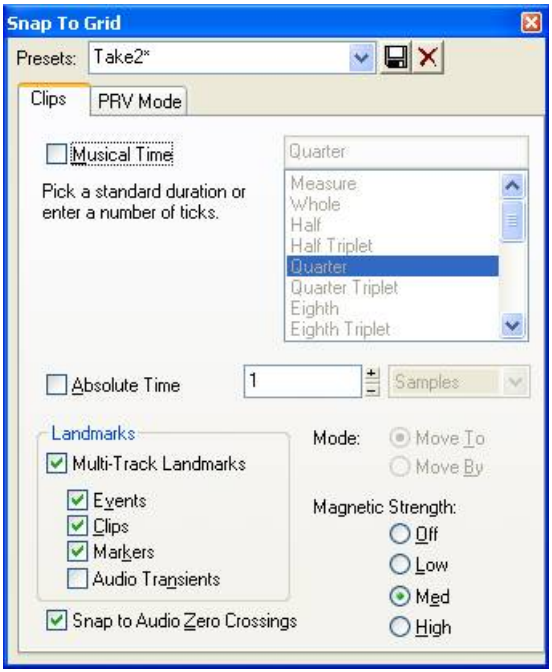
To enable/disable multi-track landmarks

1. Do one of the following to open the Snap to Grid window:
   - In the **Track view** toolbar, click the **Snap to Grid** arrow.
   - Press SHIFT+N.
2. Click the **Clips** tab.
3. Under **Landmarks**, select the **Multi-Track Landmarks** check box.

When selected, landmarks are derived from all visible tracks. When not selected, landmarks are only derived from the track under the mouse pointer.

Note: *Since multi-track landmarks are derived from all visible tracks, the landmarks can change as you scroll and zoom the Track view.*

Figure 176. *Snap to Grid window*



See:

Defining and Using the Snap Grid

Dynamic Arm enhancement

SONAR has a new option that can reduce CPU overhead when the **Allow Arm Changes During Playback/Record** option is enabled (see Arm tracks during playback/recording).

When **Allow Arm Changes During Playback/Record** is enabled, SONAR must keep all hardware input ports open so that it can dynamically arm tracks on the fly. With some drivers in WDM mode, this can add significant overhead if there are many input devices enabled in the **Audio Options** dialog (**Options > Audio > Drivers**).

The new **Only For Inputs In Project** option instructs SONAR to only open hardware input ports that are currently active in the project (i.e. assigned to a track).

To only open active hardware input ports

1. On the **Transport** menu, click **Record Options** to open the **Record Options** dialog.

2. Select the **Only For Inputs In Project** check box.

Note: *If this option is enabled, you will not be able to change inputs while recording.*

See:

Arm tracks during playback/recording

External insert enhancements

The External Insert plug-in has several enhancements, including:

- Improved sync when mixing external hardware with other plug-ins that require delay compensation.
- Improved sync while looping.
- Multiple external inserts can be used in the same project.
- Improved stability on multiprocessing machines.

See:

External Insert plug-in

Global effects bypass

SONAR allows you to globally bypass all audio effects in a project. You can also choose to only bypass effects of a specific category (track, bus or clip).

With global effects bypass, you can:

- Quickly compare (A/B) a dry versus a wet mix.
- Temporarily bypass all inline plug-in delay compensation (PDC) effects in order to avoid delay compensation induced latency while tracking virtual instruments or input monitored tracks.
- Temporarily reduce CPU consumption.

SONAR also has the ability to bypass effects at a per-effect level (effects bypass) as well as at an effects bin level (bin bypass). Any existing effects and bin bypass states are preserved when you globally bypass and unbypass effects.

You can selectively unbypass individual effects while in this global bypass state, whick makes it easy to quickly audition a single effect within a mix.

Note: *You can only globally bypass audio effects, not MIDI effects.*

To globally bypass all effects in a project

- Do one of the following:
  - On the **Process** menu, click **Global Bypass Effects Bins**.
  - Press CTRL+SHIFT+Y.

  All FX bins in the active project are temporarily bypassed. To restore the bins to their original state, simply toggle the state of the **Global Bypass Effects Bins** option.

Note: *The **Global Bypass Effects Bins** option is only a temporary toggle, and is not saved with the project.*

To globally bypass all track, bus or clip effects

1. Determine which type of effects you want to bypass (track, bus or clip), and make sure at least one corresponding FX bin is visible.
2. Right-click the FX bin and select **Bypass Bins Of This Type** from the pop-up menu.

All FX bins of the same type as the source FX bin are globally bypassed. To restore the bins to their original state, simply toggle the state of the **Bypass Bins Of This Type** option.

Split clip group enhancement

SONAR can automatically create a new clip group when splitting clips in an existing clip group. To specify the split behavior, follow these steps:

1. On the **Options** menu, click **Global**, then click the **Editing** tab.
2. Under **Clips**, select the **When splitting clips in groups, create new groups** check box.

Create new group when pasting grouped clips

When you copy and paste clips that belong to a clip group, you can specify if the pasted clips should be placed in a new clip group or continue to be grouped with the original clip group. By default, a new clip group is created. You can change the behavior by adding the following line to the [WinCake] section of the `Cakewalk.ini` file:

```
[WinCake]
CreateNewGroupsOnPaste=1
```

The values are as follows:

0 = The pasted clips will belong to the same clip group as the clips that were copied.

1 = A new clip group is created for the pasted clips. This is the default behavior.

To view and edit the `Cakewalk.ini` file, choose **Options > Initialization File**.

For more information about the `Cakewalk.ini` file, see Initialization Files.

New split clip options

SONAR allows you to specify what is selected after a clip is split into two parts:

- **Left portion (default).** Only the left portion is selected.
- **Right portion.** Only the right portion is selected.
- **Both portions.** Both the left and right portions are selected.
- **None.** Neither portion is selected.

To specify the default split behavior

1. On the **Options** menu, click **Global**, then click the **Editing** tab.
2. Under **Clips**, select the desired option in the **Selection after single split** list.

Notification when track/bus outputs are assigned to silent output

When you load a project, SONAR checks to see if the exact same output ports are assigned as when the project was saved. SONAR's port assignments can change if you load the project on a different hardware configuration or change driver models. If there is any discrepancy between the port assignments that were saved and the ports that are used in the current configuration, the ports are set to "None" and the **Silent Buses Detected** dialog displays all track and bus outputs from the current project that have been assigned to a silent output.

The **Silent Buses Detected** dialog also appears if any track or bus output is assigned to **None** as a result of changing the audio configuration.

See:

Silent Buses Detected dialog

GUITAR RIG 3.2.1 LE enhancements

The *GUITAR RIG 3 LE* plug-in has several enhancements:

- Vista 64 bit support.
- New Bass Pro amp.
- New Stomp Compressor.
- MIDI input filter in the Preferences tab.
- Improved performance.

See:

Native Instruments GUITAR RIG 3 LE

TruePianos Vista 64 support

The *TruePianos Amber Module* VSTi plug-in now supports Vista 64 bit.

See:

TruePianos Amber Module VSTi plug-in

Included plug-ins

The following is a list of audio, MIDI and instrument plug-ins that are included with SONAR. For detailed informaiton about a specific plug-in, see the plug-in's online Help.

Amp, Tape & Tube Simulation

FX2 AmpSim

FX2 TapeSim

TL-64 Tube Leveler

Dynamics Processing

Boost 11 Peak Limiter

Compressor/Gate

FX Compressor/Gate

FX Dynamics Processor

FX Expander/Gate

FX Limiter

LP-64 Multiband

PX-64 Percussion Strip

Sonitus fx: Compressor

Sonitus fx: Gate

Sonitus fx: Surround Compressor

Sonitus fx: Multiband

TL-64 Tube Leveler

TS-64 Transient Shaper

VC-64 Vintage Channel

VX-64 Vocal Strip

Channel Strips, Stereo & Panning

Channel Tools

PX-64 Percussion Strip

VC-64 Vintage Channel

VX-64 Vocal Strip

Delays & Modulation

Chorus

Chorus (mono)

Classic Phaser

Delay

Delay/Echo (mono)

DSP-FX Chorus (32-bit Only)

DSP-FX Delay (32-bit Only)

DSP-FX Flange (32-bit Only)

Flanger

Flanger (mono)

Multivoice Chorus/Flanger

Sonitus fx: Delay

Sonitus fx: Modulator

SpectraFX

Tempo Delay

EQ

2-band EQ

DSP-FX EQ (32-bit Only)

LP-64 EQ

Parametric EQ

Para-Q

Sonitus fx: EQ

VC-64 Vintage Channel

Mastering

Analyst

Boost 11 Peak Limiter

Channel Tools

LP-64 EQ

LP-64 Multiband

Sonitus fx: Multiband

Sonitus fx:Phase

TL-64 Tube Leveler

Reverbs

DSP-FX Studioverb (32-bit Only)

Lexicon Pantheon Reverb

Perfect Space (32-bit Only)

Reverb

Reverb (mono)

Sonitus fx: Reverb

SpectraFX

StudioVerb 2

Signal Analysis

Analyst

BitMeter

Cakewalk Tuner

Specialty Effects

Alias Factor

FX2 AmpSim

FX2 TapeSim

HF Exciter

Modfilter

Perfect Space (32-bit Only)

Pitch Shifter

Sonitus fx: Surround

Sonitus fx: WahWah

SpectraFX

MIDI effects

MFX Arpeggiator

MFX Change Velocity

MFX Chord Analyzer

MFX Echo/Delay

MFX Event Filter

MFX Quantize

MFX Transpose

Instruments

Cakewalk TTS-1

Cyclone

DreamStation DXi2 (32-bit Only)

DropZone

Pentagon I

PSYN II

Rapture LE

Roland GrooveSynth

RXP REX Player

Session Drummer 2

Session Drummer 3

sfz Sound Font Player

True Pianos (x86, x64)

Z3ta+

See:

Audio effects

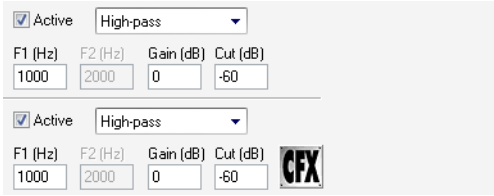
MIDI effects

Instruments

Audio effects

2-band EQ

Figure 177. *2-band EQ*



The 2-Band EQ lets you choose the frequencies affected by equalization, and then choose how much to cut or boost each frequency.

For more information, see the *2-band EQ* online Help.

Alias Factor

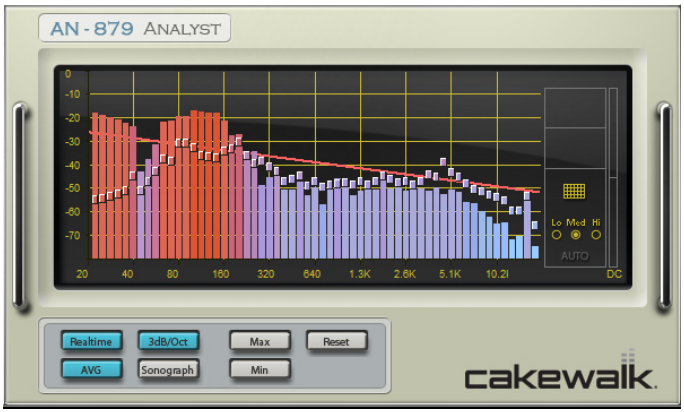
Figure 178. *Alias Factor*

Alias Factor combines bit crushing and low pass filtering in a unique way, allowing you to decimate your audio to create tones as varied as vintage samplers, cell phones, or old video games. Decimator effects are nothing new, but *Alias Factor* generates this effect using a special technique that generates aliasing without the unwanted harsh effects provided by other options, offering sounds that are grainy in a “smooth” and organic way. *Alias Factor* also allows for further creation of attention grabbing new timbres by linking a low pass resonant filter to the decimator for a new means of tweaking your sound.

For more information, see the *Alias Factor* online Help.

Analyst

Figure 179. *Analyst*



Analyst is a spectrum analyzer, and can also generate automation envelopes.

You can operate Analyst in either one of two modes:

- **Spectrum mode.** Vertical axis represents dB, horizontal axis represents frequency (as pictured above).
- **Sonograph mode.** This mode displays a color-coded historical representation of the audio. Level is indicated by color; vertical axis represents frequency. Horizontal axis represents time, with NOW being at the right edge, and the history going toward the left.

For more information, see the *Analyst* online Help.

BitMeter

Figure 180. *BitMeter*

See the benefits of SONAR's 64-bit audio engine in action with the Bit Meter VST plug-in: . A valuable tool for monitoring the digital activity of your audio stream. View output word length, dynamic range, signal peaks, and more to analyze the quality of your digital signal.

Boost 11 Peak Limiter

Figure 181. *Boost 11 Peak Limiter*

The *Boost 11 Peak Limiter* is a transparent peak limiting and volume maximizing plug-in for mixing and mastering purposes; it is designed to reduce peak levels without coloring the sound. Boost 11 uses a “look-ahead” limiter algorithm to prevent output clipping and PDR (Program Dependent Release) to minimize pumping (audible fluctuations of the volume) and maximize the loudness. “Look-ahead” means the limiter analyzes the audio input ahead of time by delaying the output for approximately 1.5ms. Boost 11 supports sampling rates up to 192 kHz, mono and stereo operation, and double precision processing.

Boost 11’s features include:

- Look-ahead peak detection prevents clipping
- Program Dependent Release minimizes pumping
- Dynamic waveform displays of input vs. output
- Stereo peak and RMS input/output meters
- Operation at sampling rates up to 192 kHz
- 64-bit double precision signal path
- VST Automation

For more information, see the *Boost 11 Peak Limiter* online Help.

Cakewalk Tuner

Figure 182. *Cakewalk Tuner*

Channel Tools

Figure 183. *Channel Tools*

The *Channel Tools* plug-in provides easy and powerful channel processing for gain, Mid-Side decoding, delay and stereo panning. *Channel Tools* is ideal for enhancing and adjusting stereo separation for stereo tracks and full mixes.

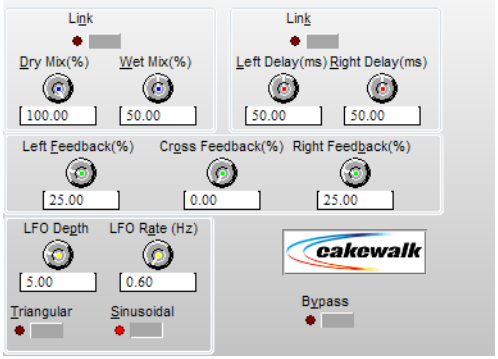
With *Channel Tools* you can:

- Use intuitive controls to easily place the left and right channels individually anywhere in the stereo space.
- Automatically decode Mid-Side channel recordings.
- Enhance the spatial characteristics of your mixes.
- Adjust for phase problems due to microphone placement.
- Swap the left and right channels.
- Invert the polarity (phase) of each channel.
- Fine-tune the timing of recordings by delaying the left and/or right channel by a specific number of samples or milliseconds.

For more information, see the *Channel Tools* online Help.

Chorus

Figure 184. *Chorus*

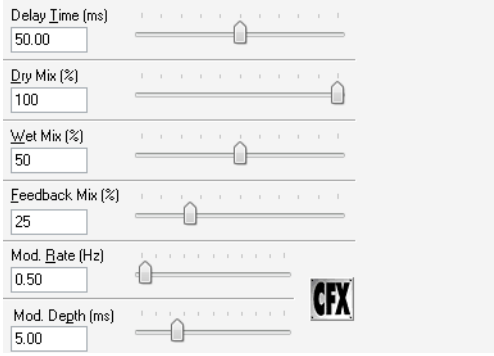


Chorusing “fattens” the audio to make one instrument sound like many. When many people sing together, for example, each of their voices is slightly out of tune and off the beat. Therefore, detuning and delaying the signal makes many instruments sound richer, including guitars, vocals, and strings.

For more information, see the *Chorus* online Help.

Chorus (mono)

Figure 185. *Chorus (mono)*



For more information, see the *Chorus (mono)* online Help.

Classic Phaser

Figure 186. *Classic Phaser*

This is a classic phaser effect that uses a modulating notch filter with a feedback loop. The “Quadra” mode provides extra wide imaging and animation.

For more information, see the *Classic Phaser* online Help.

Compressor/Gate

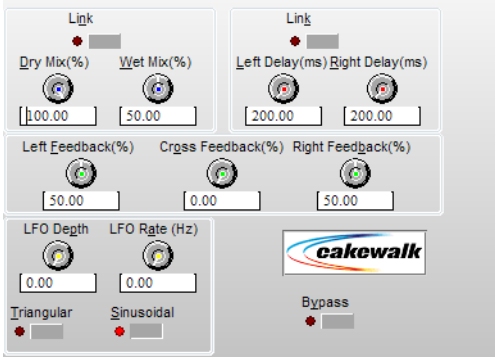
Figure 187. *Stereo Compressor/Gate*

Stereo Compressor/Gate combines a compressor and a gate into a single effect, so you can increase the overall dynamic level of an audio signal, without distorting the loud parts, and without excessively boosting low-level noise. You can manually trigger the gate via MIDI, which makes it simple to produce stuttering effects.

For more information, see the *Stereo Compressor/Gate* online Help.

Delay

Figure 188. *Delay*

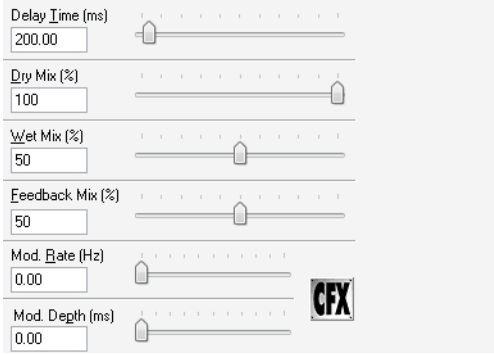


FX Delay (Stereo) creates a series of repeating signals from the original signal. You vary the amount of this delay or echo by changing the Delay Time and the Feedback Mix. Use the modulation parameters to detune the processed signal.

For more information, see the *Delay* online Help.

Delay/Echo (mono)

Figure 189. *Delay/Echo (mono)*

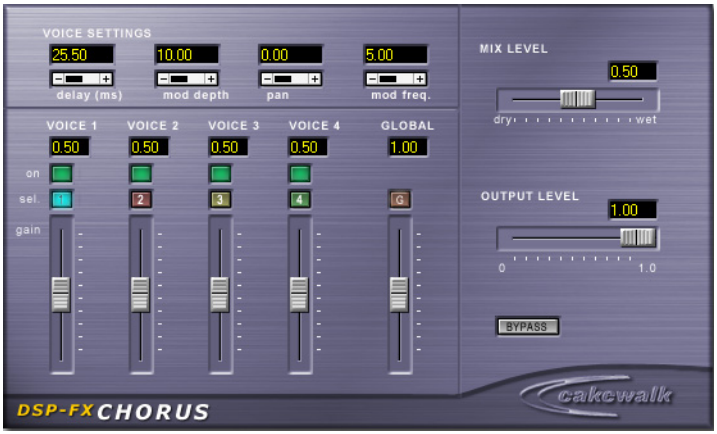


Delay/Echo creates a series of repeating signals from the original signal. You vary the amount of this delay or echo by changing the Delay Time and the Feedback Mix. This effect is available both as a destructive, offline effect, and as a realtime effect in both the Track and Console windows.

For more information, see the *Delay/Echo (mono)* online Help.

DSP-FX Chorus (32-bit Only)

Figure 190. *DSP-FX Chorus*

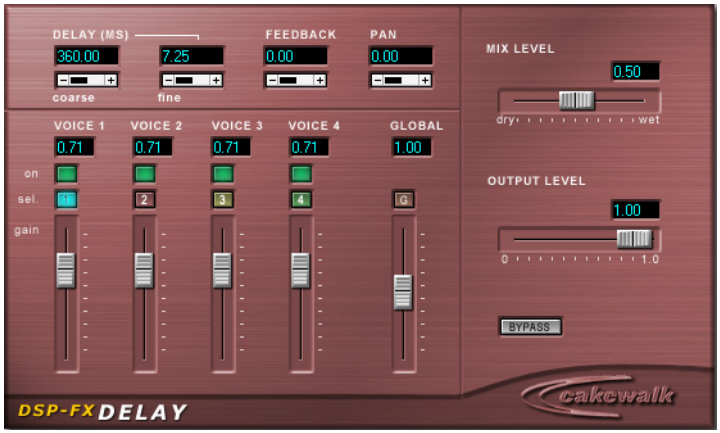


The FxChorus gives you a wide variety of ways to fatten up your recordings, providing both sound and intonation variables from small and large groups of singers or instruments. You can set each of the four voices independently, giving you the power of four different chorus processors at the same time.

For more information, see the *DSP-FX Chorus* online Help.

DSP-FX Delay (32-bit Only)

Figure 191. *DSP-FX Delay*

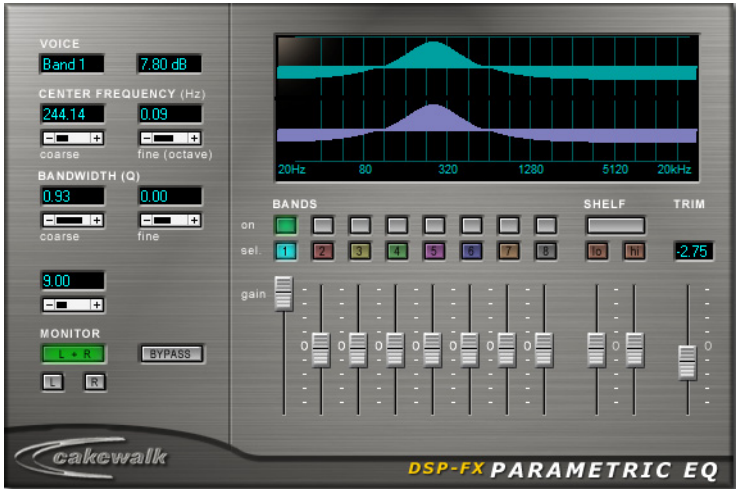


FxDelay creates a series of repeating signals from the original signal. You can create a single echo on the original signal, or a series of echoes.

For more information, see the *DSP-FX Delay* online Help.

DSP-FX EQ (32-bit Only)

Figure 192. *DSP-FX EQ*

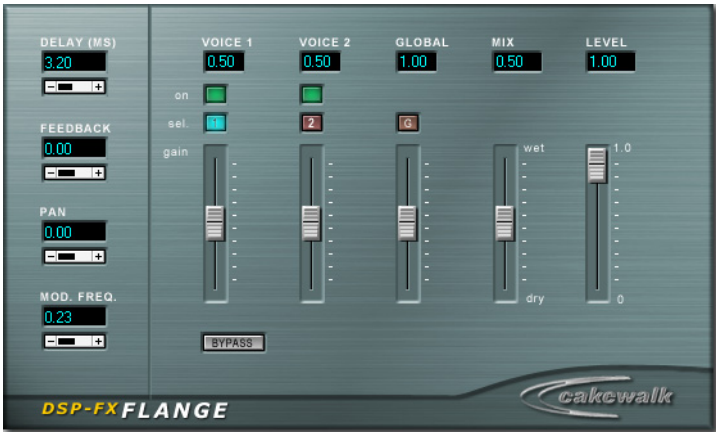


FxEq is an extremely flexible EQ. It is highly customizable, offering 8 user-defined bands.

For more information, see the *DSP-FX EQ* online Help.

DSP-FX Flange (32-bit Only)

Figure 193. *DSP-FX Flange*



The FxFlange is the first digital flanger to accurately model tape-based analog flanging, right down to the engineer's thumb applying pressure on one of the tape reels. Since its two voices are completely independent, the FxFlange can produce more complex effects than a standard stereo flanger—it's like having two separate flangers in the same unit. The FxFlange is very effective for both flanging individual instrument tracks or for flanging multiple tracks or the entire mix for a dramatic swirling sound.

For more information, see the *DSP-FX Flange* online Help.

DSP-FX Studioverb (32-bit Only)

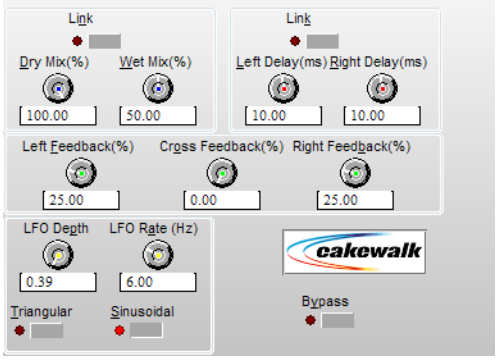
Figure 194. *DSP-FX Studioverb*

The FXReverb provides very dense and warm reverberation with 32-bit floating point implementation. This eliminates the digital grunge and harshness that occurs even in the best studio reverberation systems, which are implemented using less advanced fixed point processing. The FXReverb provides extremely high efficiency, typically using half of the CPU load of other premium reverb plug-ins.

For more information, see the *DSP-FX Studioverb* online Help.

Flanger

Figure 195. *Flanger*

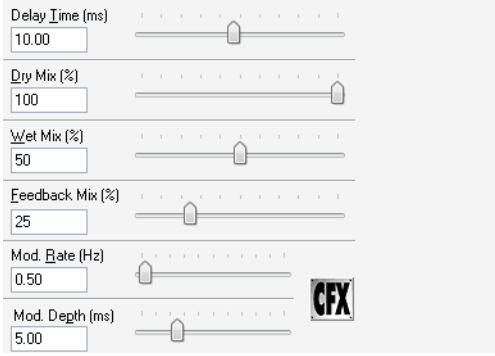


Flanging consists of two signals, one delayed slightly so that the signals are out of phase. This creates a spacey, ethereal sound.

For more information, see the *Flanger* online Help.

Flanger (mono)

Figure 196. *Flanger (mono)*

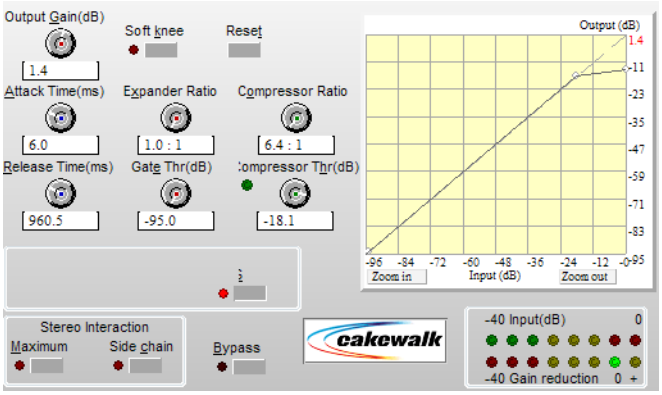


Flanging consists of two signals, one delayed slightly so that the signals are out of phase. This creates a spacey, ethereal sound.

For more information, see the *Flanger (mono)* online Help.

FX Compressor/Gate

Figure 197. *FX Compressor/Gate*



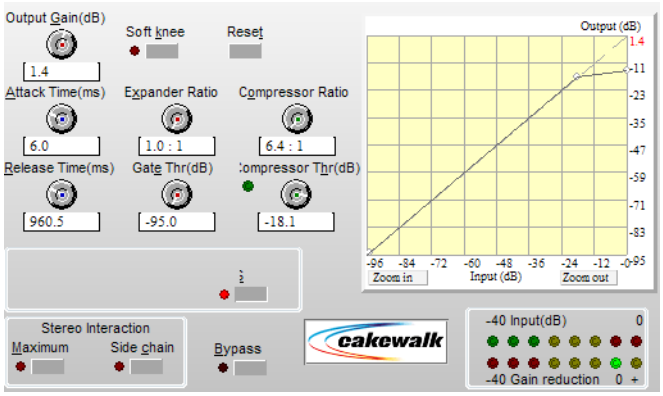
A compressor takes the loudest parts of an input signal and reduces their volume. There are a variety of reasons why you might want to use a compressor:

- Compressors enable you to increase the overall signal level of a mix, without causing the distortion that would result from exceeding the maximum allowable peak level. Increasing the average signal level makes a recording sound louder, with an apparent increase in “punch.”
- If you plan to reproduce your audio using a medium with limited dynamic range, such as magnetic tape, the increase in the average signal level that you achieve with a compressor helps prevent important audio material from being lost in the background noise.
- Compression can even out unwanted volume changes to achieve a smoother and fuller sound. For example, if a vocalist moves closer in and further away from a microphone while making a recording, the recorded volume levels may be uneven. A compressor can smooth out theses variations.
- During mixdown, you can use a compressor to adjust the dynamic range of individual tracks. This is one way to balance the tracks, and can even reduce the need to use a lot of equalization.
- Compressors can be used to increase an instrument’s sustain, by using a release time longer than the instruments decay.
- With extreme compressor settings, you can produce new interesting sounds from familiar sounds.

For more information, see the *FX Compressor/Gate* online Help.

FX Dynamics Processor

Figure 198. *FX Dynamics Processor*

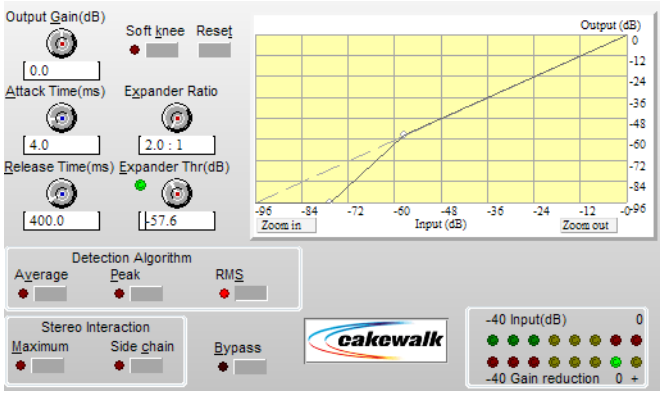


Dynamics processors are a class of audio effects that modify the dynamic range of an audio signal. The dynamic range of an audio signal is a measure of the level of variation between the loudest and softest parts of the signal.

For more information, see the *FX Dynamics Processor* online Help.

FX Expander/Gate

Figure 199. *FX Expander/Gate*

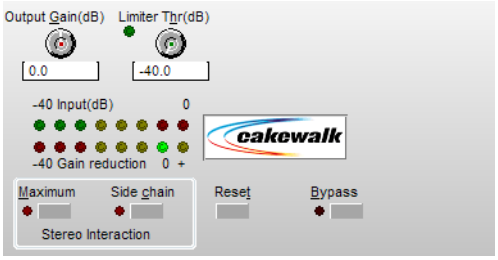


The stereo expander expands the dynamic range of the portion of an audio signal which falls below a given threshold.

For more information, see the *FX Expander/Gate* online Help.

FX Limiter

Figure 200. *FX Limiter*

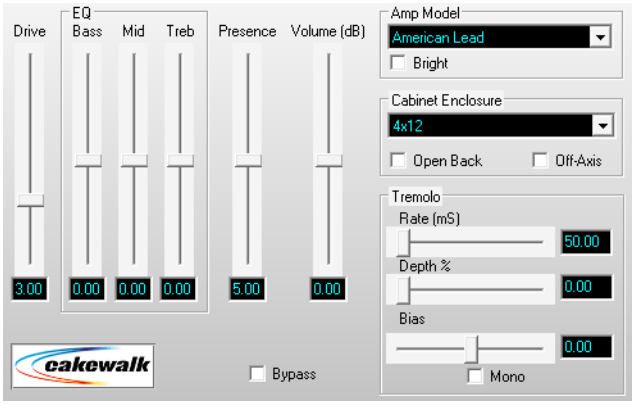


The purpose of the limiter is to prevent the audio signal from exceeding a threshold value. A limitter may be seen as an extreme case of compressing

For more information, see the *FX Limiter* online Help.

FX2 AmpSim

Figure 201. *FX2 AmpSim*

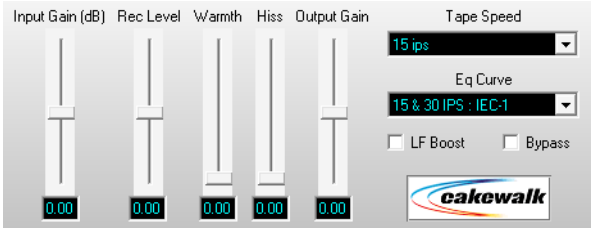


The AmpSim plug-in allows you to simulate processing your audio through a guitar amplifier and/or speaker cabinet, providing authentic distortion and speaker modeling characteristics.

For more information, see the *FX2 AmpSim* online Help.

FX2 TapeSim

Figure 202. *FX2 TapeSim*



The TapeSim plug-in simulates processing your audio through an analog tape recorder, emulating the coloration effects that are inherent in magnetic recording, including natural tape overload compression, saturation and hiss (noise).

For more information, see the *FX2 TapeSim* online Help.

Guitar Rig 3 LE

Note: *The GUITAR RIG 3 LE plug-in is only available in SONAR Producer.*

Figure 203. *GUITAR RIG 3 LE*

GUITAR RIG 3 LE is built on the latest award-winning guitar amp modeler from Native Instruments. This special edition contains 3 amps and cabinets, 11 effects, tuner, metronome and over 50 presets.

For more information, see the *GUITAR RIG 3 LE* online Help.

HF Exciter

Figure 204. *HF Exciter*

HF Exciter lets you enhance the higher end of the frequency spectrum. This produces the psycho-acoustic affect that the signal is brighter and clearer. This is done by adding harmonic content that is not present in the original signal.

For more information, see the *HF Exciter* online Help.

Lexicon Pantheon Reverb

Figure 205. *Lexicon Pantheon Reverb*

Music recorded in a typical studio sounds lifeless. In a performance space the music is enhanced by reverberation, but even in an ideal space capturing that reverberation can be chancy. Lexicon reverberators solve this problem by enabling you to generate exactly the reverberance that your recordings call for. Pantheon is designed to create, in the studio, the acoustics of any real or conceivable space.

For more information, see the *Lexicon Pantheon* online Help.

LP-64 EQ

Note: *The LP-64 EQ plug-in is only available in SONAR Producer.*

Figure 206. *LP-64 EQ*

Unlike traditional equalizers, LP-64 EQ provides highly accurate control of tonal balance while maintaining a linear-phase shift at all frequencies, regardless of the gain settings. Phase-shifting in typical equalizers means that audio material is shifted in time in a frequency-dependent way. Alignment of low and high frequencies may have changed with respect to one another and to the original audio material. In other words, the sound is literally “pulled apart” in time, often resulting in loss of sonic clarity and crispness. With LP-64 EQ linear-phase processing, the integrity of your audio is maintained for all frequencies, at all times—no unintended coloration, cancellations, comb filtering, or muddy transients. When a host application, such as SONAR, compensates for the plug-in’s overall latency, the resulting linear-phase output is referred to as “zero-phase”.

LP-64 EQ is well suited for critical mastering projects.

For more information, see the *LP-64 EQ* online Help.

LP-64 Multiband

Note: *The LP-64 Multiband Compressor plug-in is only available in SONAR Producer.*

Figure 207. *LP-64 Multiband Compressor*

The LP-64 Multiband Compressor consists of five high-quality compressors, each operating on a single adjustable frequency band.

Unlike typical limiters, the filters that split up the frequency bands in the LP-64 Multiband Compressor plug-in are of the Linear Phase variety. This allows you to split up the spectrum into bands and then sum them back together with no phase errors or colorations.

Most typical limiters color the sound even if they are doing nothing, because the splitting/re-combining of the bands is done with IIR (Infinite impulse response) filters with phase shift.

For more information, see the *LP-64 Multiband* online Help.

Modfilter

Figure 208. *Mod Filter*

Mod Filter produces a dynamic filtering effect, in that the actual filter can respond to incoming signal or follow the cycle of a tempo-synchronized LFO. The filter itself is a low-pass filter type, which filters out higher frequencies.

For more information, see the *Mod Filter* online Help.

Multivoice Chorus/Flanger

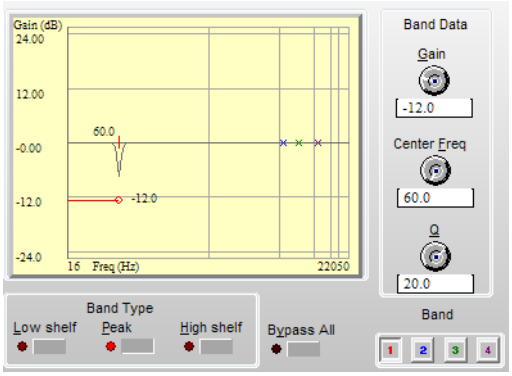
Figure 209. *Multivoice Chorus/Flanger*

Chorus/Flanger lets you add depth and thickness to the signal. The EQ section in the feedback path allows you to create some truly unique sounds.

For more information, see the *Multivoice Chorus/Flanger* online Help.

Parametric EQ

Figure 210. *Parametric EQ*



The FX EQ (Stereo) is a parametric equalizer consisting of four bands which you can control using both the interactive graph and controls adjacent to it. To select a band either click near it on the graph or click one of the four buttons in the Band field at the bottom of the dialog box.

For more information, see the *Parametric EQ* online Help.

Para-Q

Figure 211. *Para-Q*

Para-Q is a two-band true parametric EQ that can be used to boost or attenuate generally high or low bands of the signal. It consumes very little processing power, which allows you to use it on many tracks simultaneously.

For more information, see the *Para-Q* online Help.

Perfect Space (32-bit Only)

Figure 212. *Perfect Space convolution reverb*

The *Perfect Space* convolution reverb is a stereo convolution processor. The process of convolution allows you to apply the acoustic characteristics of any space (or sound) to any input signal. Perfect Space can work with a latency as low as 64 samples (1.5 ms at 44.1kHz), making it possible to use it during tracking.

The process of convolution allows you to apply the acoustic characteristics of any space to any input signal. These acoustic characteristics are captured within audio files called **impulse responses**.

An impulse response can specifically represent a certain location, from a famous cathedral to a locker room shower. Impulse responses (IRs) are created by recording the reverberations within these spaces after playing special tone sweeps or firing a starter pistol. These wideband "impulse" sounds typically span the entire audible frequency range, so the recorded "response" includes a complete representation of how the space reacts to all frequencies. Use IRs of this type to change your project's performance location without moving an inch.

Convolution is not limited to emulating pre-existing spaces, though. In fact, you can use absolutely *any* sound (drums, claps, screams, towel snaps, etc.) to manipulate your source audio. With creative convolving, you can achieve very interesting filter, reverb and delay effects.

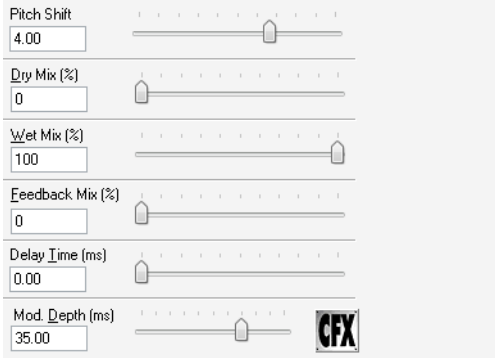
In the context of using Perfect Space, an impulse response is a standard mono, stereo or multi-channel uncompressed .WAV or .AIFF file of any bit-depth.

In addition to using the impulse responses included with SONAR and files from your own libraries, you can find many impulse responses for free on the internet at websites like www.noisevault.com.

For more information, see the *Perfect Space* online Help.

Pitch Shifter

Figure 213. *Pitch Shifter*



The Cakewalk FX Pitch Shifter raises or lowers the pitch of an audio signal, while leaving the duration of the audio event unchanged. This is a fast pitch shifter that uses minimal computation time.

For more information, see the *Pitch Shifter* online Help.

PX-64 Percussion Strip

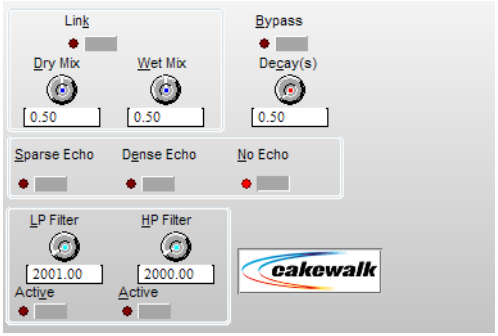
Figure 214. *PX-64 Percussion Strip*

PX-64 Percussion Strip is a multi-functional plug-in that combines a series of effects specifically optimized and streamlined for drum and percussion processing. Combining transient shaping, compression, expansion, equalization, delay and tube saturation in one convenient plug-in, *PX-64 Percussion Strip* is designed to make it fast and easy to enhance any drum or percussion track.

For more information, see the *PX-64 Percussion Strip* online Help.

Reverb

Figure 215. *Reverb*

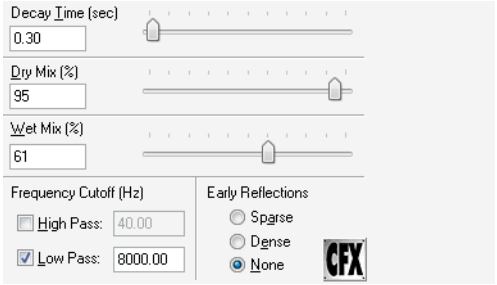


Reverberation, or reverb, adds many small echoes to a signal to create spaciousness.

For more information, see the *Reverb* online Help.

Reverb (mono)

Figure 216. *Reverb (mono)*

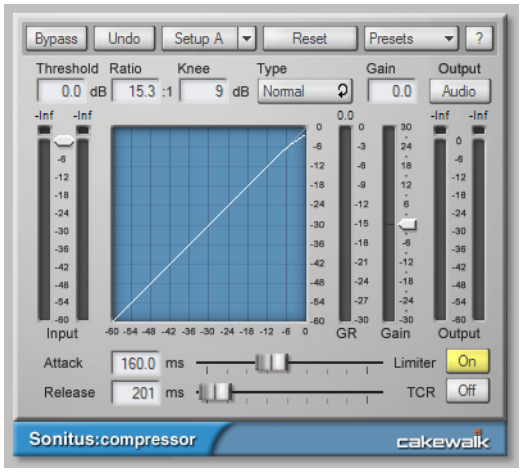


Reverberation, or reverb, adds many small echoes to a signal to create spaciousness.

For more information, see the *Reverb (mono)* online Help.

Sonitus fx: Compressor

Figure 217. *Sonitus fx: Compressor*

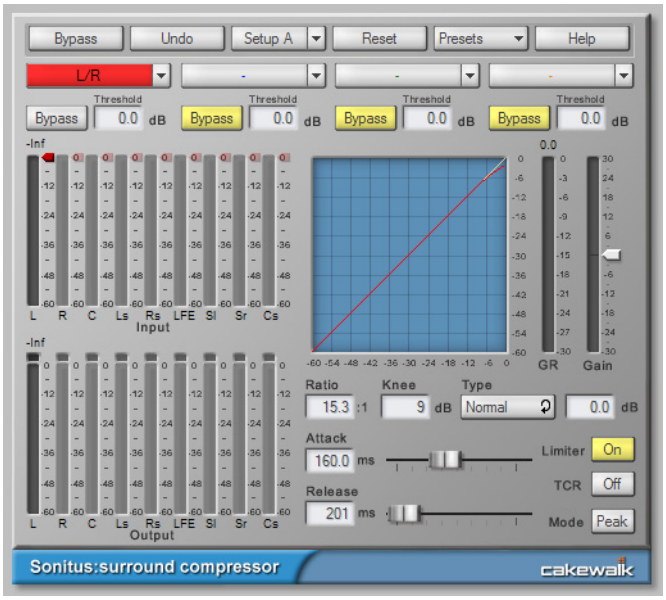


fx:compressor is a variable-knee compressor with built-in peak limiting. The purpose of a compressor is to limit the dynamic range of music or sound. Compression will make the loud parts of the signal more quiet, resulting in a more or less even level.

For more information, see the *Sonitus fx: Compressor* online Help.

Sonitus fx: Surround Compressor

Figure 218. *Sonitus fx: Surround Compressor*

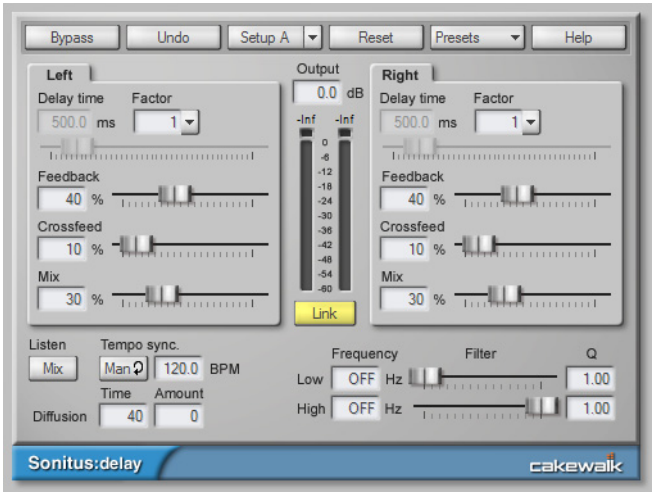


The Sonitus Surround Compressor is an enhanced, surround-capable version of the Sonitus:fx Compressor plug-in. The Surround Compressor is comprised of four stereo compressors. After you patch the compressor into a surround bus, you can direct any combination of the bus's input channels to any of the four compressors, sending any combination of stereo channel pairs, the center channel, and the LFE to the compressor(s) you choose. By default, all channels feed into compressor 1, and you can then redirect channels to the other three if you want.

For more information, see the *Sonitus fx: Surround Compressor* online Help.

Sonitus fx: Delay

Figure 219. *Sonitus fx: Delay*

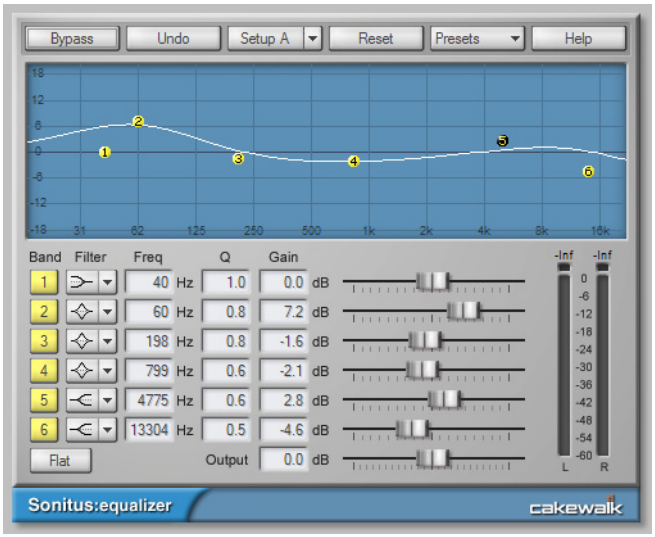


fx:delay is an advanced stereo delay with tempo sync.

For more information, see the *Sonitus fx: Delay* online Help.

Sonitus fx: EQ

Figure 220. *Sonitus fx: EQ*



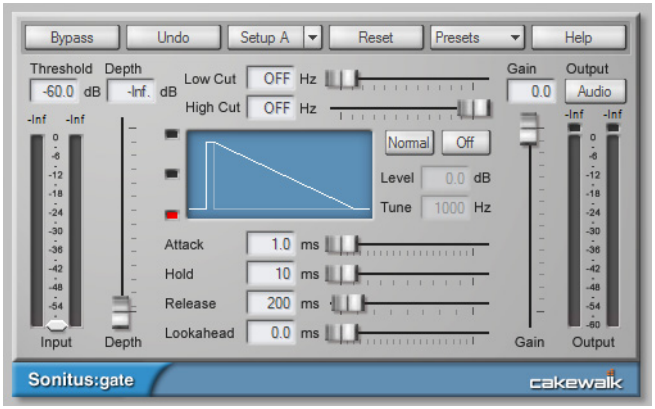
fx:equalizer is a 6-band parametric equalizer with selectable filter types for each band and frequency response graph. Equalizers are instrumental in fine tuning the frequency spectrum in all kinds of

music and sound. They let you use different filtering techniques to attenuate, cut or boost a specific frequency or a range of frequencies, allowing you the shape the overall characteristics of the audio signal.

For more information, see the *Sonitus fx: EQ* online Help.

Sonitus fx: Gate

Figure 221. *Sonitus fx: Gate*



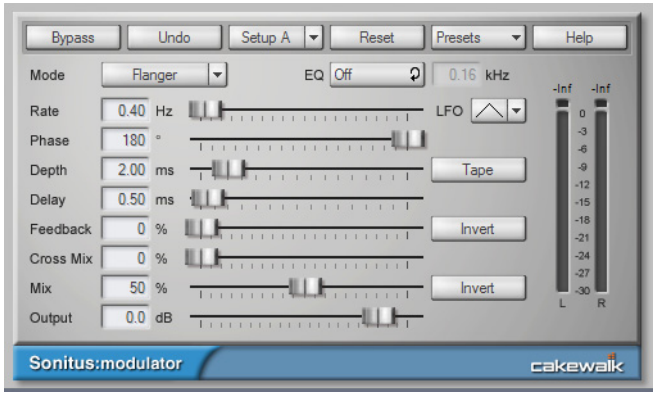
fx:gate is a dynamic gate with side-chain filtering and lookahead. The fx:gate plug-in has wide variety of uses. It can funcion as a noise gate, which quite simply gates (or blocks) signals whose amplitude lies below a certain threshold, and lets other signals through. This is useful for eliminating background noises, such as hiss or hum, during periods of silence in a recording or performance.

In addition, it also features a tuneable peak Punch mode that makes it possible to add transient punch to frequencies lacking in individual drum sounds, adding greater definition and presence to the gated signal. Using the variable high pass and low pass side chain filters enables you to perform "frequency conscious" gating. The gate can also be switched from Gating to Ducking mode for removal of clicks and pops.

For more information, see the *Sonitus fx: Gate* online Help.

Sonitus fx: Modulator

Figure 222. *Sonitus fx: Modulator*

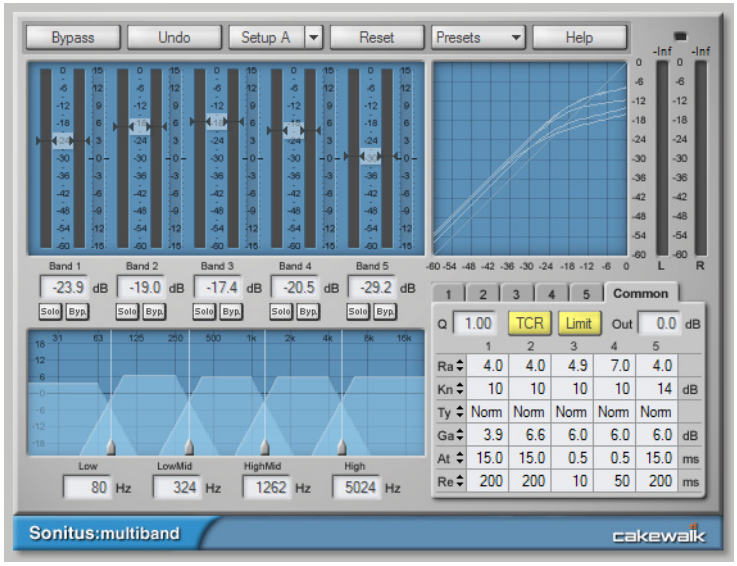


fx:modulator combines six time-varying modulation effects into one integrated plug-in.

For more information, see the *Sonitus fx: Modulator* online Help.

Sonitus fx: Multiband

Figure 223. *Sonitus fx: Multiband*



fx:multiband is a 5 band variable knee compressor with both normal and vintage compression modes and output limiter.

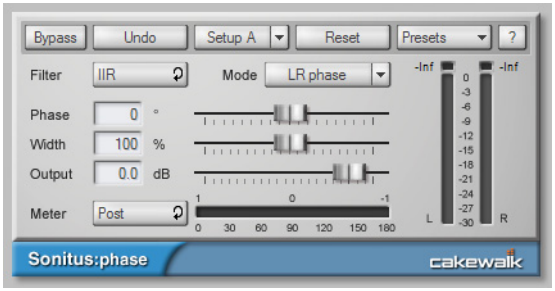
Using a multiband compressor has many advantages over using a traditional ("single band") compressor when it is used on audio signals containing complex harmonic material like a complete music mix.

- "Pumping" is virtually eliminated. "Pumping" is a phenomenon that is noticed when music with a heavy bass beat is run through a standard compressor; the mids and highs seem to vary in amplitude or "pump" to the beat. Multiband compressors don't pump because the bass frequencies are processed in a different compressor from that used to process the mid- and high range frequencies.
- The signal is equalized as it is compressed, so that differences in equalization between different sources are less noticeable.
- Multiband compressors supress or enhance the dynamic properties of specific frequency ranges. Based on this, they can also be used for tasks like de-essing, pop removal, adjusting vocal and/or instrument punch and breath (attack and release curves) within a mix.

For more information, see the *Sonitus fx: Multiband* online Help.

Sonitus fx:Phase

Figure 224. *Sonitus fx: Phase*



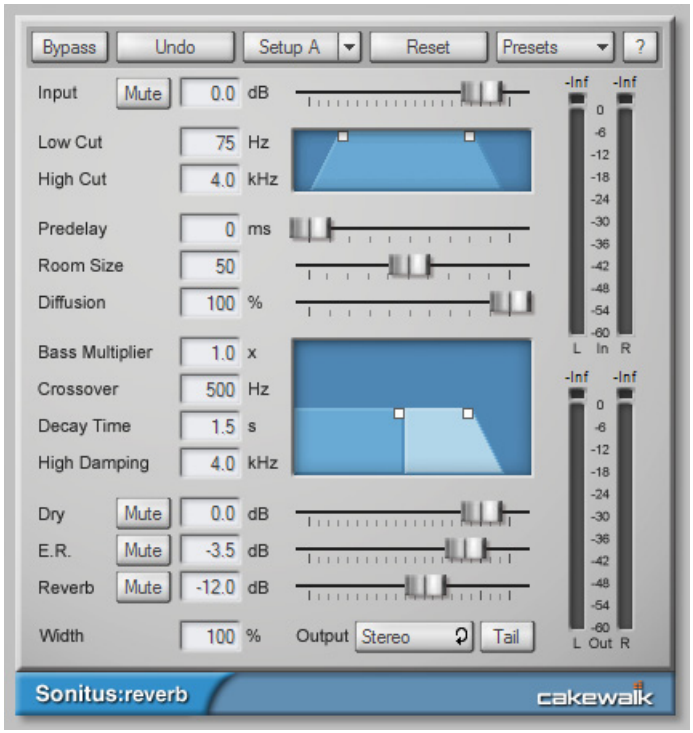
fx:phase lets you arbitrarily adjust the phase of a sound.

Note: *fx:phase is a phase shifter or phase delay - it is not a phaser, which is an entirely different type of effect. A phaser creates modulation effects by adjusting the center frequency of cascaded allpass filters, whereas fx:phase is used for applying a constant phase shift at all frequencies.*

For more information, see the *Sonitus fx:Phase* online Help.

Sonitus fx: Reverb

Figure 225. *Sonitus fx: Reverb*

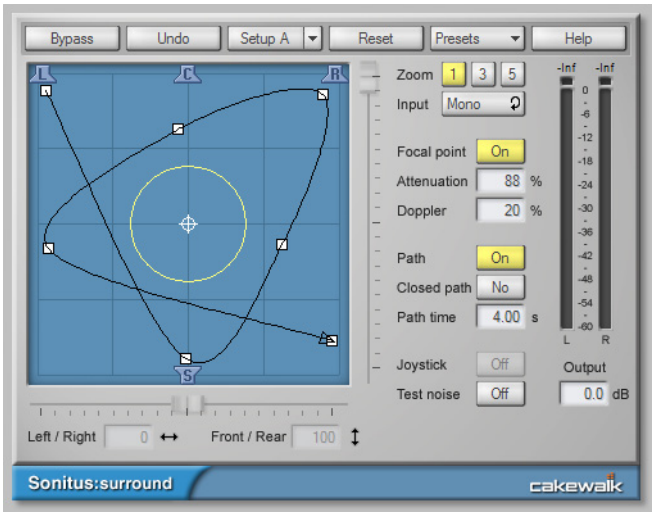


Reverb or reverberation is the effect of resounding echos in a room or other enclosed acoustic environment. Reverb can be seen as a series of echos so dense that they can't be told apart from each other. fx:reverb emulates the phenomenon of sound being reflected off walls in a virtual room, and allows you to add reverb that resembles the character, decay and frequency response of various environments.

For more information, see the *Sonitus fx: Reverb* online Help.

Sonitus fx: Surround

Figure 226. *Sonitus fx: Surround*

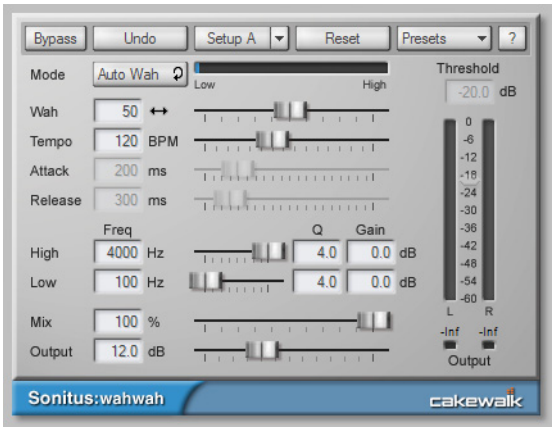


fx:surround is a surround sound panner with built-in doppler and attenuation rendering for distance and velocity effects, joystick control and graphical path editing.

For more information, see the *Sonitus fx: Surround* online Help.

Sonitus fx: WahWah

Figure 227. *Sonitus fx: WahWah*



fx:wahwah is a guitar effect emulator. A classic guitar effect, the wahwah stomp box became an instant hit when it was introduced in 1966. The Vox wahwah was the first, and was soon followed by a multitude of similar designs. It was dubbed wahwah because of its unique vocal-like sound.

fx:wahwah is a digital adaptation of the analog designs, and is modeled after real-life wahwah stomp boxes like the Morley Pro Series Distortion Wah, Jim Dunlop Crybaby Model GCB-95 and Model JH-1 (Jimi Hendrix).

For more information, see the *Sonitus fx: Wah Wah* online Help.

SpectraFX

Figure 228. *SpectraFX*

The SpectraFX lets you modulate (change the settings of) a wide variety of powerful effects in real time, using a mouse, joystick, or the SpectraFX's LFO (Low Frequency Oscilator) feature. You can create filter sweeps, distortion, flanging, and lots of other effects that change as quickly or slowly as you want, in time to the music or not, as you choose. The LFO feature synchronizes itself to your project's tempo, letting you choose any number of beats or measures before it repeats.

For more information, see the *SpectraFX* online Help.

StudioVerb 2

Figure 229. *StudioVerb2*

Studioverb2 provides very dense and warm reverberation with 32-bit floating point implementation. This eliminates the digital grunge and harshness that occurs even in the best studio reverberation systems, which are implemented using less advanced fixed point processing. The Studioverb2 provides extremely high efficiency, typically using half of the CPU load of other premium reverb plug-ins.

For more information, see the *StudioVerb 2* online Help.

Tempo Delay

Figure 230. *Tempo Delay*

Stereo Delay produces a tempo-synchronized echo on whichever channel it is patched to. The three-band EQ section in the feedback path allows you to create some truly unique sounds.

For more information, see the *Tempo Delay* online Help.

TL-64 Tube Leveler

Note: *The TL-64 Tube Leveler plug-in is only available in SONAR Producer.*

Figure 231. *TL-64 Tube Leveler*

The *TL-64 Tube Leveler* plug-in is a preamp/processor that employs advanced analog vacuum-tube circuit modeling, which allows you to apply ultra-high-quality analog warmth and saturation to tracks and mixes.

TL-64 Tube Leveler provides complete models of entire vacuum-tube circuits. Under the hood are dynamic, virtual vacuum-tubes that mimic the “animated” nature of their real, analog counterpart as they respond to different input audio. The result is the coveted warm, lively and realistic analog sound of classic vacuum-tube processors and amplifiers.

Digital audio recordings can sometimes sound sterile and lifeless. Use *TL-64 Tube Leveler* to add just the right amount of warm tube saturation to individual tracks or full mixes.

For more information, see the *TL-64 Tube Leveler* online Help.

TS-64 Transient Shaper

Note: *The TS-64 Transient Shaper plug-in is only available in SONAR Producer.*

Figure 232. *TS-64 Transient Shaper*

The *TS-64 Transient Shaper* plug-in provides powerful control over the dynamics of audio tracks and mixes.

In a musical context, the term *transient* refers to a sudden increase in sound output that occurs for a short period of time. For example, the attack portion of a drum hit is a transient.

Unlike a typical compressor, *TS-64 Transient Shaper* lets you shape the audio signal's attack phase *independently* of the decay/sustain phase.

TS-64 Transient Shaper is primarily designed for drums and percussion, but can also be useful on other percussive sounds, such as guitar and electric piano.

TS-64 Transient Shaper features include:

- Powerful envelope/transient-detection.
- Linear-phase filtering.
- Gain-shaping.
- Shape the transients independently of the tail or ambience.
- Automatable parameters.
- Smooth, zipperless output.

For more information, see the *TS-64 Transient Shaper* online Help.

VC-64 Vintage Channel

Figure 233. *VC-64 Vintage Channel*

Taking full advantage of SONAR's internal 64-bit double precision processing, *VC-64 Vintage Channel* offers the classic sound of sought-after analog channel strips and dynamics processors.

For more information, see the *VC-64 Vintage Channel* online Help.

VX-64 Vocal Strip

Figure 234. *VX-64 Vocal Strip*

VX-64 Vocal Strip is a multi-functional plug-in that combines a series of effects specifically optimized and streamlined for vocal processing. Combining compression, expansion, equalization, deessing, doubling, delay and tube saturation in one convenient plug-in, *VX-64 Vocal Strip* is designed to make it fast an easy to enhance any vocal track.

VX-64 Vocal Strip features include:

- 5 professional quality effect modules, each with its own bypass toggle.
- All modules are specifically tuned for vocal processing.
- Advanced tube saturation modeling available on input, output and EQ modules.
- Deesser with switchable center frequency and threshold.
- Configurable effect chain routing.
- Smooth, zipperless automatable parameters.
- Library of presets.

For more information, see the *VX-64 Vocal Strip* online Help.

See:

MIDI effects

Instruments

MIDI effects

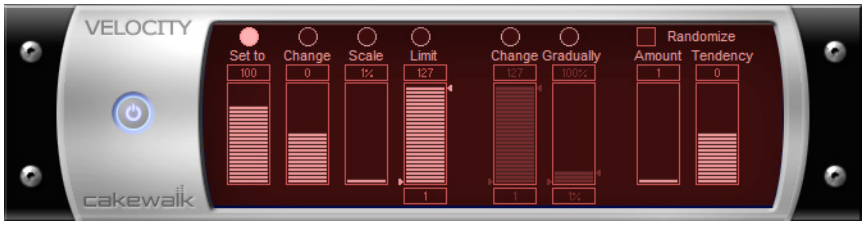
MFX Arpeggiator

Figure 235. *MFX Arpeggiator*

The **Arpeggiator** command applies an arpeggio to its input and plays it back in real time. You can make it arpeggiate with a swing feel, or straight and staccato or legato, vary its speed and direction, and specify its range.

MFX Change Velocity

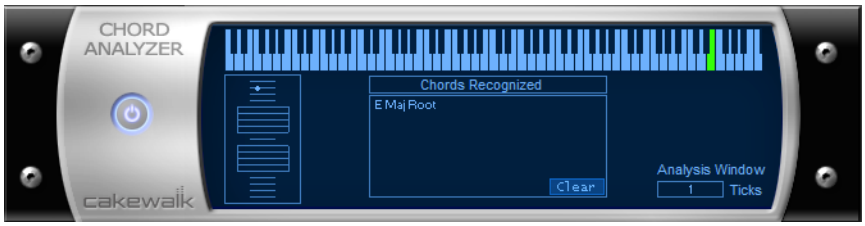
Figure 236. *MFX Velocity*



The **Velocity** effect lets you adjust velocities of MIDI notes. You can set velocity values, set scale values, add specific or random offsets, create smooth transitions, and limit the velocity range.

MFX Chord Analyzer

Figure 237. *MFX Chord Analyzer*



The **Chord Analyzer** command analyzes chords. You select the notes to be analyzed in one of SONAR's windows, then open the Chord analyzer and press the **Audition** button. The chord

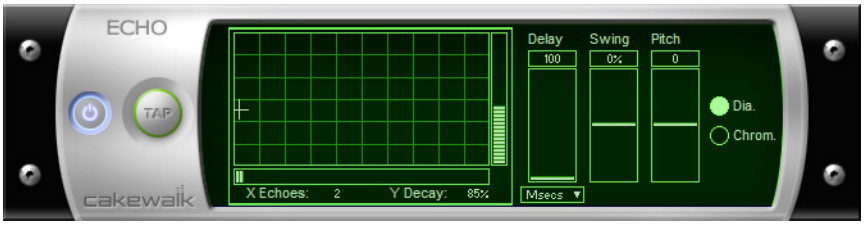
appears on the MIDI display and the staff, and its name with possible alternatives appears in the Chords recognized box.

You can play the notes on your MIDI input device and have the Chord Analyzer identify the chords in real time. You do not have to set to playback.

You can open the Chord Analyzer in the Track and Console views, press Playback and have the Chord Analyzer identify the chords in real time.

MFX Echo/Delay

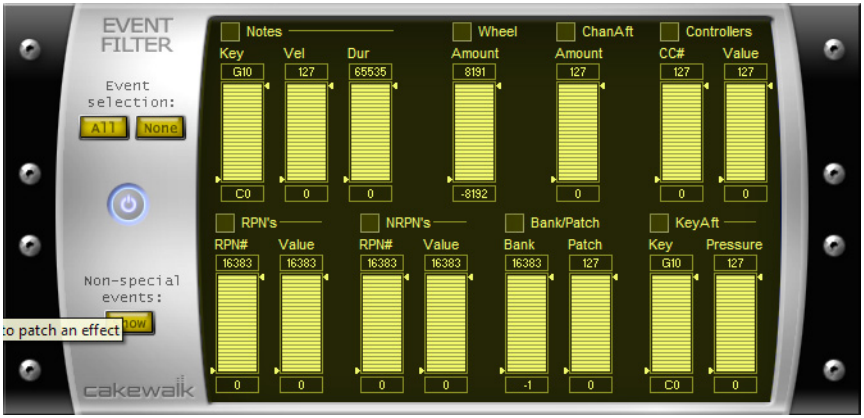
Figure 238. *MFX Echo/Delay*



The **Echo Delay** command creates a series of repeating echoes of each note. The echo notes can decrease or increase in velocity, and can be transposed from the original by regular intervals.

MFX Event Filter

Figure 239. *MFX Event Filter*



The **Event Filter** command lets you remove events from the MIDI data, keeping or passing through only those events that you specify. The Event Filter effect works almost identically to the event filter used by the **Edit > Select > By Filter** command. For more information, see “Event Filters” on page 500.

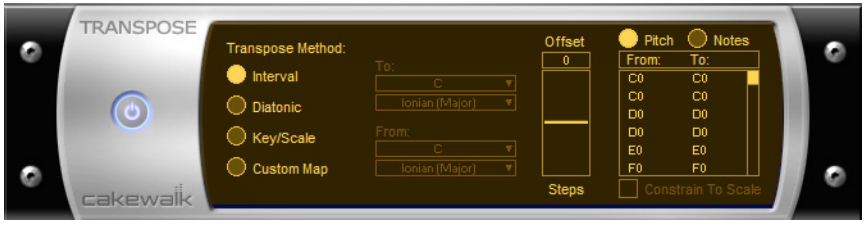
MFX Quantize

Figure 240. *MFX Quantize*

The **Quantize** command moves events to (or towards) an evenly-spaced timing grid. The Quantize effect is similar to the **Process > MIDI Effects > Cakewalk FX > Quantize** command. For more information, see “Other Settings” on page 489.

MFX Transpose

Figure 241. *MFX Transpose*



The **Process > MIDI Effects > Cakewalk FX > Transpose** command is a flexible transposition feature. You can perform simple chromatic or diatonic transpositions, transpose from one key to another, or define your own custom transposition.

See:

Audio effects

Instruments

Instruments

Cakewalk TTS-1

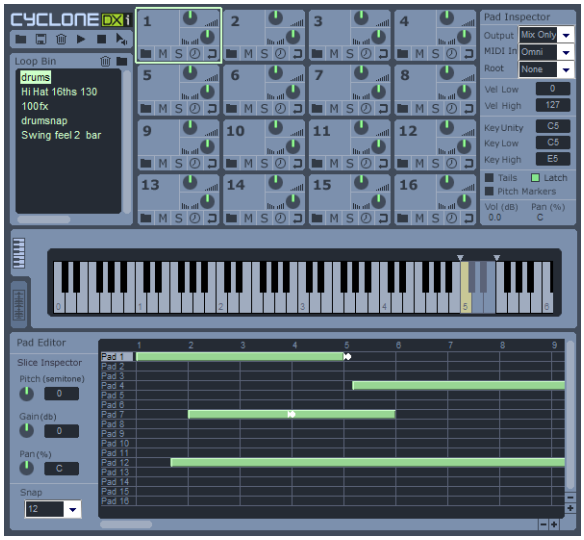
Figure 242. *Cakewalk TTS-1*

Cakewalk TTS-1 is a GM2 (General MIDI 2) compatible, multi-timbral, multi-output, software synthesizer featuring a newly developed software synthesis engine, with 256 sounds and 9 drum sets built in.

For more information, see the *Cakewalk TTS-1* online Help.

Cyclone

Figure 243. *Cyclone*



The Cyclone DXi is a 16-part phrase sampler with beat-matching and extensive loop editing capabilities. With Cyclone you can trigger different loops of different tempos and Cyclone will automatically play them back at the same tempo, in sync with little or no signal degradation. Cyclone is similar to a software-based sampler in that you can trigger the pads from the mouse, a MIDI keyboard, or from MIDI data in a track; the difference is that is works with entire loops or phrases, similar to Dr. Rex, the AKAI MPC 4000 or many other Groove-station-like hardware products. Cyclone takes Phrase sampler a step further because it lets you edit individual loop slices or make other changes on the slice level.

For more information, see the *Cyclone* online Help.

Dimension LE Synth with Garritan Pocket Orchestra

This special version of the Dimension Pro synth features over 400 sound programs, ranging from real bass, organ and electric piano samples to cutting-edge synth sounds and rhythmic grooves. It also includes the special edition of the Garritan Pocket Orchestra, which has been programmed specifically for Dimension LE and features orchestral instrument libraries of unrivaled quality that include strings, brass, woodwinds, keyboards, and percussion sounds.

Dimension LE is powered by Cakewalk's Expression Engine providing several types of synthesis capabilities including multi-sample rendering, wavetable synthesis, waveguide synthesis as well as REX playback and manipulation.

Figure 244. *Dimension LE*

For more information, see the *Dimension LE* online help.

DreamStation DXi2 (32-bit Only)

Figure 245. *DreamStation DXi2*

DreamStation DXi2 is a fully automatable polyphonic analog synthesizer.

DreamStation DXi2's features include:

- Subtractive synthesis combined with FM synthesis.
- 3 oscillators, multimode self oscillating IIR filter, VCA, LFO, user EG for each voice.
- Available waveforms: sine, triangle, sawtooth, pulse, square, noise.
- Available filter types: 12dB/Octave Lowpass, Highpass, Bandpass, 24dB/Octave Lowpass and Formant.
- A maximum of 16 voices polyphony.
- Linear frequency modulation, Hard synchronization, Ring modulation, Distortion.

For more information, see the *DreamStation DXi2* online Help.

DropZone

Figure 246. *DropZone*

There's no easier way to add your own style to a track. Just drag and drop a sample into *DropZone*, and make it part of your beat. It is the ideal synth for creating remixes or for building the perfect hook for your song. *DropZone* includes real instrument sounds, drums, vocals, REX-format loops and more.

For more information, see the *DropZone* online help.

Pentagon I

Figure 247. *Pentagon I*

Pentagon I Performance Oriented Synthesizer

For more information, see the *Pentagon I* online Help.

PSYN II

Figure 248. *PSYN II*

PSYN is a very powerful virtual analog synthesizer, which recreates sounds of old analog and vintage synthesizers.

Four oscillators with up to four waveforms each plus noise, a sub oscillator, several modulation capabilities, two filters, five envelope generators, three low frequency oscillators and a very flexible modulation array are the resources PSYN offers, combined with full automation and a powerful MIDI Learn mode.

For more information, see the *PSYN II* online Help.

Rapture LE

Figure 249. *Rapture LE*

Combining power, elegance, control, and unbeatable sounds, *Rapture* is one of the most exciting synthesizers available. Capable of producing rich, hypnotic, and rhythmic basses, leads, and pads, *Rapture* is perfect for performing and designing the modern synthesized sounds igniting today's pop, dance, and electronic music.

For more information, see the *Rapture LE* online Help.

Roland GrooveSynth

Figure 250. *Roland GrooveSynth*

Roland GrooveSynth provides genuine Roland groove box and synth sounds.

For more information, see the *Roland GrooveSynth* online Help.

RXP REX Player

Figure 251. *RXP*

RXP DXi is a virtual instrument that plays REX files. The REX file format stipulates that audio slices play back individually, usually via MIDI. This allows arbitrary playback of slices and conformation of loops to the host tempo map.

For more information, see the *RXP* online Help.

Session Drummer 2

Figure 252. *Session Drummer 2*

Session Drummer 2 is a professional drum sampler and pattern player. It features Cakewalk's patented Expression Engine technology, an anti-aliased, real-time sound production system for multisample audio playback. You can load single samples (Wave or AIFF files), or multisamples, (SFZ files) which already contain key mapping and velocity switching assignments. You can load samples in any bit depth and sample rate, in mono or stereo, in looped or unlooped format. Wave and AIFF files can be loaded directly, or as a sample inside an SFZ definition file.

Samples can be of any bit depth (8 to 32-bit), any sampler-ate, and either mono or stereo. Each sample in a multisample can be a standard PCM Windows wave file (.wav), an Apple audio format (.aiff) or a compressed file in the standard, high-quality, open and royalty-free ogg-vorbis format (.ogg).

Alternatively, it is possible to open multisample definition files (.sfz) or individual samples by drag and dropping them into an instrument pad.

For more information, see the *Session Drummer 2* online Help.

Session Drummer 3

Figure 253. *Session Drummer 3*

Session Drummer 3 is a professional drum sampler and pattern player. It features Cakewalk's patented *Expression Engine* technology, an anti-aliased, real-time sound production system for multisample audio playback. *Session Drummer 3* accurately replicates the sound of its real-world counterpart and features a highly-detailed user interface as well as simple but powerful controls. You can load single samples (Wave or AIFF files), or multisamples (SFZ files) which already contain key mapping and velocity switching assignments. You can load samples in any bit depth and sample rate, in mono or stereo, in looped or unlooped format. Wave and AIFF files can be loaded directly, or as a sample inside an SFZ definition file.

Samples can be of any bit depth (8 to 32-bit), any sample rate, and either mono or stereo. Each sample in a multisample can be a standard PCM Windows Wave file (.wav), an Apple audio format (.aiff) or a compressed file in the standard, high-quality, open and royalty-free ogg-vorbis format (.ogg).

Alternatively, it is possible to open multisample definition files (.sfz) or individual samples by dragging them to an instrument pad.

Session Drummer 3 features include:

- MIDI pattern playback.
- Multi-velocity acoustic and electronic drum kits.
- A comprehensive collection of presets and MIDI-based loop files, providing you with a creative jump-start.
- An animated user interface (UI).
- Controls for volume, pan and tuning of each drum kit piece.

For more information, see the *Session Drummer 3* online Help.

sfz Sound Font Player

Figure 254. *sfz Sound Font player*

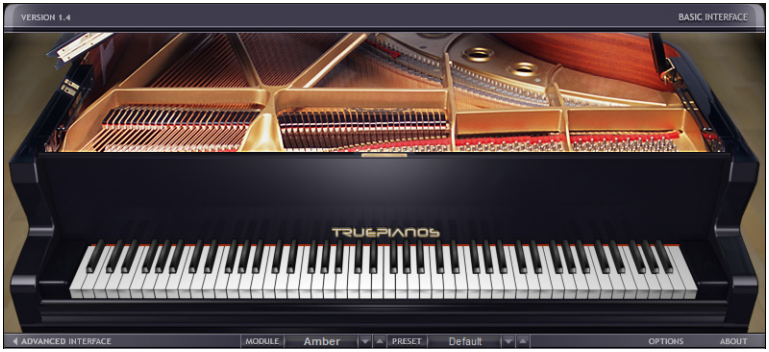
sfz is a high-quality multitimbral SoundFont player. sfz can play SoundFont (.sf2), wave (.wav) and ogg-vorbis compressed (.ogg) files.

For more information, see the *sfz* online Help.

True Pianos (x86, x64)

Note: *The TruePianos Amber Module synth is only available in SONAR Producer.*

Figure 255. *TruePianos VST*



One of four modules that currently ship with the full version of 4Front Technologies' *TruePianos VSTi*, the *TruePianos Amber Module* provides world-class, playable piano sounds through its combination sampling, modeling, and synthesis sound design. *TruePianos* sounds and feels great, just like a real acoustic piano, with all the important characteristics: sympathetic resonance, inter-string harmonics, repedalling and more.

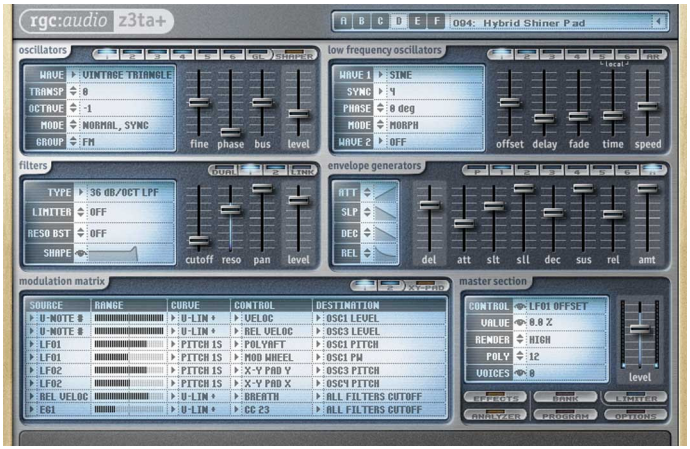
- Designed to blend transparently with the musician's hands through its unique capabilities of matching to the players own playing style (and characteristics of his/her MIDI keyboard) with the help of intuitive controls.
- Optimized for real-time performance, with low CPU usage even at 96khz host sampling rates and advanced polyphony levels.

For more information, see the *TruePianos VST* online Help.

Z3ta+

Note: *The Z3TA+ synth is only available in SONAR Producer.*

Figure 256. *Z3TA+*



Z3TA+ is an award-winning analog-style synthesizer with incredible sound shaping capabilities. The exclusive bandlimited Waveshaping technology makes Z3TA+ one the best and most respected synths in the industry.

Whether you're looking for lush, warm pads, slowly evolving atmospheres, searing leads or sparkling FM sounds, Z3TA+ delivers the goods, and includes hundreds of professional presets.

For more information, see the *Z3TA+* online Help.

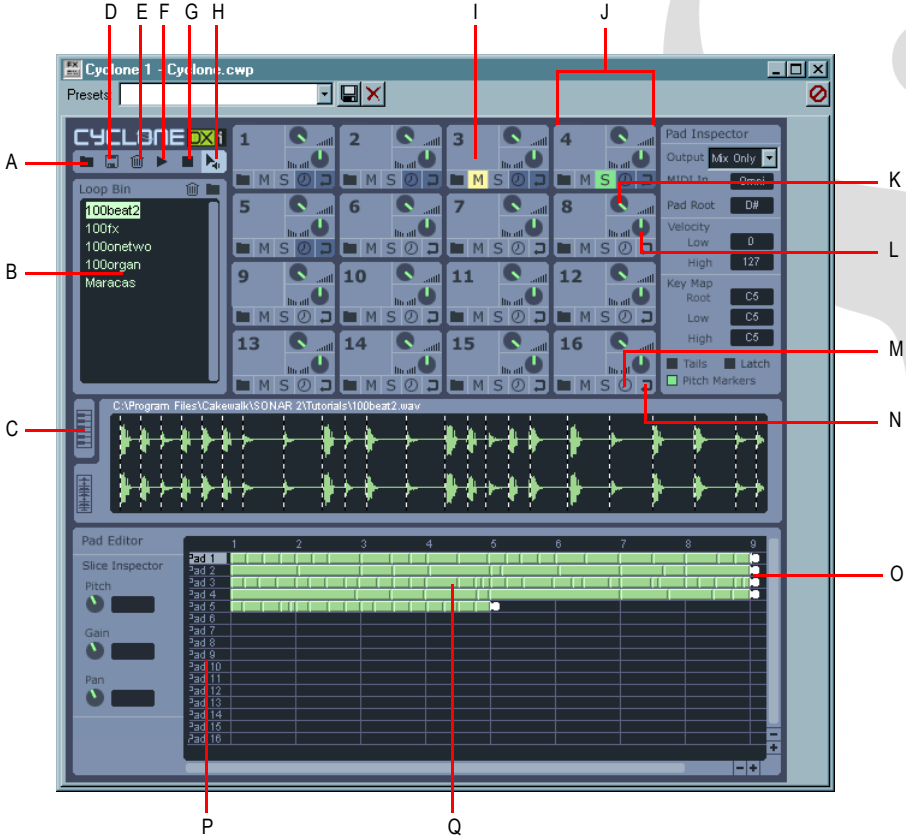
See:

Audio effects

MIDI effects

Cyclone

Figure 257. *Cyclone*



A. *Import Sound Bank* ***B.*** *Loops* ***C.*** *Key Map view tab* ***D.*** *Export Sound Bank* ***E.*** *Trash button* ***F.*** *Play button* ***G.*** *Stop button* ***H.*** *Auto Preview button* ***I.*** *Pad* ***J.*** *Pad Group* ***K.*** *Volume knob* ***L.*** *Pan knob* ***M.*** *Sync button* ***N.*** *Loop button* ***O.*** *Track handles* ***P.*** *Selected pad* ***Q.*** *Tracks*

See:

Cyclone Toolbar

Pad Groups

Pad Inspector

Loop View and Key Map View

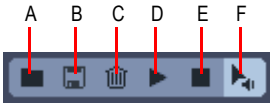
Pad Editor

Slice Inspector

Using Cyclone

Cyclone Toolbar

The following graphic shows each of Cyclone's toolbar buttons:



A. *Import Sound Bank* ***B.*** *Export Sound Bank* ***C.*** *Trash* ***D.*** *Auto Preview* ***E.*** *Stop* ***F.*** *Preview*

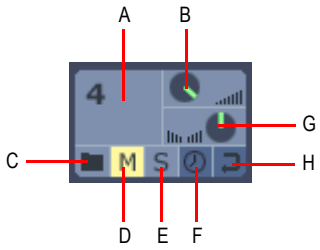
The following table describes each of Cyclone's buttons:

Button	Description
Import Sound Bank	Opens the **Open** dialog so you can load an existing Sound Bank.
Export Sound Bank	Opens the **Save As** dialog to save the current settings as a Sound Bank (.cyc).
Trash	Clears the contents of the project.
Preview	Plays the selected pads or slices.
Stop	Stops playback.
Auto Preview	When **Auto Preview** is on, you can preview the sound of a slice by clicking a slice in the Loop view or an event by clicking an event in the Pad Editor. Also, you can click and drag a slice over events in the Pad Editor, releasing the mouse button when you hear the event you want to replace.

Table 206.

Pad Groups

The following graphic shows a close-up of a Cyclone pad group:



***A.** Pad **B.** Volume **C.** Load **D.** Mute **E.** Solo **F.** Sync **G.** Pan **H.** Loop*

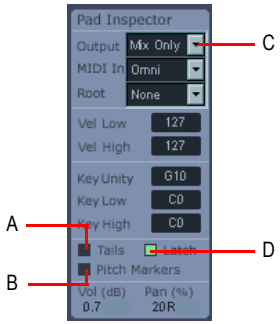
A Pad Group in Cyclone has the following controls:

Control	Description
Pad	The trigger for playing a loop.
Volume knob	Adjusts the volume of the Pad Group. The volume value is displayed in the Pad Inspector.
Pan knob	Adjusts the pan of the Pad Group. The pan value is displayed in the Pad Inspector.
File Load button	Opens the **Open** dialog where you can navigate to the directory or directories where you store your files.
Mute button	Mutes the playback of the Pad Group.
Solo button	When selected, only that Pad Group plays.
Sync button	Synchronizes the playback of the Pad Group to SONAR. When selected, the Pad Group follows SONAR's tempo and pitch.
Loop button	When selected, the playback of the Pad Group repeats continuously.

Table 207.

Pad Inspector

The Pad Inspector has additional pad group controls:



***A.** Click to enable tails for current track **B.** Click to force Cyclone to follow SONAR's Pitch markers **C.** Select an audio output **D.** Click to toggle on/off Latch mode*

In the Pad Inspector there are the following controls:

Control	Description
Output	You can select from one of 16 audio outputs or use the Mix Only setting to use the Master out.
MIDI In	You can set which MIDI channel the pad group responds to. Each pad group could have a unique MIDI Input channel.
Pad Root	This setting is read from the file when it is imported. The first loop sets the Pad Root value for each additional loop.
Velocity—Low	The minimum velocity value that triggers the pad group.
Velocity—High	The maximum velocity value that triggers the pad group.
Key Map—Unity	The MIDI note value at which the loop plays at the Pad Root pitch. This value is assigned to a loop when it is imported. You can change the Unity value in the Pad Inspector or in the Key Map view.
Key Map—Low	The lowest MIDI note value that triggers the pad group. Both the Low and High not values transpose the pitch of the loop if they are different from the Unity note value. The transposition is relative to the Unity note. The played pitch of the loop is not same as the MIDI note that triggers it unless the Unity note and the Pad Root note are the same.
Key Map—High	The highest MIDI note value that triggers the pad group.
Tails	The tails feature extends the "tail" or decay of a slice which may otherwise have ended prematurely, drowned out by the next slice. This is particularly useful when you substitute a longer slice with a shorter one leaving room for a tail to sound.

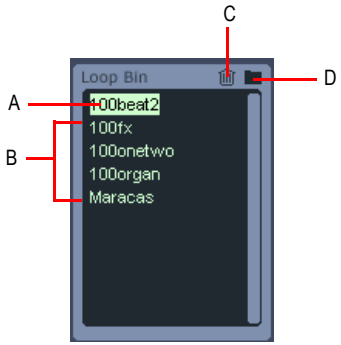
Table 208.

Control	Description
Latch	The **Latch** option gives you a second mode for triggering pads. In Latch mode, a Groove Clip plays continuously when triggered until it is triggered again. With Latch mode disabled, a pad only plays as long as the key or mouse button is held and stops when you release. If you want to set all pads to the same Latch state, hold down the SHIFT key while setting the Latch for any one pad.
Pitch Markers	This option forces Cyclone to follow SONAR's Pitch markers. When a Pitch marker is encountered, the loop is transposed by the same number of semi-tones as the pitch change in SONAR.

Table 208.

Loop Bin

The Loop bin, located right below the **Cyclone** toolbar, is where you can place loops you want to use in Cyclone. From the Loop bin you can drag and drop loops onto a Pad or into the Pad Editor.



***A.** Current Loop **B.** Loops **C.** Click to delete selected loop **D.** Click to load a loop*

Loop View and Key Map View

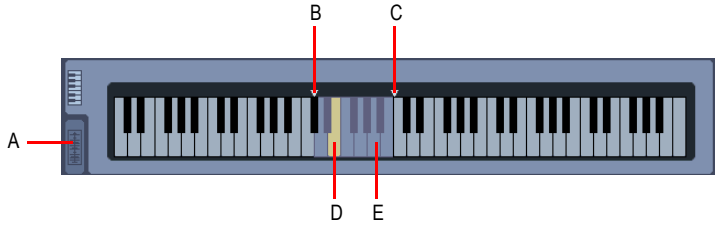
The Loop view displays the content of the loop you have selected in the Loop bin. If the loop is an ACIDized loop, the loop's transient markers separate the file's slices. From the Loop view, you can drag a slice onto an event in the Pad Editor.

Figure 258. *Loop view*

A. *Click to open the Key Map view* ***B.*** *Slices*

The Key Map view shares the same space in Cyclone as the Loop view. You toggle between the two views by clicking on one of the tabs to the left of whichever view is displayed. The keyboard in the Key Map view shows the Unity note (in orange) and the range of notes that trigger the pad group (in blue). Drag the Unity note to change its value. Drag the white triangles to extend the range of MIDI note values that trigger the pad group.

Figure 259. *Key Map view*



A. *Current Loop* ***B.*** *Key Map Low* ***C.*** *Key Map High* ***D.*** *Unity note; plays loop at the Pad Root pitch* ***E.*** *Key Map range appears in blue*

Pad Editor

The Pad Editor displays up to 16 “tracks,” one for each pad in Cyclone. Each track has the same number as the pad it represents. Each track is made up of events. An event represents a slice of a ACIDized loop, or in the case of standard wave files, it represents the entire file. Each track in the Pad Editor can be made up of slices from any number of different files. Each track in the Pad Editor terminates with a Track Handle. A Track Handle marks the point at which the track loops back to the beginning. You can move Track Handles using the mouse to any point in the Pad Editor, shortening or lengthening the length of the track.

Slice Inspector

The Slice Inspector has pitch, gain and pan offset controls. You can change the pitch of the slices in a loop to change the melody of the loop. If you want to edit multiple slices at the same time, select multiple slices by SHIFT-selecting them and adjust the controls you want.

Using Cyclone

Cyclone is a multi-output synth, and you launch it the same way you launch other synth's: by inserting it into a SONAR project. There are two basic ways to insert synths in SONAR:

- You can insert synths from the Synth Rack view or with the **Insert > Soft Synths** command. If you use this method, you can choose to have SONAR create the necessary audio and MIDI tracks, and patch them together correctly. If you want to use multiple audio tracks to take advantage of SONAR's multi-output support, you need to create and patch additional MIDI tracks manually to feed the additional audio tracks.
- You can insert synths into Fx bins of individual audio tracks. If you use this method, you need to set a MIDI track's **Output** field to the name of the synth you inserted. Then you can record MIDI data in the MIDI track to play the synth with. This method does not allow you to use multiple outputs.

For step by step instructions, see "Inserting Soft Synths" on page 571, "Multi-port Soft Synths" on page 578, and "Converting Your Soft Synth Tracks to Audio" on page 579.

Inserting Soft Synths

Synth Rack View

Multi-port Soft Synths

Playing a Soft Synth

Converting Your Soft Synth Tracks to Audio

Muting and Soloing Soft Synth Tracks

To Remove A Soft Synth from a Track or Bus

Note: *This documentation refers to any audio data that you can import into Cyclone as **loops**, referring to ACIDized loops and standard Wave files.*

To Load Loops into Cyclone

- Click the folder icon that's on the Loop bin to display the **Open** dialog. Select a loop and click **Open**. Cyclone loads the loop into the Loop bin.

  OR

- Click a folder icon that's on a particular Pad that you want to load a loop into. When the **Open** dialog appears, select a loop and click **Open**. Cyclone loads the loop into both the Pad where you clicked the folder icon and the Loop bin.

  OR

- Drag a loop into Cyclone from SONAR's Clips pane or Media Browser view.

Note: *ACIDized and Riff Wave files imported into Cyclone can not be more than 64 beats long. Regular wave files are limited to 30 seconds. Cyclone does not support 8-bit files.*

To Audition Loops

- Select a loop in the Loop bin, and then click Cyclone's **Play** button.

To Play Loops

1. Assign a loop to a pad or pads (see "To Assign a Loop to a Pad" on page 1094).
2. Select the pad or pads you want to play by clicking on them.
3. Click the **Preview** button to play the selected pads.

   If the **Loop** button for that pad is depressed the loop plays indefinitely; you can stop it by clicking the Pad again.

   If the **Loop** button is not depressed, the loop stops when it reaches the end of its original length. You can stop it before then by clicking the Pad.

You can also trigger the Pads with a MIDI controller, or with recorded MIDI data.

To Play a Loop in Latch Mode

1. Assign a loop to a Pad (see "To Assign a Loop to a Pad" on page 1094).
2. In the Pad Editor, select the track you want to loop in Latch mode.
3. In the Pad Inspector, click the **Latch** control to enable it. The **Latch** control indicator appears green when enabled.
4. Click the mouse on the pad to start the loop playing.
5. Click the mouse on the pad again to stop playing.

The loop stops playing as soon as you release the mouse button.

To Assign a Loop to a Pad

- Drag a loop from the Loop bin to a Pad.

  OR

- Click a folder icon that's on a particular Pad that you want to load a loop into. When the **Open** dialog appears, select a loop and click **Open**. Cyclone loads the loop into both the Pad where you clicked the folder icon and the Loop bin.

  OR

- Drag a loop onto a Pad from SONAR's Clips pane or Media Browser view.

You can assign one loop per Pad.

To Synchronize a Loop to Cakewalk's Tempo

- Click the **Sync** button that's on the Pad that the loop is assigned to. The **Sync** button lights up

when it's engaged.

To Set a Loop to Follow Cakewalk's Pitch Markers

1. In the Pad Editor, select the track you want to follow pitch markers.
2. In the Pad Inspector, click the **Pitch Markers** control. The **Pitch Markers** control appears green when enabled.

To Assign MIDI Keys to a Pad

1. Click the Pad that you want to trigger.
2. Click the **Keyboard** button in the Loop view to display the Key Map view.

   The blue keys between the **Pitch Range** markers show what MIDI keys trigger the Pad. The yellow key is the **Root Note**, which triggers the loop at its original pitch.
3. Drag the edge of the **Pitch Range** (the blue keys within the white triangle markers) to change the range of notes that trigger the loop. If the loop's pitch changing function is turned on, each MIDI key in the trigger range transposes the loop by the trigger note's distance from the Root Note.
4. Drag the yellow key to change the **Root Note**. The **Root Note** does not have to be in the trigger range.
5. In the **MIDI Chn** field, choose the MIDI channel that the MIDI notes will use to trigger this pad with.

You can assign the same key ranges to all the Pads if you want. You can assign different velocity ranges to each pad, also.

To Assign a Velocity Range to a Pad

1. Click the Pad that you want to assign a velocity range to.
2. Click the **Keyboard** button in the Loop view to display the Key Map view.
3. In the **Velocity Low** field, fill in the lowest velocity that you want to trigger the Pad with.
4. In the **Velocity High** field, fill in the highest velocity that you want to trigger the Pad with.

Now the Pad only plays its loop when the Pad receives a MIDI note within its velocity range.

To Play a Pad with Recorded MIDI Data

1. Record some MIDI data into a SONAR MIDI track.
2. In the MIDI track's **Output** field, choose **Cyclone**. Cyclone must have been already inserted into the project in order for it to appear as a choice in the **Output** field.
3. In the MIDI track's **Ch** field, choose the number of the Cyclone Pad that you want to trigger with this MIDI track.

See:

Controlling Individual Pads—Volume, Pan, Mute, Solo, Sync, Looping, and Content

Mixing Down Cyclone

Controlling Individual Pads—Volume, Pan, Mute, Solo, Sync, Looping, and Content

Each Pad has the following controls:

- **Volume knob.** Turn to adjust.
- **Pan knob.** Turn to adjust.
- **Folder icon.** Click this to import a loop to an individual Pad.
- **Mute button.** Click this to mute or unmute the loop that's assigned to an individual Pad.
- **Solo button.** Click this to solo or un-solo the loop that's assigned to an individual Pad.
- **Sync button.** Click this to synchronize (or unsynchronize) the Pad's loop to SONAR's pitch and tempo.
- **Loop button.** Click this to cause or prevent the Pad's loop from repeating indefinitely between its track length markers that are in the Pad Editor.

To Export a Sound Bank

1. Click the **Export Sound Bank** button in the **Cyclone** toolbar.

   The **Save As** dialog appears.
2. Navigate to the directory where you want to save the Sound Bank.
3. Enter a name for the Sound Bank.
4. Click **OK**.

Cyclone saves your Sound Bank. All wave files assigned to pads are saved. You can choose that Sound Bank in any Cyclone project SONAR automatically saves your current Cyclone settings, so you do not need to save a Sound Bank unless you want to use these settings in a different project.

To Import a Sound Bank

1. Click the **Import Sound Bank** button on the **Cyclone** toolbar.

   The **Open** dialog appears.
2. Navigate to the directory where you saved your Sound Bank, select it and click **OK**.

Cyclone loads the loops and associated settings that make up the Sound Bank you loaded.

To Clear the Contents of a Project

- Click the Trash icon in the **Cyclone** toolbar.

  Cyclone deletes all loops from your project.

Mixing Down Cyclone

You mix down a Cyclone session the same ways you mix down any synth.

For step-by-step instructions, see “Converting Your Soft Synth Tracks to Audio” on page 579.

Loop Editing

Clicking a loop in the Loop bin displays that loop in the Loop view. The Loop view displays the selected loop as a series of slices that separate the transients in the loop. When the **Auto-preview** button is depressed, you can click each of the slices to hear it. If the loop is assigned to a Pad, the slices also appear in the Pad Editor as a series of *events*, which you can also click to hear. Clicking an event in the Pad Editor also highlights the corresponding slice in the Loop view.

You can drag slices from the Loop view to any position in any track in the Pad Editor in order to add data to a Pad, or replace an already-existing event If you can drag a slice along a series of events in the Pad Editor, if the **Auto-preview** button is depressed, each event sounds as you drag across it, enabling you to hear events before you decide to replace them.

To Add or Replace Parts of a Loop

1. In the Loop bin, click the loop that you want to use as source material.
2. Make sure that the **Auto-preview** button is on.
3. Drag the slice that you want to use from the Loop view to the slice or empty space in the Pad Editor that you want to place the slice.
4. If you dragged to an area that’s to the right of the Track Length marker, drag the marker to the right until it’s to the right of the new slice.

To Change the Length of a Track

- Drag the Track Length marker to the right or left to lengthen or shorten the track, respectively. You can include empty space in your track. If you depress the **Loop** button for that Pad (track), the track loops continuously between the beginning of the track and the Track Length marker.

To Set the Number of Divisions for a Slice

You can set the number of divisions in each slice. This controls how exact the placement of your slices is within the Pad Editor. Each division represents a place where a slice can “snap to” or begin.

1. In the Pad Editor, click the down arrow next to the **Snap** field.
2. From the drop-down menu that appears, select one of the following:
   - None
   - 1/beat
   - 2/beat
   - 3/beat
   - 4/beat
   - 8/beat
   - 12/beat

- 16/beat

The number of divisions per beat in Cyclone is set.

Keyboard Shortcuts in Cyclone

The following table lists the keyboard shortcuts in Cyclone and explains what they do:

Keyboard Shortcut	Description
SHIFT selecting	Hold the SHIFT key to select multiple slices in the Pad Editor.
SHIFT drag	Hold the SHIFT key while dragging to maintain a slice's time.
CTRL drag	Hold the CTRL key while dragging to copy a slice.
SHIFT CTRL drag	Hold the SHIFT and CTRL keys simultaneously while dragging to copy the slice and maintain the slice's time.
Left and Right arrows	Turn on Auto Preview, select a slice in the Loop view or Pad Editor, and use the left and right arrow keys to listen to individual beats.

Table 209.

Undo and Redo

You can undo any edit you make in Cyclone. If you decide, after you have used Undo, that you want the edit after all, you can Redo the edit. The number of edits you can Undo and Redo in Cyclone is unlimited.

To Undo an Edit

Press CTRL+Z.

To Redo an Edit

Press SHIFT+CTRL+Z.

Menu Reference

Use the Contents or Search tabs to find the menu command topic you are looking for.

File > New

The **File > New** command opens the New Project File dialog box where you choose a template for a new file. See “New Project File dialog” on page 1365 for more information.

See also:

To create a new project file

File > Open

The **File > Open** command opens the **Open** dialog box. Use the **Open** dialog to open an existing project. See “Open dialog” on page 1367 for more information.

File > Revert

The **File > Revert** command opens the **Revert** dialog, which allows you to load an earlier version of the current file. To use the Revert feature, file versioning must be enabled in the **Global Options** dialog on the **Autosave and Versioning** tab.

File > Close

The **File > Close** command closes the current project. If multiple projects are open, the project with focus is closed.

File > Save

The **File > Save** command saves the current project. If multiple projects are open, the project with the focus is saved.

For more information, see Saving Your Work.

File > Save As

The **File > Save As** command opens the **Save As** dialog where you can save a project with the name, directory, and format you specify. The formats available are:

- **Normal.** Also known as a Project file (extension .cwp)
- **Bundle.** Contains all the audio and MIDI data (extension .cwb)
- **Template.** Save project settings so you can use them with new projects (extension .cwt)
- **MIDI Format 0.** Standard MIDI File that has all channels merged into one track.
- **MIDI Format 1.** Standard MIDI File that keeps each channel on a separate track.
- **Riff MIDI Format 0.** Riff MIDI File of Format 0.
- **Riff MIDI Format 1.** Riff MIDI File of Format 1.

See also:

Saving Your Work

Labeling Your Projects

To Display and Edit Project Information

File Statistics

File > Info

The **File > Info** command opens the **File Info** dialog box where you can enter information about your project, including author, title and copyright. For more information, see File Info dialog.

File > Project Audio Files

The **File > Project Audio Files** command opens the **Project Files** dialog. For information, see Project Files dialog.

File > Import > Audio

The **File > Import > Audio** command lets you import Digital audio information stored in wave file format into any track (or, for stereo, two tracks) of a project.

The **File > Import > Audio** command supports the following digital audio file types:

- Wave (extension .wav)
- MPEG (extensions .mpeg, .mpg, .mp2, and .mp3)
- Windows Media files (extension .wma)
- Apple AIFF (extensions .aif and .aiff)
- MS Streaming Format (extension .ams)
- Audio files (extensions .au and .snd)

The sampling rate for a project is set based on your default sampling rate. If the sampling rate from the wave file does not match the sampling rate in your project, then it will be converted to the current project's sampling rate.

See:

Importing Audio CD Tracks

File > Import > Audio CD

The **File > Import > Audio CD** command lets you import tracks from audio CD's into any track of a project. Any number of CD tracks can be imported. For each track selected, a new Audio track is created in the project.

The **File > Import > Audio CD** command supports CD Audio Track files (extension .cda).

Audio tracks on a CD always have a bit depth of 16, but you can choose to import the tracks at a higher bit depth if desired.

See:

Importing Audio CD Tracks

File > Import > Video File

SONAR's **File > Import > Video File** command lets you include an AVI, MPEG, or QuickTime video in your project. This video is shown in real time as your project plays. The Video view displays the current time (as in the Big Time view) and the video itself. The display in the Video view is

synchronized with the Now time, giving you convenient random access to the video stream. This makes it easy to align music and digitized sound to the video.

See:

Video playback, import, and export

File > Import > MIDI

The **File > Import > MIDI** command opens the **Import MIDI** dialog. You must first select a MIDI track to make the command available. This dialog lets you import MIDI files and Project5 patterns.

For more information, see Exporting, and Importing MIDI Groove Clips.

File > Export > Audio

The **File > Export > Audio** command lets you save and export your projects as MP3 files and other types of formats.

For more information about the **File > Export > Audio** command, see Preparing Audio for Distribution.

See also:

Routing and Mixing Digital Audio

File > Export > Video

Use the **File > Export > Video** command to combine the audio data and any video data in your SONAR project into an .avi file, Windows Media Video file, or QuickTime file. The audio in your project is mixed down automatically and saved with the video in the new file.

For more information about video files, see Video playback, import, and export and Preparing Audio for Distribution.

File > Export > MIDI Groove Clip

The **File > Export > MIDI Groove Clip** command opens the **Export MIDI Groove Clip** dialog. You must first select a MIDI Groove Clip to make the command available.

For more information, see Exporting, and Importing MIDI Groove Clips.

File > Export > OMF

SONAR's **File > Export > OMF** command opens the **Export OMF** dialog.

File > Export > Track Template

This command opens the **Export Track Template** dialog. Use this command to save a track template using the currently selected track as a template. For more information about track presets, see Working with Track Templates.

File > Print

The **File > Print** command opens your system's Print dialog box.

File > Print Preview

The **File > Print Preview** command opens the SONAR Print window, where you can view your document before you print it.

File > Print Setup

The **File > Print Setup** command opens your system's **Print Setup** dialog box.

File > Send

The **File > Send** command opens a blank email message and attaches the current project.

Note: *If you send a project file (extension .cwp) and your project contains audio data, the audio data is not attached along with the project file. If you want to send a project that contains both MIDI and audio data, use the bundle file format (extension .cwb). For more information, see Saving Your Work.*

File > Recent File

The recent file list at the bottom of the **File** menu lets you choose any file you have opened recently. Choosing a file in the list opens it immediately.

File > Exit

The **File > Exit** command closes SONAR. If you have made any changes since the last time you saved any of the open projects, SONAR prompts you to save the changes.

Edit > Undo

The **Edit > Undo** command reverses your last action. Successive **Undoes** cancel preceding actions in reverse order. To redo the action, see Edit > Redo.

Edit > Redo

The **Edit > Redo** command cancels a just-previous **Undo** command.

Edit > History

The **Edit > History** command opens the Undo History dialog which displays a history of your editing actions. You can set how many editing actions you want the **Undo History** dialog to store by changing the number in the **Maximum Undo Steps** field. The default value is **128**.

See:

Undo, Redo, and the Undo History

Edit > Select > All

The **Edit > Select > All** command selects everything in all open views. Any action affects all selected objects.

See:

Edit > Select > None

The **Edit > Select > None** command cancels all selections, with the result that nothing is selected.

See:

Selecting and Editing Events

Edit > Select > By Filter

The **Edit > Select > By Filter** command lets you change a selection to keep only events with the criteria you specify.

For more information, see Searching for Events.

See also:

Selecting and Editing Events

Event Filter Select Some/Search/Replace dialog

Edit > Select > By Time

The **Edit > Select > By Time** command lets you specify times from which and through which SONAR selects.

To select partial clips by time, see To Select Partial Clips Using Time Ranges and Tracks.

See also:

Select By Time dialog

Edit > Select > From = Now

The **Edit > Select > From = Now** command lets you specify the Now time as the time from which a selection extends.

The From and Thru times you select appear in the **Select** toolbar in the **From** and **Thru** fields. If you select a whole measure, the Thru time is the start of the next measure, which actually makes it a “to” time and not a “through” time.

Edit > Select > Thru = Now

The **Edit > Select > Thru = Now** command lets you specify the Now time as the time through which a selection extends.

The From and Thru times you select appear in the **Select** toolbar in the **From** and **Thru** fields. If you select a whole measure, the Thru time is the start of the next measure, which actually makes it a “to” time and not a “through” time.

Edit > Select > From = Start

The **Edit > Select > From = Start** command lets you specify the start of a piece as the time from which a selection extends.

The From and Thru times you select appear in the **Select** toolbar in the **From** and **Thru** fields. If you select a whole measure, the Thru time is the start of the next measure, which actually makes it a “to” time and not a “through” time.

Edit > Select > Thru = End

The **Edit > Select > Thru = End** command lets you specify the end of a piece as the time through which a selection extends.

The From and Thru times you select appear in the **Select** toolbar in the **From** and **Thru** fields. If you select a whole measure, the Thru time is the start of the next measure, which actually makes it a “to” time and not a “through” time.

Edit > Select > Select Track Envelopes with Selected Clips

Clicking the drop-down arrow that’s on the right side of the **Select tool** button in the **Track view** toolbar pops up a menu to select track envelopes. When you enable this function, the menu option has a checkmark next to it. That means when you select a clip in the Clips pane, any track envelopes in that track get selected too.

Edit > Cut

The **Edit > Cut** command lets you remove from the project and put on the clipboard any selected objects. You can specify the kinds of objects to cut in the Cut dialog.

You can paste the contents of the clipboard elsewhere.

See Edit > Paste.

See also:

Moving and Copying Clips

Erasing Tracks

Edit > Copy

The **Edit > Copy** command lets you put on the clipboard any selected objects. You can specify the kinds of objects to copy in the Copy dialog.

You can paste the contents of the clipboard elsewhere. See Edit > Paste.

To remove rather than copy objects, see Edit > Cut.

To make copies of linked clips, see Splitting and Combining Clips.

See also:

Moving and Copying Clips

Working with Partial Clips

Importing MIDI Files

Edit > Paste

The **Edit > Paste** command lets you put the contents of the clipboard into any appropriate place in your project. You can specify what, where, and how to paste in the Paste dialog.

To put data on the clipboard, see or Edit > Cut, Edit > Copy.

See also:

Moving and Copying Clips

Importing Material from Another SONAR Project

Importing MIDI Files

Edit > Delete

The **Edit > Delete** command removes selected objects from the project. It doesn't put them on the clipboard, so they can not be subsequently pasted. You can specify the kinds of objects to remove in the Delete dialog.

For more information, see To Delete Clips.

See also:

Moving and Copying Clips

Working with Partial Clips

Deleting Measures or Time from One or More Tracks

Edit > Bounce to Clip(s)

The **Edit > Bounce to Clip(s)** command lets you combine selected audio clips into a single clip.

Note: *Like any clips, slip-edited clips can be combined with other clips using the* ***Bounce to Clip(s)*** *command. When a slip-edited clip is combined with another clip, any slip-edited data (audio or MIDI events that are cropped from view) is overwritten.*

For more information, see Splitting and Combining Clips, and Bouncing to Clips.

See also:

Splitting and Combining Clips

Splitting and Combining Clips

Bouncing to Clips

Edit > Bounce to Track(s)

The **Edit > Bounce to Tracks** command lets you combine one or more audio tracks into a submix.

For more information about the **Edit > Bounce to Tracks** command, see Bouncing Tracks.

Edit > Groove Clip Looping

The **Edit > Groove Clip Looping** command enables a selected audio clip's looping capabilities. When you enable these capabilities, you can make unlimited copies of the clip by dragging its start or end points to the left or right, respectively. When a clip's looping capabilities are enabled, the clip's corners are beveled instead of sharp. If the clip's looping capabilities are already enabled, the same command turns them off.

For more information, see Working with Loops and Groove Clips.

Edit > Create V-Vocal Clip

This command creates a V-Vocal clip on top of selected audio data.

For more information about V-Vocal clips, see V-Vocal Clips.

Edit > Clip Mute/Unmute

This command mutes or unmutes all selected clips.

Edit > Isolate Clip(s) in Layer

The **Edit > Isolate Clip(s) in Layer** command solos selected clips in any tracks that are showing layers (**Tracks > Layers > Show Layers** command). “Isolating” (clip soloing) mutes any clips in a track that overlap the soloed clips, but does not mute clips in other tracks. To unsolo the clips, use the Mute tool to unmute the muted clips.

Edit > Split

The **Edit > Split** command opens the “Split Clips dialog” on page 1409, which allows you to split a selected clip into smaller clips. The command, which is also available from the Clips pane right-click menu, is greyed-out if no clips are selected.

Edit > Apply Trimming

Using the **Edit > Apply Trimming** command permanently deletes any data from a selected clip that is hidden by a slip editing edit.

For step-by-step instructions, see “To Permanently Delete Slip-edited Data” on page 349.

Edit > Revert Clip(s) to Original Time Stamp

The **Edit > Revert Clip(s) to Original Time Stamp** command moves all selected clips back to their original SMPTE time position.

Edit > Clip Lock > Lock Position

Using the **Edit > Clip Lock > Lock Position** command locks or unlocks a clip’s position.

For more information, see Locking Clips.

Edit > Clip Lock > Lock Data

Using the **Edit > Clip Lock > Lock Data** command locks or unlocks a clip's data.

For more information, see Locking Clips.

Edit > Convert MIDI to Shapes

Using the **Edit > Convert MIDI To Shapes** command opens the Convert MIDI To Shapes dialog. This command lets you convert a controller envelope created in the Piano Roll view to a Track view envelope, or *shape*.

Note: *If two clips overlap, the command converts the controller envelopes in both clips, in whatever parts of the clips lie in the selected time range.*

For step-by-step instructions, see "Converting MIDI Envelopes to Shapes" on page 722.

Process > Audio > Remove Silence

The **Process > Audio > Remove Silence** command detects sections of audio that fall below a given loudness threshold, and replaces those sections with absolute silence.

See also:

Removing Silence

Process > Audio > Gain

The **Process > Audio > Gain** command can adjust stereo channels independently, switch channels, invert the phase of one or both channels, and produce any amount of possible gain or cut values.

See "Using the Normalize and Gain Commands" on page 561 for more information.

See also:

Basic Audio Processing

Process > Audio > Normalize

The **Process > Audio > Normalize** command lets you increase the volume of the selected clips or tracks to the maximum level possible before clipping.

For more information, see To Normalize Audio Data.

See also:

Basic Audio Processing

Process > Audio > Remove DC Offset

The **Process > Audio > Remove DC Offset** command lets you remove artifacts from audio files caused by DC offset.

For more information, see Removing DC Offset.

Process > Audio > Fade/Envelope

The **Process > Audio > Fade/Envelope** command lets you specify accurately the shape of a fade for a selection, clip, or track. You can specify one of the following curves, which the Fade/Envelope dialog displays for you:

- Exponential Fade In
- Exponential Fade Out
- Inverse Exponential Fade In
- Inverse Exponential Fade Out
- Linear Fade In
- Linear Fade Out

Alternately you can manipulate any curve in the dialog box to look exactly as you want.

See also:

To Apply a Fade to Audio Data

Process > Audio > Crossfade

The **Process > Audio > Crossfade** command lets you specify accurately the shape of a Crossfade for two overlapping audio clips. You can specify one of the following curves, which the Crossfade dialog displays for you:

- Exponential Crossfade
- Inverse Exponential Crossfade
- Linear Crossfade

Alternately you can manipulate any curve in the dialog box to look exactly as you want.

For more information, see To Crossfade Two Overlapping Clips.

See also:

Fades and Crossfades

Process > Audio > Reverse

The **Process > Audio > Reverse** command reverses audio data, making it play backwards. You may wish to do this to obtain unusual sounds for special effects.

See also:

Reversing Audio Data

Process > Apply Audio Effects

The **Process > Apply Audio Effects** command (which is greyed-out if you're not currently using any audio effects) opens the **Apply Audio Effects** dialog box. Applying an audio effect means that the audio data that you apply the effect to is permanently altered to sound like it would if it was flowing through an effects processor in real time. Applying an effect saves a lot of your processor's power for other tasks that must be done in real time.

Clicking **OK** in this dialog box applies any audio effects that are patched into track inserts. but does not apply effects that are patched into a bus. You can also check the **Delete the effects from the track inserts** check box to remove the real-time effects from the track inserts after you apply them, so the audio data does not receive a double dose of the same effects.

See:

Real-Time Audio Effects Processing

Process > Apply MIDI Effects

The **Process > Apply MIDI Effects** command opens the **Apply MIDI Effects** dialog box, which allows you to apply any MIDI effects that are patched into a track to all **selected** data in that track.

Applying a MIDI effect means that the MIDI data that you apply the effect to is permanently altered to sound like it would if it was flowing through an effects processor in real time. You can leave the **Delete the effects from the track inserts** check box checked to remove the real-time MIDI effects from the track inserts after you apply them, so the track data does not receive a double dose of the same effects.

See:

Applying MIDI Effects

MIDI Effects (MIDI Plug-ins)

Process > Audio Fx

The **Process > Audio Fx > (name of effects vendor)** commands display submenus of all audio effects available to you.

See also:

Real-Time Audio Effects Processing

Process > Audio Fx > Plug-in Layouts > Manage Layouts

The **Process > Audio Fx > Plug-in Layouts > Manage Layouts** command opens the Cakewalk Plug-in Manager. The **Plug-in Manager** dialog has its own help file, which appears when you click its **Help** button.

Process > MIDI Fx

The **Process > MIDI Fx > (name of effects vendor)** commands display submenus of all MIDI effects available to you.

See:

Adding Arpeggio

Analyzing Chords

Adding Echo/Delay

Filtering Events

Quantizing

Transposing MIDI Notes with the Transpose MIDI Effect

Changing Velocities with the Velocity Effect

Process > Deglitch

The **Process > Deglitch** command opens the Deglitch dialog.

See also:

To Use the Deglitch Filter

Process > Slide

The **Process > Slide** command opens the Slide dialog. You can move a selected track and/or its markers by a set amount of measures, ticks, seconds or frames. Positive numbers move the track to the right (forward) and negative numbers move the track to the left (backward).

See also:

Shifting Events in Time

Process > Nudge > Left 1

The **Process > Nudge > Left 1** command moves a selected clip to the left by any of three increments that you set in the Nudge 1 section in the Nudge tab of the **Global Option** dialog. You can assign a hotkey shortcut for this command.

For more information, see Nudge.

Process > Nudge > Right 1

The **Process > Nudge > Right 1** command moves a selected clip to the right by any of three increments that you set in the Nudge 1 section in the Nudge tab of the **Global Option** dialog. You can assign a hotkey shortcut for this command.

For more information, see Nudge.

Process > Nudge > Left 2

The **Process > Nudge > Left 2** command moves a selected clip to the left by any of three increments that you set in the Nudge 2section in the Nudge tab of the **Global Option** dialog. You can assign a hotkey shortcut for this command.

For more information, see Nudge.

Process > Nudge > Right 2

The **Process > Nudge > Right 2** command moves a selected clip to the right by any of three increments that you set in the Nudge 2section in the Nudge tab of the **Global Option** dialog. You can assign a hotkey shortcut for this command.

For more information, see Nudge.

Process > Nudge > Left 3

The **Process > Nudge > Left 3** command moves a selected clip to the left by any of three increments that you set in the Nudge 3 section in the Nudge tab of the **Global Option** dialog. You can assign a hotkey shortcut for this command.

For more information, see Nudge.

Process > Nudge > Right 3

The **Process > Nudge > Right 3** command moves a selected clip to the right by any of three increments that you set in the Nudge 3 section in the Nudge tab of the **Global Option** dialog. You can assign a hotkey shortcut for this command.

For more information, see Nudge.

Process > Nudge > Up

The **Process > Nudge > Up** command moves a selected clip up a track at a time in the Track view or a note up a pitch at a time in the Piano Roll view.

For more information, see Nudge.

Process > Nudge > Down

The **Process > Nudge > Down** command moves a selected clip down a track at a time in the Track view or a note down a pitch at a time in the Piano Roll view.

For more information, see Nudge.

Process > Nudge > Settings

This command opens the Nudge tab of the **Global Options** dialog box where you can customize the three Nudge settings.

For more information, see Nudge.

Process > Quantize

The **Process > Quantize** command opens the Quantize dialog.

This command adjusts the start time and duration of selected notes so that they line up with a fixed size grid. In the **Quantize** dialog, you can adjust the resolution of the grid (note size) and specify which track properties you want to allow the command to change.

For step by step instructions:

To Use the Quantize Command

To Use the Groove Quantize Command

To Define a New Groove

To Save a Groove Pattern

To Copy an Existing Groove

To Delete a Groove

Groove Quantize Tips

See also:

Changing the Timing of a Recording

Drag-quantize

Process > Groove Quantize

The **Process > Groove Quantize** command opens the Groove Quantize dialog.

This command adjusts the start time and duration of selected notes using a music piece as a pattern. In the **Quantize** dialog, you assign the groove pattern you want to use (extension .GRV), adjust the resolution of the grid (note size) and specify which track properties you want to allow the command to change.

See also:

Groove Quantize Tips

Changing the Timing of a Recording

Process > AudioSnap Pallette

The **Process > AudioSnap Pallette** command opens the AudioSnap Pallette, which allows you to set AudioSnap options.

For more information, see AudioSnap.

Process > Interpolate

The **Process > Interpolate** command is an extremely flexible way of manipulating the data parameters of events. It works something like the search-and-replace function in a word processor but with scaling rather than simple replacement.

See:

Searching for Events

Process > Length

The **Process > Length** command can be used to stretch or shrink a portion of a project. **Process > Length** lets you stretch or shrink the selection by a fixed percentage and makes the adjustment by altering the individual events. A value of 200 percent, for example, stretches the selection to twice its original length, while a value of 50 percent shrinks the selection to half its original length.

This command offers the option to stretch audio clips along with the MIDI information. Sometimes you don't want to adjust the speed of your audio. Audio can be stretched or condensed up to a factor of 4 (e.g., it can be shrunk to as little as 25 percent of its original length, or expanded to as much as 400 percent of its original length).

See also:

Stretching and Shrinking Events

Process > Run CAL

The **Process > Run CAL** command enables you to run CAL programs. Cakewalk Application Language (CAL) is an event-processing language that you use to extend SONAR with custom editing commands.

You can write your own CAL program and use or edit CAL programs that other people have written. CAL files are stored on disk in files with an extension of .cal.

See Also:

Running CAL Programs

Process > Retrograde

The **Process > Retrograde** command reverses the order of events in a selection. If one or more clips are selected, then the events within each clip are reversed. If several clips are selected from the same track, then the order of the clips is also reversed. You could use this command, for example, to take a scale or other long run of notes and reverse the order in which they are played. The **Process > Retrograde** command does not reverse the contents of audio clips. It only changes their start times. You can use the **Process > Audio > Reverse** command to reverse audio clips.

See also:

Reversing Notes in a Clip

Process > Transpose

The **Process > Transpose** command transposes the pitches of note events up or down by a fixed number of half-steps. It does so by changing the MIDI key numbers of note events and by pitch-shifting audio clips. Simply enter the number of half-steps in the **Amount** field of the **Transpose** dialog box--a negative number to transpose down, a positive number to transpose up.

SONAR can also perform diatonic transposition, which shifts all the notes up and down the major scale of the current signature by the designated number of steps. For instance, if you specify an amount of +1 and the key signature is C-major, a C becomes a D (up a whole step), an E becomes an F (up a half step), and so on. Diatonic transposition assures you that the transposed notes fit with the original key signature.

As an option, you can choose to transpose selected audio clips along with any selected MIDI clips. SONAR uses pitch-shifting to perform the transposition. You can transpose audio only a single octave in either direction (-12 to +12), and you cannot transpose audio when you are using diatonic transposition.

See also:

Transposing MIDI Notes with the Transpose MIDI Effect

Process > Scale Velocity

The **Process > Scale Velocity** command lets you create crescendos (volume swells) and decrescendos on those instruments that respond to MIDI velocity. Most such instruments map changes in velocity to changes in note loudness. Many synthesizer patches alter the timbre of the sound as well, so that higher velocities produce brighter, as well as louder, sounds. Changes in velocity also affect the playback of audio clips.

This command lets you set a starting and ending velocity for the entire time range of the selection. SONAR scales the velocity of each event to create a smooth linear change in velocity. As an option, you can enter a starting and ending percentage; existing velocity values are modified by the designated percentage.

You can also edit note velocities in the Notes pane of the Piano Roll view, which lets you draw shapes other than straight line changes. For more information, see Adding and Editing Controllers in the Piano Roll.

Process > Fade Selected Clips

The **Process > Fade Selected Clips** command opens the **Fade Selected Clips** dialog, which allows you to create or edit fades on selected clips.

For more information, see Fades and Crossfades.

Process > Fit to Time

Process > Fit to Time stretches or shrinks the selection so that it ends at a specific time, expressed in either measure:beat:tick (MBT) or hours:minutes:seconds:frames (SMPTE) format. This command gives you a choice of modifying the events or modifying the underlying tempo. This is useful when you want to alter a portion of a project to have an exact length. The start time of the selection does not change, but the end time is altered as necessary to fit the required time interval.

Audio can be stretched or condensed up to a factor of 4 (e.g., it can be shrunk to as little as 25 percent of its original length, or expanded to as much as 400 percent of its original length).

For more information, see To Stretch or Shrink to a Specific Length.

Stretching and Shrinking Events.

Process > Fit Improvisation

SONAR lets you record music from a MIDI controller without requiring that you use a fixed tempo. But if you record without using a metronome, you are very likely to end up with a recording that does not fit onto a fixed tempo grid.

The **Process > Fit Improvisation** command lets you take a recording and create a tempo map (with measure and beat boundaries) that fits what you played. Your performance is not changed in any way, even thought the note start times and durations are adjusted to fit the new tempo map.

To use this command, you must record a "reference track" containing a single clip that matches your original track or tracks, but has only a single note on each beat boundary. You should make sure that the reference track has one event for every single beat, with no extra beats or missing beats. The first beat of the reference track should be at 1:01:000. You can use any editing command to adjust the reference track.

See also;

To Fit Tempos to an Improvisation

Views > Piano Roll

Open the Piano Roll view with the **Views > Piano Roll** command, or by clicking the **Piano Roll view** button in the **Views** toolbar. The Piano Roll view displays all MIDI notes and events from one or more tracks in a grid format that looks much like a player piano roll. Notes are displayed as horizontal bars, and drum notes as diamonds. Pitch runs from bottom to top, with the left vertical margin indicating the pitches as piano keys or note names. Time is displayed running left to right with vertical measure and beat boundaries. The Piano Roll view makes it easy to add, edit, and delete notes and controller data from a track.

See also:

The Piano Roll View

Views > Step Sequencer

Open the Step Sequencer by using the **Views > Step Sequencer** command or by double-clicking on a Step Sequencer clip.

If an existing Step Sequencer clip is selected, the **Views > Step Sequencer** command will open the selected Step Sequencer clip. If no Step Sequencer slip is selected, the **Views > Step Sequencer** command will create a new Step Sequencer clip.

The **Views > Step Sequencer** command is disabled if multiple Step Sequencer clips are selected.

See:

Step Sequencer View

Views > Event List

Open the Event List view with the **Views > Event List** command, or by clicking the **Event List view** button in the **Views** toolbar. The Event List view shows events in a list format. You can insert, delete, or modify any kind of event, including notes, pitch-wheel data, velocity, MIDI controllers, patch changes, wave files, lyrics, text strings, MCI commands, System Exclusive meta-events, and more.

See:

The Event List View

Views > Staff

Open the Staff view by using the **Views > Staff** command, or by clicking the **Staff view** button in the **Views** toolbar. The Staff view contains the Staff pane and the Fretboard. The Staff pane displays MIDI note events as musical notation, and the Fretboard displays MIDI notes as markers on a guitar fretboard. The Staff view provides many features that make it possible for you to compose, edit, and print music.

For more information, see The Staff View.

Views > Loop Construction

Open the Loop Construction view by selecting **Views > Loop Construction** from the menu. The Loop Construction view allows you to create Groove clips and enable looping of clips.

See Loop Construction view for more information.

See also:

Using Groove Clips

Creating and Editing Groove Clips

Views > Lyrics

Open the Lyrics view by using the **Views > Lyrics** command, or by clicking the **Lyrics view** button in the **Views** toolbar. The Lyric view lets you edit a track's lyrics. You can use it to cue yourself or your

group with the lyrics during playback and recording. For more information about the Lyrics view, see Lyrics view.

See also:

Working with Lyrics

Views > Media Browser

Select **Views > Media Browser** to open the Explorer view.

You can preview and import files using the Explorer view, without having to leave your work environment. For more information, see Media Browser View.

See also:

The Media Browser View

Views > Matrix View

Select **Views > Matrix View** to open the Matrix view.

The Matrix view lets you trigger individual or multiple audio and MIDI patterns, either with a computer keyboard, mouse or via MIDI remote control. For more information, see Matrix view.

Views > V-Vocal Editor

Select **Views > V-Vocal Editor** to open the V-Vocal interface.

V-Vocal is a vocal processor that corrects pitch, formants, timing, and can add vibrato.

See also:

Using V-Vocal

Views > Track View

The **Views > Track View** command displays the Track view.

See also:

Track View

Views > Console

To open the Console view, click the **Console view** button in the **Views** toolbar, or use the **Views > Console** command.

The Console view contains all the controls you need to mix your project. For more information about the Console view, see Console View.

See also:

Preparing to Mix

Views > Synth Rack

Use the **Views > Synth Rack** command to open the Synth Rack. For more information, see Synth Rack View.

Views > Video

Open the Video view by using the **Views > Video** command, or by clicking the **Video view** button in the **Views** toolbar. The Video view lets you load digitized video files and play them back with your project. For more information about the Video view, see Video View.

Views > Big Time

Open the Big Time view by using the **Views > Big Time** command, or by clicking the **Big Time view** button in the **Views** toolbar. The Big Time view lets you see the Now time from a distance while recording. For more information about the Big Time view, see Big Time View.

See also:

Displaying the Now time in large print

Views > Markers

Open the Markers view with the **Views > Markers** command, or by clicking the **Markers view** button in the **Views** toolbar. The Markers view lets you add, move, rename, or delete Marker (labels) for

places in your song. The markers make it easier to move from one point to another. For more information about the Markers view, see Markers View.

See Creating and Using Markers.

Views > Tempo

Open the Tempo view by using the **Views > Tempo** command or by clicking the **Tempo view** button in the **Views** toolbar. The Tempo view provides a graphic display of the tempo. In the Tempo view you can use your mouse to draw tempo changes directly onto the graph. For more information about the Tempo view, see Tempo View.

See Using the Tempo Toolbar.

Views > Meter/Key

Open the Meter/Key view by using the **Views > Meter Key** command or by clicking the **Meter/Key view** button in the **Views** toolbar. The Meter/Key view lets you set and change the meter and key signature for any project or part of a project, over all its tracks. For more information about the Meter/Key view, see Meter/Key View.

See The Meter/Key View.

Views > Sysx

Open the Sysx view by using the **Views > Sysx** command, or by clicking the **Sysx view** button in the **Views** toolbar. The Sysx view gives you 256 Banks to hold MIDI System Exclusive messages. For more information about the SYSX view, see SYSX View.

See Using the System Exclusive View.

Views > Navigator

Open the Navigator view by using the **Views > Navigator** command. The Navigator view gives you an overview of your entire project.

Views > Surround Panner

Open the Surround Panner by using the **Views > Surround Panner** command. The Surround Panner allows you to control the output levels for each of your outputs. For more information, see Panning in Surround.

Views > Layouts

The **Views > Layouts** command allows you to save and load layouts. SONAR stores the layout of all of a project's views in the project file when you save the project. By default, SONAR restores the layout of all the views when you open the file.

In addition, you can save the current layout in a separate list--the global layout list. Once you have saved the layout in this list, you can apply it to any open project. The global layout list can contain as many layouts as you want. Layouts in the list can be updated, renamed, and deleted.

See:

See also:

To Update a Layout

To Load a Layout

To Delete a Layout

To Rename a Layout

To Set Layout Options

Views > Toolbars

The **Views > Toolbars** command lets you select which toolbars are displayed and also the style of display for the toolbars.

To display a toolbar, click the check box next to its name.

To display toolbars with an upraised appearance similar to a button in the up position, make sure the Flat Style box is unchecked.

Views > Show Toolbars

The **Views > Show Toolbars** command hides or shows all toobars at once.

Views > Enable Tabbing in Open Views

This command toggles the display of views other than the Track and Console views between floating and docked in the Bus pane of the Track view. When docked in the Bus pane of the Track view, each view has a tab that allows you to display that view.

Insert > Bank/Patch Change

Use the **Insert > Bank/Patch** command to insert a patch change and/or a bank change.

See:

To insert a bank/patch change

Choosing the instrument sound (bank and patch)

Insert > Meter/Key Change

Use the **Insert > Meter/Key Change** command to insert a meter change and/or a key change.

See Adding and Editing Meter/Key Changes.

Insert > Tempo Change

The **Insert > Tempo Change** command opens the Tempo dialog.

For more information, see Changing Tempos.

See:

To Insert a Tempo Change.

Changing Tempos

Insert > Time/Measures

Use the **Insert > Time/Measures** command to insert blank measures at a specified location.

See Inserting Time or Measures into a Project.

Insert > Marker

Use the **Insert > Marker** command to insert a marker at a specified location.

See:

To Add a Marker

Insert > Controllers

Select **Insert > Controllers** from the menu to open the Insert Series of Controllers dialog.

This command lets you change controller event values smoothly over a specified time range.

See Adding and Editing Controllers in the Piano Roll.

Insert > Audio Track

The **Insert > Audio Track** command, which you can also find by right-clicking a track title bar in the Track view, inserts an audio track above the track on which you right-click.

Insert > MIDI Track

The **Insert > MIDI Track** command, which you can also find by right-clicking a track title bar in the Track view, inserts a MIDI track above the track on which you right-click.

Insert > Multiple Tracks

The **Insert > Multiple Tracks** command allows you to insert multiple audio and/or MIDI tracks, and set some track properties for the inserted tracks.

Insert > Track Folder

The **Insert > Track Folder** command, which you can also find by right-clicking a track title bar in the Track view, inserts a track folder above the track on which you right-click.

For more information, see Track Folders.

Insert > Insert from Track Template > More Track Templates

The **Insert From Track Template > More Track Templates** command opens the **Import Track Templates** dialog. For more information about track templates, see Working with Track Templates.

Insert > Insert from Track Template > Import Filter

The **Insert From Track Template > Import Filter** command opens the **Track Template Import Options** dialog. For more information about track templates, see Working with Track Templates.

Insert > Stereo Bus

The **Insert > Stereo Bus** command, which you can also find by right-clicking an empty area of the Bus pane in the Track view or Console view, inserts a stereo bus into the empty space of the Bus pane.

Insert > Surround Bus

The **Insert > Surround Bus** command, which you can also find by right-clicking an empty area of the Bus pane in the Track view or Console view, inserts a surround bus into the empty space of the Bus pane.

For more information, see Surround Buses.

Insert > Series of Tempos

The **Insert > Series of Tempos** command lets you change Tempo smoothly over a specified time range by inserting a series of tempo changes.

See To Insert a Series of Tempos.

Insert > Soft Synths

The **Insert > Soft Synths** command displays a submenu of all installed soft synths. Clicking the name of one of the synths either displays the **Insert Synth Options** dialog, or inserts a synth into your project if you unchecked the dialog's **Ask This Every Time** option previously.

See:

Inserting Soft Synths

Insert > ReWire Device

The **Insert > ReWire Device** command displays a submenu of all installed ReWire soft synths. Clicking the name of one of the soft synths either displays the Insert **Synth Options** dialog, or inserts s soft synth into your project if you unchecked the dialog's **Ask This Every Time** option previously.

See:

ReWire Instruments

Transport > Play

The **Transport > Play** command starts playback.

See:

Controlling playback

Transport > Audition

The **Transport > Audition** command plays back only selected clips and/or time regions.

To use the command, hold down the SHIFT key and then press the SPACEBAR. Only the selected data plays back.

Transport > Record

The **Transport > Record** command starts recording.

See also:

Preparing to record

Recording music from a MIDI instrument

Transport > Rewind

The **Transport > Rewind** command rewinds to the start of the project.

See:

Controlling playback

Transport > Stop

The **Transport > Stop** command stops playback or recording.

See:

Controlling playback

Transport > Stop Audio / Transport > Run Audio

The **Transport > Stop Audio** command stops SONAR's audio engine from running, which disables input monitoring temporarily. After you use the command, it changes into the **Transport > Run Audio** command.

For more information, see Input Monitoring.

Transport > Reset

The **Transport > Reset** command stops all MIDI notes from playing and clears stuck notes.

See:

Handling stuck notes

Transport > Step Record

The **Transport > Step Record** command opens the **Step Record** dialog box. Step recording lets you specify step size and note duration so you can record things that are hard to play a step at a time.

See:

Step Recording

Transport > Toggle Step Record Activate

The **Transport > Step Record Activate** command enables or disables the **Step Record** dialog box so that you can use keyboard shortcuts for non-step recording commands.

See:

Step Recording

Transport > Loop and Auto Shuttle

The **Transport > Loop and Auto Shuttle** command lets you specify start and stop times for looping and whether you want the loop to start over again.

See:

Looping

Transport > Record Options

The **Transport > Record Options** command specifies how SONAR records Clips into tracks already holding other clips. The command also lets you specify whether to record Takes in sequential tracks or stacked in a single track.

Note: *SONAR saves the recording options you choose with each project, so you can save a different recording mode with each of your projects.*

See:

To choose a recording mode

Transport > Reject Loop Take

The **Transport > Reject Loop Take** command erases the most recent Take during loop recording.

Note: *This command is only available for MIDI recording.*

See:

To Use Loop Recording

Transport > Update Patch Cache

The **Transport > Update Patch Cache** command is enabled only if you're using one or more sound cards which require "patch caching". After making changes to your song which result in patch change events being added, changed, or deleted, you may need to choose **Transport > Update Patch Cache** to force the sound card to load the required sounds from disk storage.

Transport > Tempo Ratio 1

The **Transport > Tempo Ratio 1** command changes the speed of playback.

See:

Using the Tempo Toolbar

Transport > Tempo Ratio 2

The **Transport > Tempo Ratio 2** command changes the speed of playback.

See:

Using the Tempo Toolbar

Transport > Tempo Ratio 3

The **Transport > Tempo Ratio 3** command changes the speed of playback.

See:

Using the Tempo Toolbar

Transport > Set Timecode at Now

The **Transport > Set Timecode at Now** command opens the **Set Timecode at Now Time** dialog, which allows you to move the SMPTE time 00:00:00:00 to the current Now time. If you enter a value in the dialog, the SMPTE value that you enter is set to the current Now time.

Transport > Set Measure/Beat at Now

The **Transport > Set Measure/Beat at Now** command opens the **Measure Beat/Meter** dialog, which allows you to shift the Time Ruler so that the beat of the measure that you choose in the dialog appears at the Now Time.

See:

To sync the project tempo to freely played MIDI (DD10; new S8.5)

Measure Beat/Meter

Go > Time

The **Go > Time** command lets you set a new Now time.

See:

To change the Now time

Go > From

The **Go > From** command sets the Now time to the From time.

See:

The Now time and how to use it

Go > Thru

The **Go > Thru** command sets the Now time to the From time.

See:

The Now time and how to use it

Go > Beginning

The **Go > Beginning** command sets the Now time to the beginning of the project.

See:

The Now time and how to use it

Go > End

The **Go > End** command sets the Now time to the end of the project.

See:

The Now time and how to use it

Go > Previous Measure

The **Go > Previous Measure** command sets the Now time to the beginning of the previous measure.

See:

The Now time and how to use it

Go > Next Measure

The **Go > Next Measure** command sets the Now time to the beginning of the next measure.

See:

The Now time and how to use it

Go > Previous Marker

The **Go > Previous Marker** command sets the Now time to the previous marker.

See:

The Now time and how to use it

Creating and Using Markers

Go > Next Marker

The **Go > Next Marker** command sets the Now time to the next marker.

See:

The Now time and how to use it

Creating and Using Markers

Go > Search

The **Go > Search** command lets you find the next Event (searching forward from the Now time) that meets criteria you specify in the **Event Filter-Search** dialog box (see Event Filter Select Some/ Search/Replace dialog).

For more information about the **Go > Search** command, see Searching for Events.

Go > Search Next

This command lets you find the next Event using the criteria for your previous search command.

For more information about the **Go > Search Next** command, see Searching for Events.

Go > Go to Track Peak

Because a Peak Marker may be offscreen, you can jump to a peak marker by using the **Go > Go To Track Peak** command. Doing so will center the peak location and Now time in the Clips pane

For more information, see Peak Markers.

Tracks > Property > Name

The **Tracks > Property > Name** command lets you assign a name to a track for easy reference.

For more information about the **Tracks > Property > Name** command, see Track Name dialog.

Tracks > Property > Outputs

The **Tracks > Property > Outputs** command lets you assign an output, either MIDI or audio, for your track to play back through.

For more information about the **Tracks > Property > Outputs** command, see Setting up output devices, and Assigning Inputs & Outputs.

Tracks > Property > Inputs

The **Tracks > Property > Inputs** command lets you specify input sources for all of your project's tracks for recording purposes.

For more information about the **Tracks > Property > Inputs** command, see Choosing an input, and Changing track settings.

Tracks > Property > Channel

The **Tracks > Property > Channel** command specifies the MIDI channel through which the track plays its data.

For more information about the **Tracks > Property > Channel** command, see Assigning a MIDI channel (Chn), and Changing track settings.

Tracks > Property > Key+

The **Tracks > Property > Key+** command lets you specify how many half-steps the notes in a MIDI track should be transposed on playback. 12 half-steps make an octave. The Key+ command does not alter the data in a track, but causes it to play back in a different key.

For more information about the **Tracks > Property > Key+** command, see Adjusting the Key/ transposing a track (Key+).

Tracks > Property > Vel+

The **Tracks > Property > Vel+** command lets you designate the change in velocity (volume) to be applied to notes in this track on playback, ranging from -127 to +127. The Vel+ command does not alter the data in a track, but causes it to play back with different velocities.

For more information about the **Tracks > Property > Vel+** command, see Adjusting the note velocity (Vel+).

Tracks > Property > Time+

The **Tracks > Property > Time+** command lets you apply an offset to the start time of the events in the track. The Time+ command does not alter the data in a track, but causes it to play back at an earlier or later time.

For more information about the **Tracks > Property > Time+** command, see Adjusting the time alignment of a MIDI track (Time+).

Tracks > Property > Bank

The **Tracks > Property > Bank** command lets you choose the bank, or set of patch names, available for this track.

For more information about the **Tracks > Property > Bank** command, see Choosing the instrument sound (bank and patch).

Tracks > Property > Patch

The **Tracks > Property > Patch** command lets you choose the patch, or MIDI instrument sound, to use for playback.

For more information about the **Tracks > Property > Patch** command, see Choosing the instrument sound (bank and patch).

Tracks > Property > Volume

The **Tracks > Property > Volume** command lets you specify the starting volume level for the track, ranging from -INF (silent) to 6 dB (maximum volume).

The Volume setting controls the initial volume of a track during playback. Every time you start playback, SONAR sets the volume to this initial level.

In some projects you want the volume of a track to change while playback is in progress. You can accomplish this using the Track, Console, Piano Roll, or Event List views. For more information, see "Mixing" on page 593.

Note: *Not all keyboards and synthesizers respond to volume change messages. Check the manual that came with your keyboard or synthesizer for more information.*

For more information about the **Tracks > Property > Volume** command, see "Adjusting volume and pan" on page 209.

Tracks > Property > Pan

The **Tracks > Property > Pan** command lets you specify the stereo distribution of the output, ranging from 100% L (hard left) to 100% R (hard right), with a value of C indicating sound that is centered left-to-right.

The Pan setting controls the initial pan of a track during playback. Every time you start playback, SONAR sets the pan to this initial level.

For more information about the **Tracks > Property > Pan** command, see Adjusting volume and pan.

Tracks > Property > Icon > Load Icon

The **Tracks > Property > Icon > Load Icon** command opens the **Open** dialog, which displays folders of track icons. You can select an icon from the dialog to load into the current track.

For more information about track icons, see Track Icons.

Tracks > Property > Icon > Reset Icon

The **Tracks > Property > Icon > Reset Icon** command resets the track icon in the current track to the track's original icon.

For more information about track icons, see Track Icons.

Tracks > Mute

The **Tracks > Mute** command silences the specified track for playback.

For more information about the **Tracks > Mute** command, see Track-by-track playback and Silencing tracks.

Tracks > Archive

The **Tracks > Archive** command silences the specified track for playback and removes its data from RAM. You must stop playback to change a track's archive status.

For more information about the **Tracks > Archive** command, see Track-by-track playback and Silencing tracks.

Tracks > Show Automated Mute

The **Tracks > Show Automated Mute** command causes the **Mute** button on a selected track to show whether the track's mute envelope (if any) is in the muted or unmuted position (the *automated mute status*). When the command is disabled, the track's **Mute** button shows whether you have depressed the **Mute** button manually or not (the *manual mute status*). When the command is enabled, the **Mute** button displays an envelope icon through the M:

Tracks > Solo

The **Tracks > Solo** command solos the specified track, meaning it plays while all other tracks do not. Each track set to solo plays back.

For more information about the **Tracks > Solo** command, see Track-by-track playback and Soloing tracks.

See also:

Dim Solo mode

Tracks > Automation Read Enable

The **Tracks > Automation Read Enable** command turns on and off the ability to read automation data on playback.

For more information about the **Tracks > Automation Read Enable** command, see Automation.

Tracks > Automation Write Enable

The **Tracks > Automation Write Enable** command turns on and off the ability to record automation data.

For more information about the **Tracks > Automation Read Enable** command, see Automation.

Tracks > Arm for Recording

The **Tracks > Arm for Recording** command arms or disarms all selected tracks for recording.

For more information about the **Tracks > Arm for Recording** command, see Arming tracks for recording and Auto arming.

Tracks > Input Monitor/Echo

Toggles on or off the Input Monitor or MIDI Echo for the selected track.

Tracks > Freeze > Freeze Track

This command freezes all selected tracks. For more information about the Freeze feature, see Freeze Tracks and Synths.

Tracks > Freeze > Quick Freeze Track

This command is only available if you've already performed the **Freeze Track** command on the track and subsequently performed a **Quick Unfreeze** on it. This command returns to the same frozen state as the initial **Freeze Track** command. For more information about the Freeze feature, see Freeze Tracks and Synths.

Tracks > Freeze > Unfreeze Track

This command unfreezes all selected tracks. For more information about the Freeze feature, see Freeze Tracks and Synths.

Tracks > Freeze > Quick Unfreeze Track

This command returns the track to an unfrozen state and preserves the Freeze data which then can be recalled using the Quick Freeze command. For more information about the Freeze feature, see Freeze Tracks and Synths.

Tracks > Freeze > Freeze Synth

This command freezes all selected synth tracks (both the MIDI track where the synth lives and the audio output track). For more information about the Freeze feature, see Freeze Tracks and Synths.

Tracks > Freeze > Quick Freeze Synth

This command is only available if you've already performed the **Freeze Synth** command and subsequently performed a **Quick Unfreeze** on it. This command returns to the same frozen state as the initial **Freeze Synth** command. For more information about the Freeze feature, see Freeze Tracks and Synths.

Tracks > Freeze > Unfreeze Synth

This command unfreezes all selected synth tracks (both the MIDI track where the synth lives and the audio output track). For more information about the Freeze feature, see Freeze Tracks and Synths.

Tracks > Freeze > Quick Unfreeze Synth

This command returns the synth tracks to an unfrozen state and preserves the Freeze data which then can be recalled using the Quick Freeze command. For more information about the Freeze feature, see Freeze Tracks and Synths.

Tracks > Freeze > Freeze Options

This command opens the **Freeze Options** dialog box.

Tracks > Clone

The **Tracks > Clone** command copies one or more tracks. You can choose to include events, properties, sends, and/or effects in the copied track(s). You can specify a destination.

For more information about the **Tracks > Clone** command, see Copying Tracks.

Tracks > Delete

The **Tracks > Delete** command deletes one or more tracks entirely, including all its track properties and all its clips and events. SONAR does not put deleted information on the clipboard for later copying.

For more information about the **Tracks > Delete** command, see Erasing Tracks.

Tracks > Wipe

The **Tracks > Wipe** command deletes track contents but leaves track properties intact. SONAR does not put wiped information on the clipboard for later copying.

For more information about the **Tracks > Wipe** command, see Erasing Tracks.

Tracks > Hide

The **Tracks > Hide** command, which is also available from the Clips pane pop-up menu, hides all selected tracks. To display them again, press M on your keyboard to open the **Track Manager** dialog, which is located in the **Track view** toolbar.

Tracks > Show Record Meter

The **Tracks > Show Record Meter** command displays record meters in all armed audio tracks. The command is greyed-out if any tracks currently show record meters. You can hide or display meters on individual tracks by right-clicking them and choosing options from the pop-up menu.

Tracks > Show Playback Meter

The **Tracks > Show Playback Meter** command displays playback meters in all audio tracks. The command is greyed-out if any tracks currently show playback meters. You can hide or display meters on individual tracks by right-clicking them and choosing options from the pop-up menu.

Tracks > Layers > Show Layers

The **Tracks > Layers > Show Layers** command displays any overlapping clips that a track contains in separate lanes in the track.

For more information, see Take Management and Comping Takes.

Tracks > Layers > Remove Empty Layers

The **Tracks > Layers > Remove Empty Layers** command removes empty layers in a track.

For more information, see Take Management and Comping Takes.

Tracks > Layers > Rebuild Layers

The **Tracks > Layers > Rebuild Layers** command moves overlapping clips to separate layers in selected tracks.

For more information, see Take Management and Comping Takes.

Tracks > Sort

The **Tracks > Sort** command lets you arrange tracks in order according to any of several criteria.

For more information about rearranging tracks, see To Sort the Tracks, To Drag a Track to a New Position, and To Insert a Single Track.

Tracks > Inline PRV > PRV Mode

The **Tracks > Inline PRV > PRV Mode** command puts all MIDI tracks into or out of PRV mode (Inline Piano Roll View mode).

For more information about PRV mode, see The Inline Piano Roll View.

Tracks > Inline PRV > PRV Tool > Select/Draw/Erase

The **Tracks > Inline PRV > PRV Tool Select/Draw/Erase** commands allow you to activate the Select tool, the Draw tool, or the **Erase** button in the **Inline Piano Roll view** toolbar.

For more information about using the Inline Piano Roll view, see The Inline Piano Roll View.

Tracks > Inline PRV > Fit Content

The **Tracks > Inline PRV > Fit Content** command fits all displayed MIDI content in any tracks that are in PRV mode into the visible area of each Inline Piano Roll view.

For more information about using the Inline Piano Roll view, see The Inline Piano Roll View.

Tracks > Inline PRV > Show Velocity Tails

The **Tracks > Inline PRV > Show Velocity Tails** command shows or hides the velocity tails on MIDI notes in all tracks that are in PRV mode (Inline Piano Roll mode), and that are using Drum Maps.

For more information about using the Inline Piano Roll view, see The Inline Piano Roll View.

Tracks > Inline PRV > Show/Hide Continuous Events

The **Tracks > Inline PRV > Show/Hide Continuous Events** command hides or shows continuous events (MIDI cc's, NRPN's, RPN's, wheel) in all tracks that are in PRV mode (Inline Piano Roll mode), but takes into account each event type's individual show/hide status.

For more information about using the Inline Piano Roll view, see The Inline Piano Roll View.

Tracks > Inline PRV > Show/Hide Notes

The **Tracks > Inline PRV > Show/Hide Notes** command hides or shows notes in all tracks that are in PRV mode (Inline Piano Roll mode).

For more information about using the Inline Piano Roll view, see The Inline Piano Roll View.

Tracks > Inline PRV > Display All Continuous Events

The **Tracks > Inline PRV > Display All Continuous Events** command displays all continuous events in all tracks that are in PRV mode (Inline Piano Roll mode), regardless of the events' previous show/hide conditions.

For more information about using the Inline Piano Roll view, see The Inline Piano Roll View.

Tracks > Snap to Scale > Enable/Disable Snap to Scale

The **Tracks > Snap to Scale > Enable/Disable Snap To Scale** command enables or disables the Snap to Scale function on selected tracks.

For more information, see Snap to Scale.

Tracks > Snap to Scale > Root Note > [name of root note]

The **Tracks > Snap to Scale > Root Note > [name of root note]** command sets the root note of the selected scale on selected tracks.

For more information, see Snap to Scale.

Tracks > Snap to Scale > Scales > [name of scale]

The **Tracks > Snap to Scale > Root Note > [name of scale]** command sets the scale for the Snap to Scale function on selected tracks.

For more information, see Snap to Scale.

Tracks > Snap to Scale > Scales > Scale Manager

The **Tracks > Snap to Scale > Scales > Scale Manager** command opens the **Scale Manager** dialog.

For more information, see Snap to Scale.

Tracks > Snap to Scale > Scales > Snap Settings

The **Tracks > Snap to Scale > Scales > Snap Settings** command opens the **Snap Scale Settings** dialog.

For more information, see Snap to Scale.

Tracks > Input Quantize > Enable/Disable Input Quantize

The **Tracks > Input Quantize > Enable/Disable Input Quantize** command enables or disables the input quantize feature on all selected MIDI tracks.

For more information about input quantizing, see Input quantizing.

Tracks > Input Quantize > Quantize Settings

The **Tracks > Input Quantize > Quantize Settings** command opens the **Input Quantize** dialog.

For more information about input quantizing, see Input quantizing.

Tools > Burn Audio CD

The **Tools > Burn Audio CD** command lets you burn your tracks to an audio CD that you can play in any standard CD player.

For more information about the **Tools > Burn Audio CD** command, see Audio CD Burner dialog and the Cakewalk Publisher online Help.

Tools > Cakewalk Publisher

Use the **Tools > Cakewalk Publisher** command to present and share your music online.

Using Publisher, you can create a customized streaming music player with a playlist of your music, upload it to your personal or band's website, and embed it in any other website. You can also update your playlist with album art, links (URLs), and artist, track, & album information.

Publisher works by connecting to your web host's FTP account (usually provided when you sign up with a webhosting company and create a website) and uploading files to a location of your choosing. Once these files are successfully transferred to your website, Publisher generates a simple HTML

tag that you can paste into any other website to embed and display your audio player. For those familiar with it, the process is similar to displaying images hosted on one site in another.

Figure 260. *Cakewalk Publisher*

For more information about the **Tools > Cakewalk Publisher** command, see the Cakewalk Publisher online help.

Tools > Consolidate Project Audio

The **Tools > Consolidate Project Audio** command copies all the audio used by the current project into a subfolder of the project's audio folder. Use this command to create a backup of your project's audio.

For more information:

Backing Up Projects with Digital Audio

Tools > Clean Audio Folder

Use the **Tools > Clean Audio Folder** command to delete digital audio files from an audio data directory that are no longer used by any of your projects. You should use this command from time to time to free up disk space.

Important: *Make sure that all of your important project (.cwp and .wrk) files are stored in your local hard disk(s) before using this command. If your project files are stored elsewhere, such as a floppy drive, removable drive, or network drive, you risk accidentally deleting important audio files that are associated with your projects.*

Note: *The Cakewalk Audio Finder (CWAFTool) is a more advanced utility for finding and removing unused projects and audio files. This utility can be installed from the **AutoRun** menu of the SONAR CD. If you have an older version of SONAR you can download the SONAR Audio Finder from the SONAR Website at www.cakewalk.com.*

For more information about the **Tools > Clean Audio Folder** command, see “To Delete Unused Audio Files” on page 841.

Tools > Change Audio Format

Use the **Tools > Change Audio Format** command if you want to rewrite the audio in a project to a different bit depth. Your sound card must be capable of playing the project at the new bit depth.

For more information about the **Tools > Change Audio Format** command, see Change Audio Format dialog.

Options > MIDI Devices

The output setting for a track determines which piece of hardware will be used to produce the sound stored in your project. The **Options > MIDI Devices** command opens the **MIDI Devices** dialog box, which lets you choose the MIDI outputs you want to use.

For more information about setting up MIDI devices, see To choose MIDI devices and Setting up output devices.

Options > Instruments

This command lets you choose one or more port/channel configurations and assign an instrument to it or them.

SONAR lets you assign a MIDI instrument definition to each available MIDI port and channel. The assignments you make determine the MIDI bank names, patch names, note names, and controller names that you see during your SONAR session.

Suppose that you have a Roland GS compatible synthesizer attached to MIDI port 1. By assigning all 16 channels of MIDI port 1 to the Roland GS instrument definition, you ensure that the bank, patch, note and controller name lists you see displayed in SONAR are the ones that match your synthesizer.

Often, you want to assign a different instrument to channel 10, which is usually used for percussion. For example, you might assign the Roland GS instrument definition to channels 1 through 9 and 11 through 16, but you would most likely want to assign the Roland GS Drumsets instrument definition to channel 10. If you have several MIDI ports, with a different instrument attached to each one, you would normally assign a different instrument to each MIDI port.

For convenience, you can assign a block of channels to one instrument, and then change the assignment of one or more of those channels without changing the others. For example, you can highlight all 16 channels of the first MIDI port and assign them to the Roland GS instrument definition. Then, you can highlight channel 10 of the first MIDI port and assign it to the Roland GS Drumset instrument definition. Channels 1 through 9 and 11 through 16 on the first MIDI port will stay assigned to Roland GS.

You might also want to split channels to different instruments if you have several instruments attached to a single MIDI port. For example, you might have a Roland synth receiving on MIDI channels 1-9, a Roland drum machine receiving on channel 10, and a basic GM-compatible synth receiving on channels 11 through 16. In this case, you'd use three different instrument definitions for your one and only MIDI port.

Assign Instruments dialog

Options > Audio

The **Options > Audio** command opens the **Audio Options** dialog box (see below), which contains all the necessary controls to completely configure your audio setup. SONAR configures all of these options automatically, but allows you to customize them to a great degree.

For more information about configuring your audio system, see System Configuration.

For more information about the various tabs or pages in the **Audio Options** dialog box, see:

Audio Options dialog—General

Audio Options dialog—Advanced

Audio Options dialog—Drivers

Audio Options dialog—Driver Profiles

Options > Audio Meter Settings

The **Options > Audio Meter Settings** command opens the **Audio Meter Settings** dialog, which allows you to adjust the rise and fall times of both the RMS and Peak Meters. These settings control meter ballistics globally for all types of meters in SONAR. You can also choose to display segmented or non-segmented meters from this dialog.

For more information, see For more information, see Configure Colors dialog., and Segmented and Non-segmented Meters.

Options > Project

The **Options > Project** command gives you access to options you might want to set for a particular project.

For more information about the **Options > Project** command, see Setting the MIDI timing resolution, Setting the Metronome and Tempo settings, and Synchronizing Your Gear.

Options > Global Options

The **Options > Global** command gives you access to many options you might want to set for all your projects, including settings that affect appearance, MIDI and audio functions, and auto-save.

For more information about the **Options > Global** command, see these global options topics: Global Options dialog—General, Global Options dialog—Timecode, Global Options dialog—MIDI, Global Options dialog—Folders, Global Options dialog—Editing, Global Options dialog—Nudge, and Global Options dialog—Audio Data.

Options > Colors

The **Options > Colors** command lets you choose and change the colors for most things that SONAR displays.

For more information about the **Options > Colors** command, see Screen colors and wallpaper.

Options > Icons > Show Icons

This global command hides or shows icons in all applicable views.

Options > Icons > Track View > Show Icons

This command hides or shows icons in the Track view, if the global command to show icons is not enabled.

Options > Icons > Track View > Large Icons

This command displays icons in the Track view in large format.

Options > Icons > Track View > Small Icons

This command displays icons in the Track view in small format.

Options > Icons > Track View > Show in Header

This command hides or shows icons in the Track view in the headers of each track.

Options > Icons > Track View > Show Custom in Header

This command hides or shows custom icons in the Track view headers instead of the default icons.

Options > Icons > Track View > Show in Strip

This command hides or shows icons in the track strips of the Track view.

Options > Icons > Track Inspector > Show Icons

This command hides or shows icons in the Track Inspector.

Options > Icons > Track Inspector > Show Large

Icons

This command displays icons in the Track Inspector in large format.

Options > Icons > Track Inspector > Show Small Icons

This command displays icons in the Track Inspector in small format.

Options > Icons > Console > Show Icons

This command hides or shows icons in the Console view.

Options > Icons > Console > Show Large Icons

This command displays icons in the Console view in large format.

Options > Icons > Console > Show Small Icons

This command displays icons in the Console view in small format.

Options > Icons > Synth Rack > Show Large Icons

This command hides or shows icons in the Synth Rack in large format.

Options > SoundFonts

The **Options > SoundFonts** command lets you import SoundFont banks.

SoundFont files contain data for patches. They are available from vendors and you can create them using the Vienna editor from Creative. To use SoundFonts, you must have a Creative Labs SoundBlaster Live, AWE 32 or AWE 64 sound card and have the SoundFont Management System installed (supplied with SoundBlaster Live). When SONAR opens a WRK or MID file, it looks for a SF2 file in the same folder with the same base name. If one exists, SONAR uses it. Use the **Locations** button to specify folder (or folders, separate multiple folders with semicolons) where

SONAR should look. Use the **Attach** button in the **SoundFont Banks** dialog box to override this behavior and specify a different SoundFont file to use with the song. Bank 0 is reserved for the Standard GM sound set, but user banks can be attached to banks 1 through 255. SONAR saves SoundFont file names in (WRK) files, but not in Standard MIDI (MID) files. In order to use an attached SoundFont, you must select your SoundFont device as an output and assign a MIDI track to that output. You must also force an output channel for the track and choose a SoundFont bank and patch for the MIDI track.

Options > Key Bindings

Key bindings let you connect SONAR commands to keys on your MIDI or computer keyboard. This makes it easy for you to access specific features more quickly and efficiently.

The **Options > Key Bindings** command opens the **Key Bindings** dialog box, which lets you specify which keys and key combinations to use for specific SONAR commands and files.

For more information about the **Options > Key Bindings** command, see Key Bindings.

Options > Initialization File

The **Options > Initialization File** command lets you edit SONAR initialization files. Many Windows applications, as well as Windows itself, use files to store information about your preferences and configuration. Often applications store values to these files when you make selections in the program using menus or dialog boxes. However, you can also change these files directly. In some cases, there is no way to change the settings in the application, and changing the file directly is the only way.

For more information about the **Options > Initialization File** command, see Initialization Files.

Options > Non-Destructive MIDI Editing

This command, off by default, makes all MIDI editing non-destructive. When toggled on, this command forces deleted data to be retained even though it is not visible.

Options > Time Ruler Format > M:B:T

The **Options > Time Ruler Format > M:B:T** command, which is also available from the Clips pane pop-up menu, changes the unit of measurement in the time ruler to MBT units.

Options > Time Ruler Format > H:M:S:F

The **Options > Time Ruler Format > H:M:S:F**: command, which is also available from the Clips pane pop-up menu, changes the unit of measurement in the time ruler to H:M:S:F units.

Options > Time Ruler Format > Samples

The **Options > Time Ruler Format > Samples** command, which is also available from the Clips pane pop-up menu, changes the unit of measurement in the time ruler to samples.

Options > Menu Editor

The **Options > Menu Editor** command opens the **Menu Editor** dialog, which allows you to customize the layout of your menus. For more information, see Customizable menus.

Options > Menu Layouts > [name of layout]

The **Options > Menu Layouts > [name of layout]** command sets the current layout to the layout that you choose from the options in this menu. For more information, see Customizable menus.

Options > Drum Map Manager

The **Options > Drum Map Manager** command opens the **Drum Map Manager** dialog, which allows you to create and edit drum maps. For more information, see Drum Map Manager dialog.

Options > Controllers/Surfaces

The **Options > Controllers/Surfaces** command opens the **Controllers/Surfaces** dialog, which allows you to enable or disable specific controllers/surfaces, and choose their MIDI inputs and outputs.

For more information, see:

External Devices

Controllers/Surfaces dialog

Options > ACT Learn

The **Options > ACT Learn** command enables or disables the **Learn** button on the **Controller/ Surfaces** toolbar.

For more information, see:

External Devices

Controllers/Surfaces dialog

Options > PRV Tool Configuration

The **Options > PRV Tool Configuration** command opens the **PRV Tool Configuration** dialog, which allows you to customize the behavior of the Piano Roll tools.

For more information, see PRV Tool Configuration dialog.

Window > Cascade

The **Window > Cascade** command lets you arrange multiple opened windows in an overlapped fashion.

Window > Tile in Rows

The **Window > Tile in Rows** command arranges multiple opened windows from top to bottom down the screen.

Window > Tile in Columns

The **Window > Tile in Columns** command arranges multiple opened windows from side to side across the screen.

Window > Arrange Icons

Use the **Window > Arrange Icons** command to arrange the icons for minimized windows at the bottom of the main window.

Help > Help Topics

Use the **Help > Help Topics** command to open the entire help system. You can look for topics in the table of contents, in the index, and in the finder.

Help > View README.RTF

The **Help > View README.RTF** command tells you all about the current version of SONAR.

Help > Quick Start

The **Help > Quick Start** command gives you access to a number of ways to get started.

For more information about the **Help > Quick Start** command, see SONAR Quick Start dialog.

Help > Tip of the Day

The **Help > Tip of the Day** command opens a series of tips and shortcuts for doing various functions in SONAR.

Help > Keyboard Shortcuts

Note: *A **plus sign** (**+**) indicates that both keys must be held down at the same time. For example, CTRL+F6.*

Menu Commands

Command	Shortcut
File > Open	CTRL+O
File > Save	CTRL+S

Table 210.

Command	Shortcut
Edit > Undo	CTRL+Z
Edit > Redo	CTRL+SHIFT+Z
Edit > Select > All	CTRL+A
Edit > Select > None	CTRL+SHIFT+A
Edit > Cut	CTRL+X
Edit > Copy	CTRL+C
Edit > Paste	CTRL+V
Edit > Groove Clip Looping	CTRL+L
Edit > Clip Mute/Unmute	Q
Edit > Isolate Clip(s) in Layer	SHIFT+1
Edit > Delete	DELETE key
Process > Global Bypass Effects Bins	CTRL+SHIFT+Y
Insert > Marker	F11
Transport > Play	SPACEBAR
Transport > Record	R
Transport > Rewind	W
Transport > Stop	SPACEBAR
Transport > Tempo Ratio 1	CTRL+1
Transport > Tempo Ratio 2	CTRL+2
Transport > Tempo Ratio 3	CTRL+3
Transport > Live Input PDC Override	CTRL+D
Go > Time	F5
Go > From	F7
Go > Thru	F8
Go > Beginning	CTRL+HOME
Go > End	CTRL+END

Table 210.

Command	Shortcut
Go > Previous Measure	CTRL+PAGE UP
Go > Next Measure	CTRL+PAGE DOWN
Go > Previous Marker	CTRL+SHIFT+PAGE UP
Go > Next Marker	CTRL+SHIFT+PAGE DOWN
Go > Search Next	F3
Tools > Run CAL	CTRL+F1

Table 210.

Track View

Command	Shortcut
Show/Hide Large Transport	F4
Solo/un-solo current track	/
Help	F1
Close Window	CTRL+F4
Insert track (same kind as current track; if no tracks exist, opens the **Choose Track Type** dialog box)	INSERT
Open the Track Manager	M
Show/hide Bus pane	SHIFT+B
Toggle Envelope/Offset Mode	O
Select current track	COMMA (,)
Open the Patch Browser (for the current MIDI track)	SEMI COLON (;)
Show and fit selection	SHIFT+S
Fit tracks to window	F
Fit project to window	SHIFT+F
Show only selected tracks	H

Table 211.

Command	Shortcut
Hide selected tracks	SHIFT+H
Show all tracks	A
Undo view change	U
Redo view change	SHIFT+U
Snap enable/disable	N
Open **Snap** dialog	SHIFT+N
Activate Zoom tool	Z
Fast Zoom In	CTRL+=
Fast Zoom Out	CTRL+MINUS SIGN (-)
Decrease track height	CTRL+UP ARROW
Increase track height	CTRL+DOWN ARROW
Zoom in horizontally	CTRL+RIGHT ARROW
Zoom out horizontally	CTRL+LEFT ARROW
Zoom all tracks in vertically	CTRL+DOWN ARROW
Zoom all tracks out vertically	CTRL+UP ARROW
Zoom out on all audio waveforms	ALT+DOWN ARROW
Zoom in on current track's audio waveforms	ALT+CTRL+UP ARROW
Zoom out on current track's audio waveforms	ALT+CTRL+DOWN ARROW
Zoom current track in vertically	CTRL+SHIFT+DOWN ARROW
Zoom current track out vertically	CTRL+SHIFT+UP ARROW
Zoom in on all audio waveforms	ALT+UP ARROW
Increase current track height	CTRL+SHIFT+DOWN ARROW
Decrease current track height	CTRL+SHIFT+UP ARROW
Scale audio waveform in all audio tracks	ALT+UP/DOWN ARROW
Scale audio waveform in current audio track	CTRL+ALT+UP/DOWN ARROW
Lasso zoom scale audio clip/waveform	SHIFT+Z (while selecting a clip)

Table 211.

Command	Shortcut
Scissors tool	C
Center Now time	G
Puts focus in Track pane	SHIFT+UP ARROW
Puts focus in Bus pane	SHIFT+DOWN ARROW
Scroll Track view up or down	PAGE UP or PAGE DOWN
Move between same controls in different tracks	UP or DOWN ARROW
Move between controls in same track	LEFT or RIGHT ARROW
Moves to the previous or next tab in Track pane (All, Mix, FX, I/O), or between views in tabs	SHIFT+LEFT ARROW or SHIFT+RIGHT ARROW
Raise or lower the pitch of a loop-enabled clip	ALT+ or ALT- (use the + or - keys on the NumPad)
Activate Select tool	T
Activate Scrub tool	B
Activate Envelope Edit tool	E
Loop enable/disable selected clip	CTRL+L
Split selected clips at Now time	S
Auto crossfade	X
Toggle on/off “sticky” Now Time (Now Time returns to Now Time Marker on stop)	CTRL+SPACEBAR
Toggle display of the Track Inspector	I
Open/close current track folder	CTRL+F
Mute tool on/off	K
Show/hide Navigator pane	D
Show/hide Video Thumbnail pane	L
Nudge left 1	NumPad 1
Nudge right 1	NumPad 3
Nudge left 2	NumPad 4
Nudge right 2	NumPad 6

Table 211.

Command	Shortcut
Nudge left 3	NumPad 7
Nudge right 3	NumPad 9
Nudge up	NumPad 8
Nudge down	NumPad 2

Table 211.

V-Vocal Editor

Command	Shortcut
Open V-Vocal Editor	CTRL+SHIFT+V
Create V-Vocal Clip	SHIFT+V
Note: All V-Vocal shortcuts in the Editor itself are listed in the V-Vocal help file.	

Table 212.

Piano Roll View

Command	Shortcut
Select tool	S
Draw tool **Note**: you can draw straight lines with the Draw tool by holding the SHIFT key down before and while you draw.	D
Pattern Brush Tool	Q
Scrub tool	B
Enter a Whole Note	1
Enter a Half Note	2
Enter a Quarter Note	4

Table 213.

Command	Shortcut
Enter an Eighth Note	8
Enter a Sixteenth Note	6
Enter a Thirty-second Note	3
Dotted Note	PERIOD (.)
Triplet	P
Snap enable/disable	N
Open **Snap** dialog	SHIFT+N
Pick Track	T
Show/Hide Track Pane	H
Show/Hide the Controller pane	C
All Tracks	A
No Tracks	K
Invert Tracks	V
Insert new MIDI data lane	SHIFT+L
Show/Hide velocity tails in the Drum pane	Y
Show/Hide Grid lines	I
Show/Hide durations in the Drum pane	O
Zoom tool	Z
Scroll up/down	UP or DOWN ARROW keys
Scroll left/right	LEFT or RIGHT ARROW keys
Zoom in vertically	CTRL+DOWN ARROW
Zoom out vertically	CTRL+UP ARROW
Undo Zoom	U

Table 213.

Step Sequencer View

Command	Shortcut
Open the Step Sequencer View	ALT+SHIFT+5
Insert a new row above the selected row	INSERT
Delete the active row	DELETE
Move focus to the previous control	LEFT ARROW
Move focus to the next control	RIGHT ARROW
When there are multiple strips, move focus to the same control on the previous row	UP ARROW
When there are multiple strips, move focus to the same control on the next row	DOWN ARROW
When focus is on a control in the steps pane, move focus to the strips pane	CTRL+LEFT ARROW
When focus is on a control in the strips pane, move focus to the steps pane	CTRL+RIGHT ARROW
When focus is either on the steps or strips pane, move focus to the toolbar	CTRL+UP ARROW
When focus is on the toolbar, move focus to the strips pane	CTRL+DOWN ARROW
When focus is on steps, toggle step or tie on/off; for buttons, turn on/off	ENTER
When focus is on a step, allow velocity adjustment	SHIFT+ENTER
For spinner controls, increase/decrease value; fine adjust for knobs	+ / - (plus and minus)
Coarse adjust for knobs	[/] (square brackets)
Toggles the **Audition** (Play) button for the view	CTRL+SHIFT+SPACEBAR
When focus is on the steps pane, move focus to the next enabled note on the same row	TAB
When focus is on the steps pane, move focus to the previous enabled note on the same row	SHIFT+TAB
Shift the active row's steps by 1 step and wrap first step to the end	ALT+LEFT ARROW
Shift the active row's steps by 1 step and wrap the last step to the beginning	ALT+RIGHT ARROW

Table 214.

Staff View

Command	Shortcut
Select tool	S
Draw tool	D
Erase tool	E
Scrub tool	B
Lyric	Y
Chord	C
Expression	I
Hairpin	H
Pedal	A
Snap enable/disable	N
Fill Durations	F
Trim Durations	M
Layout	L
Pick Track	T
Whole note	1
Half note	2
Quarter note	4
Eighth note	8
Sixteenth note	6
Thirty-second note	3
Dotted	.
Triplet	P
Scroll left/right	LEFT/RIGHT ARROW keys
Play Previous Note	CTRL+LEFT ARROW

Table 215.

Command	Shortcut
Play Next Note	CTRL+RIGHT ARROW
Open **Snap** dialog	SHIFT+N
Export to ASCII TAB	X
Show/Hide Fretboard view	V

Table 215.

AudioSnap

Command	Shortcut
AudioSnap Enable	F12
AudioSnap Add Transients To Pool	CTRL+F12
AudioSnap Show Transient Markers	SHIFT+F12
AudioSnap Go to Next Transient Marker	TAB
AudioSnap Go to Previous Transient Marker	SHIFT+TAB
Set Measure Beat at Now	CTRL+M
AudioSnap Auto Stretch (Follow Tempo)	ALT+F12
AudioSnap Insert Marker	CTRL+ALT+I
AudioSnap Reset Selected Transient Marker(s)	CTRL+ALT+R
AudioSnap Delete Inserted Marker	CTRL+ALT+BACKSPACE
AudioSnap Disable Marker	CTRL+ALT+D
AudioSnap Promote Marker	CTRL+ALT+P
AudioSnap Snap to Transients	CTRL+ALT+N
AudioSnap Audition Beat	CTRL+SHIFT+SPACEBAR
AudioSnap Show Palette	SHIFT+A
AudioSnap Show Transient Pool	CTRL+ALT+F12
AudioSnap Select All Markers	ALT+SHIFT+A

Table 216.

Command	Shortcut
AudioSnap Clear Selection	ALT+SHIFT+C
AudioSnap Select Moved Markers	ALT+SHIFT+M
AudioSnap Select Stretched Markers	ALT+SHIFT+S
AudioSnap Select Disabled Markers	ALT+SHIFT+D
AudioSnap Select Enabled Markers	ALT+SHIFT+E
AudioSnap Select Promoted Markers	ALT+SHIFT+P

Table 216.

Event List View

Command	Shortcut
Filter (hide) Note events	N
Filter Key Aftertouch events	F
Filter Controller events	C
Filter Patch Change events	A
Filter Channel Aftertouch Events	F
Filter Pitch Wheel events	B
Filter RPN events	Z
Filter NRPN events	P
Filter Sysx Bank events	S
Filter Sysx Data events	Y
Filter Text events	X
Filter Lyric events	L
Filter MCI Command events	M
Filter Audio events	U
Filter Shape events	H

Table 217.

Command	Shortcut
Filter Expression events	E
Filter Hairpin events	I
Filter Chord events	O
Event Manager	V
Insert event	INSERT
Delete event	DELETE
Play single event	CTRL+SHIFT+SPACEBAR
Pick Tracks	T

Table 217.

Console View

Command	Shortcut
Move between controls	TAB
Delete an effect	DELETE
Change values (small)	+ and -
Change values (large)	[and]
Open Module manager	M
Toggle Envelope/Offset Mode	O

Table 218.

Loop Construction View

Command	Shortcut
Save loop to wave file	F
Enable looping	L
Enable stretching	T
Follow project pitch	P
Preview loop	CTRL+SHIFT+SPACEBAR
Stop preview	CTRL+SHIFT+SPACEBAR
Select tool	S
Erase marker tool	E
Default all markers	M
Enable Slice Auto-Preview	A
Slice Auto-Preview Loop	SHIFT+A
Clip Properties	C
Move to Previous Slice	PAGE UP
Move to Next Slice	PAGE DOWN
Show/Hide Gain Envelope	G
Show/Hide Pan Envelope	N
Show/Hide Pitch Envelope	K

Table 219.

Media Browser View

Command	Shortcut
Preview file	CTRL+SHIFT+SPACEBAR
Stop preview	CTRL+SHIFT+SPACEBAR

Table 220.

Synth Rack View

Command	Shortcut
Close view	CTRL+F4
Move to next or previous synth	DOWN ARROW or UP ARROW
Toggle connection for current synth	PAUSE/BREAK
Increment or decrement current preset	+ or -
Increment or decrement current preset by 10	] or [
Navigate between synths	UP/DOWN ARROW keys
Change preset for current soft synth	+ or -
Insert	A
Rename synth	F2
Properties	P
Open **Insert Soft Synth Options** dialog	O
Freeze	F
Unfreeze	U
Quick Unfreeze	T
Mute current soft synth	M
Solo current soft synth	S

Table 221.

All Views

Command	Shortcut
Close Window	CTRL+F4
Next Window	CTRL+F6

Table 222.

Command	Shortcut
Display the Track view	ALT+0 (but not on the NumPad)
Open the Media Browser view	ALT+1
Open the Loop Construction view	ALT+2
Open the Console view	ALT+3
Open the Event List view	ALT+4
Open the Piano Roll view	ALT+5
Open the Step Sequencer view	ALT+SHIFT+5
Open the Video view	ALT+6
Open the Staff view	ALT+7
Open the Synth Rack view	ALT+8
Open the Tempo view	ALT+9

Table 222.

Surround Panner (large)

Command	Shortcut
Constrains to angle	ALT+drag
Constrains to angle at 100% focus	ALT+SHIFT+drag
Constrains to focus only	CTRL+SHIFT+drag
Sets panner point to the point that you click (large and medium panners only)	SHIFT+click
Fine resolution	SHIFT+drag controls (Angle, Width, etc.)
Move to next/previous widget in surround panner	UP/DOWN ARROW keys
Move to next/previous panner in same track	LEFT/RIGHT ARRROW keys
Move to surround panner in another track	CTRL+UP/DOWN ARROW keys
Speaker mutes	CTRL+NumPad 0-9

Table 223.

Command	Shortcut
Jump to speaker angle at 100% focus	NumPad 0-9
n/a	NumPad 0
Ls	NumPad 1
Cs	NumPad 2
Rs	NumPad 3
Sl	NumPad 4
n/a	NumPad 5
Sr	NumPad 6
L	NumPad 7
C	NumPad 8
R	NumPad 9
Lc	/
Rc	*

Table 223.

Help > SONAR on the Web

The **Help > SONAR on the Web** command opens your web browser to the SONAR Web page. This page has information about upgrades, patches and offers.

Help > Register Online

The **Help > Register Online** command opens Cakewalk's online form so you can register your new product.

Help > Time Trial Activator

The **Help > Time Trial Activator** command opens the **Time Trial Activator** dialog. If you have an evaluation version of SONAR and need to extend the evaluation period, this dialog allows you to enter the activation code that a Cakewalk representative can give you.

Help > Cakewalk Problem Reporter

The Cakewalk Problem Reporter is a tool that gathers general information about your computer and specific facts about the current open project file.

These log files may be used by Cakewalk Technical Support when detailed system info is required to resolve a problem on your computer.

Help > About SONAR

The **Help > SONAR** command displays copyright, version number of the product, and your licensing information.

Delete Track

This command, which you find by right-clicking a track name or number in the Track view, removes the track on which you right-click.

Group

This command, which you find by right-clicking a fader, button, or knob in the Track or Console views, lets you Group faders, knobs, or buttons so they work together in ways you specify.

For more information about grouping controls, see Using Control Groups.

Remove From Group

This command, which you find by right-clicking a fader, button, or knob in the Track or Console views, lets you remove a control or button from its group.

For more information about grouping controls, see Using Control Groups.

Set Start = Current

This command, which you find by right-clicking a fader, button, or knob in the Track or Console views, lets you adjust the start value of a control. This command, together with the **Set End = Current** command, only functions when you use custom grouping. These two commands set the range that a grouped control moves through when the members of its group move through their

starting and ending values. This makes it easy to group controls so that they move in similar or opposite motion and at similar or different rates of speed.

For more information about grouping controls, see To Adjust the Start Value of a Control, and Using Control Groups.

Set End = Current

This command, which you find by right-clicking a fader, button, or knob in the Track or Console views, lets you adjust the end value of a control. This command, together with the **Set Start = Current** command, only functions when you use custom grouping. These two commands set the range that a grouped control moves through when the members of its group move through their starting and ending values. This makes it easy to group controls so that they move in similar or opposite motion and at similar or different rates of speed.

For more information about grouping controls, see To Adjust the End Value of a Control, and Using Control Groups.

Insert Audio Track

This command, which you find by right-clicking in the Console view in the grey area to the right of the final module, or in the Track pane context menu in the Track view, adds a new Digital audio track.

For more information about configuring tracks, see Configuring the Console and Track Views.

Insert MIDI Track

This command, which you find by right-clicking in the Console view in the grey area to the right of the final module, adds a MIDI track to the console.

For more information about adding tracks, see Changing track settings.

Hide Module

This command allows you to hide track and bus modules in the Console view. You find the command by right-clicking in the Console view in three different areas:

- For track modules, right-click in the grey area above a track's **Phase** button.
- For buses, right-click in the grey area between the **Send** and **Return** knobs.

To redisplay modules, see To Choose the Tracks that are Displayed Using the Track Manager, and Configuring the Console and Track Views.

Set Snap-to = Current

This command, which you find by right-clicking a fader or knob in the Console or Track views, sets the snap-to position of that fader or knob to its current value. When you double-click a fader or knob, it jumps to its snap-to position.

For more information about the Console view, see Preparing to Mix.

90 dB Range

This command, which you find by right-clicking any audio meter in the Track view or Console view, changes the range that the meter measures to 90 dB.

For more information about meters, see Metering.

78 dB Range

This command, which you find by right-clicking any audio meter in the Track view or Console view, changes the range that the meter measures to 78dB.

For more information about meters, see Metering.

60 dB Range

This command, which you find by right-clicking any audio meter in the Track view or Console view, changes the range that the meter measures to 60 dB.

For more information about meters, see Metering.

42 dB Range

This command, which you find by right-clicking any audio meter in the Track view or Console view, changes the range that the meter measures to 42 dB.

For more information about meters, see Metering.

24 dB Range

This command, which you find by right-clicking any audio meter in the Track view or Console view, changes the range that the meter measures to 24 dB.

For more information about meters, see Metering.

12 dB Range

This command, which you find by right-clicking any audio meter in the Track view or Console view, changes the range that the meter measures to 12 dB.

For more information about meters, see Metering.

Set As Current Track

This command, which you find by right-clicking the grey area of a MIDI or audio track in the Console view, changes the track you clicked to the current track. This makes that track the object of any track editing commands you give, such as **Mute**, **Solo**, **Kill**, etc.

For more information about the Console view, see Preparing to Mix.

Delete

This command, which you find by right-clicking the name of an effect in the Console view, deletes that effect from its patch point.

For more information about effects, see Audio Effects (Audio Plug-ins) and MIDI Effects (MIDI Plug-ins).

View Options

The **Options > Clips pane** command lets you set display options for the Clips pane.

For more information about view options, see Displaying Clips, and To Display Clip Names and Contents.

Set Loop Points

This command, which you find by right-clicking in the Time ruler, sets the Loop From time to the start time of the selection, and the Loop Thru time to the end time of the selection.

For more information about looping, see Looping.

Select Loop Region

This command, which you find by right-clicking in the Time ruler, sets the selection start and end times to the Loop From and Loop Thru times.

For more information about looping, see Looping.

Set Punch Points

This command, which you find by right-clicking in the Time ruler, sets the Punch In time to the start time of the selection, and the Punch Out time to the end time of the selection.

For more information about punch recording, see Punch Recording.

Loop On/Off

Click to enable/disable playback looping.

Set Punch Points

Sets the borders of a selected area as punch points.

Select All Siblings

This command selects all clips that are linked to this clip.

Unlink

This command opens the Unlink Clips dialog.

Select Punch Region

This command, which you find by right-clicking in the Time ruler, sets the selection start and end times to the **Punch In** and **Punch Out** times.

For more information about punch recording, see Punch Recording.

Snap Properties

This command, which you find by right-clicking in the Time ruler, lets you set snap options in the Snap to Grid dialog.

For more information about setting snap options, see Defining and Using the Snap Grid.

Set Snap Offset to Now Time

This command sets the snap offset at the Now Time. A snap offset is a value, in samples, at which the Snap Grid uses to align the clip. Clips without a snap offset always align at the very beginning of a clip. For more information, see Snap Offsets.

Envelope > Create Track Envelope > Volume

This command creates a volume envelope in the track you have right-clicked in. After you have created an envelope, you can create nodes and edit them to create changes in volume as the track plays. For more information, see Quick Automation Guide.

Envelope > Create Track Envelope > Pan

This command creates a pan envelope in the track you have right-clicked in. After you have created an envelope, you can create nodes and edit them to create changes in pan as the track plays. For more information, see Quick Automation Guide.

Jump

This command causes an automation envelope to make a 90 degree “jump” when it reaches the next node.

See:

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Linear

This command draws a straight line between two nodes.

See:

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Fast Curve

This command creates a curve between nodes which changes rapidly at first, and slower as it nears the second node.

See:

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Slow Curve

This command creates a curve between two nodes which changes slowly at first, then rapidly as it nears the second node.

See:

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Drag and Drop Options

The Drag and Drop Options command opens the Drag and Drop Options dialog.

Clip Properties

This command opens the **Clip Properties** dialog. For more information, see Clip Properties dialog—General and Clip Properties dialog—Audio Stretching.

Track Properties

This command opens the Track Properties dialog.

Layout

The Layout command, accessed by right clicking in the Staff pane, opens the Staff View Layout dialog.

Regenerate Tablature

The Regenerate Tablature command generates a new TAB staff in the Staff pane.

Export to ASCII TAB

This command opens the Save As dialog where you can set the name and location for an ASCII text file of a track's tablature.

Note Length > Whole

This command, also available on the Staff view's toolbar, changes selected notes to Whole notes or creates new notes as Whole notes.

Note Length > Half

This command, also available on the Staff view's toolbar, changes selected notes to Half notes or creates new notes as Half notes.

Note Length > Quarter

This command, also available on the Staff view's toolbar, changes selected notes to Quarter notes or creates new notes as Quarter notes.

Note Length > Eighth

This command, also available on the Staff view's toolbar, changes selected notes to Eighth notes or creates new notes as Eighth notes.

Note Length > Sixteenth

This command, also available on the Staff view's toolbar, changes selected notes to Sixteenth notes or creates new notes as Sixteenth notes.

Note Length > Thirty second

This command, also available on the Staff view's toolbar, changes selected notes to Thirty second notes or creates new notes as Thirty second notes.

Note Length > Dotted

This command, also available on the Staff view's toolbar, changes selected notes to dotted notes or creates new notes as dotted notes.

Note Length > Triplet

This command, also available on the Staff view's toolbar, changes selected notes to Triplets or creates new notes as Triplets.

Mirror Fretboard

This command displays the Staff view's fretboard with low strings at the top and high strings at the bottom.

Rosewood Hi

This command changes the fretboard to appear as if made of rosewood with high resolution.

Rosewood Lo

This command changes the fretboard to appear as if made of rosewood in low resolution.

Ebony Hi

This command changes the fretboard to appear as if made of ebony in high resolution.

Ebony Lo

This command changes the fretboard to appear as if made of ebony in low resolution.

Maple Hi

This command changes the fretboard to appear as if made of maple in high resolution.

Maple Lo

This command changes the fretboard to appear as if made of maple in low resolution.

Show Previous Track(s)

This command displays the previous track or group of tracks.

Show Next Track(s)

This command displays the next track or group of tracks.

Animate

This command, which you find by right-clicking in the Video view, enables or disables video playback. Disabling video playback frees your computer to process more audio data, if your project has too much data to process efficiently.

For more information about video, see Video playback, import, and export.

Insert

This command, which you find by right-clicking in the Video view, inserts a video file into a project.

See also:

Video playback, import, and export

Delete

This command, which you find by right-clicking in the Video view, deletes a video file from a project.

For more information about deleting video files, see To delete the video from the project.

See also:

Video playback, import, and export

Original Size

This command, which you find by right-clicking in the Video view, displays the video in its original size.

For more information about video, see Video playback, import, and export.

Stretch to Window

This command, which you find by right-clicking in the Video view, stretches the video to fill the Video view.

For more information about video, see Video playback, import, and export.

Preserve Aspect Ratio

This command, which you find by right-clicking in the Video view, stretches the video as much as possible while preserving the original aspect ratio.

For more information about video, see Video playback, import, and export.

Integral Stretch

This command, which you find by right-clicking in the Video view, stretches the video as much as possible, but only enlarges it by whole-number multiples.

For more information about video, see Video playback, import, and export.

Full Screen

This command, which you find by right-clicking in the Video view, stretches the video to fill the screen.

For more information about video, see Video playback, import, and export.

Time Display Format > M:B:T

This command, which you find by right-clicking in the Video view, changes the video view's time display to MBT (measure:beat:tick).

For more information about video, see Video playback, import, and export.

Time Display Format > SMPTE

This command, which you find by right-clicking in the Video view, changes the video view's time display to SMPTE.

For more information about video, see Video playback, import, and export.

Time Display Format > Frames

This command, which you find by right-clicking in the Video view, changes the video view's time display to frame.

For more information about video, see Video playback, import, and export.

Time Display Format > None

This command, which you find by right-clicking in the Video view, hides the video view's time display.

For more information about video, see Video playback, import, and export.

Time Display Format > Font

This command, which you find by right-clicking in the Video view, lets you choose the font for the video view's time display.

For more information about video, see Video playback, import, and export.

Background Color > Black

This command, which you find by right-clicking in the Video view, changes the background color of the Video view to black.

For more information about video, see Video playback, import, and export.

Background Color > White

This command, which you find by right-clicking in the Video view, changes the background color of the Video view to white.

For more information about video, see Video playback, import, and export.

Video Properties

This command, which you find by right-clicking in the Video view, opens the Video Properties dialog, where you can set the trim-in and trim-out times, and read the video file's statistics.

Add Node

This command, which you find by right-clicking an envelope in the Track view, adds a node to the envelope that you clicked.

For more information about envelopes, see Automation.

Reset Node

This command returns a node to its default value. For example a pan node would return to 0% C.

Delete Node

This command deletes the node over which you have right-clicked.

Note

This command, which you find by right-clicking in the Event List view, hides all note events.

For more information about the Event List view, see Event List View.

Key Aftertouch

This command, which you find by right-clicking in the Event List view, hides all key aftertouch events.

For more information about the Event List view, see Event List View.

Controller

This command, which you find by right-clicking in the Event List view, hides all controller events.

For more information about the Event List view, see Event List View.

Patch Change

This command, which you find by right-clicking in the Event List view, hides all patch change events.

For more information about the Event List view, see Event List View.

Channel Aftertouch

This command, which you find by right-clicking in the Event List view, hides all channel aftertouch events.

For more information about the Event List view, see Event List View.

Pitch Wheel

This command, which you find by right-clicking in the Event List view, hides all pitch wheel events.

For more information about the Event List view, see Event List View.

RPN

This command, which you find by right-clicking in the Event List view, hides all RPN events.
For more information about the Event List view, see Event List View.

NRPN

This command, which you find by right-clicking in the Event List view, hides all NRPN events.
For more information about the Event List view, see Event List View.

Sysx Bank

This command, which you find by right-clicking in the Event List view, hides all Sysx banks.
For more information about the Event List view, see Event List View.

Sysx Data

This command, which you find by right-clicking in the Event List view, hides all Sysx data.
For more information about the Event List view, see Event List View.

Text

This command, which you find by right-clicking in the Event List view, hides all text events.
For more information about the Event List view, see Event List View.

Lyric

This command, which you find by right-clicking in the Event List view, hides all lyric events.
For more information about the Event List view, see Event List View.

MCI Command

This command, which you find by right-clicking in the Event List view, hides all MCI commands.

For more information about the Event List view, see Event List View.

Audio

This command, which you find by right-clicking in the Event List view, hides all audio clips.

For more information about the Event List view, see Event List View.

Expression

This command, which you find by right-clicking in the Event List view, hides all expression events.

For more information about the Event List view, see Event List View.

Hairpin

This command, which you find by right-clicking in the Event List view, hides all hairpin events.

For more information about the Event List view, see Event List View.

Chord

This command, which you find by right-clicking in the Event List view, hides all chord events.

For more information about the Event List view, see Event List View.

Event Manager

To open the Event Manager dialog:

- Right-click in the Event List view and choose **Event Manager** from the pop-up menu.

  OR
- Click the **Event Manager** button in the Event List view

In the Event Manager you select which types of event to display in the Event List view. Check the events you want to see in the Events List view.

For more information about the Event List view, see Event List View.

Lock Contents

This command forces SONAR to open a new instance of the current view (the view you are locking) rather than using the current view. This allows you to keep multiple copies of the same view open at one time.

See:

Locking views

Enable Floating

This command allows you to “float” a view (move it beyond the boundaries of SONAR. This is especially useful when using dual monitors.

See:

Floating views

Show Entire Project

This command adjusts the vertical track heights to fit all tracks in your project in the Track view.

For more information about displaying tracks, see Configuring the Console and Track Views.

Zoom tool

This command enables the Zoom tool feature.

For more information about the Zoom tool feature, see Displaying Clips.

For more information about displaying tracks, see Configuring the Console and Track Views.

Fast Zoom Options

This command shows options for changing the mouse’s zoom behavior. For more information about Fast Zoom, see “To Zoom Using the Mouse Wheel (Fast Zoom)” on page 301.

Previous Zoom

This command returns the Track view to the previous zoom level.

For more information about displaying tracks, see Configuring the Console and Track Views.

Show All Tracks

This command shows all tracks in the current project.

For more information about displaying tracks, see Configuring the Console and Track Views.

Track Manager

This command opens the **Track Manager** dialog.

For more information about the **Track Manager** dialog, see Track Manager dialog.

For more information about displaying tracks, see Configuring the Console and Track Views.

Record Meters

When selected with a checkmark record meters are displayed. When unchecked, record meters are not displayed.

Playback Meters

When selected with a checkmark playback meters are displayed. When unchecked, playback meters are not displayed.

Output Bus Meters

When selected with a checkmark output bus meters are displayed. When unchecked, output bus meters are not displayed.

Record Meter Options > Peak

Available in the **Playback Meter Options**, **Record Meter Options**, and **Mains Meter Options** submenus, this command sets the meter to **Peak**.

For more information about Peak meter display, see Metering.

Record Meter Options > RMS

Available in the **Playback Meter Options**, **Record Meter Options**, and **Mains Meter Options** submenus, this command sets the meter to **RMS**.

For more information about RMS meter display, see Metering.

Record Meter Options > Peak + RMS

Available in the **Playback Meter Options**, **Record Meter Options**, and **Mains Meter Options** submenus, this command sets the meter to **Peak + RMS**.

For more information about Peak + RMS meter display, see Metering.

Record Meter Options > Show Labels

This command toggles on/off the meter labels.

Record Meter Options > Hold Peaks

This command causes a meter to hold the most recent peak for a short time. The peak volume level recorded by the meter is marked by a small white line which remains for a moment if lock peaks is not checked or until the end of playback or recording if Lock Peaks is checked.

Record Meter Options > Lock Peaks

This command when checked and the Hold Peaks is also checked causes the peak to be locked at its highest point on the meter until the end of playback or recording.

Playback Meter Options > Peak

Available in the **Playback Meter Options**, **Record Meter Options**, and **Mains Meter Options** submenus, this command sets the meter to show peaks.

For more information about Peak meter display, see Metering.

Playback Meter Options > RMS

Available in the **Playback Meter Options**, **Record Meter Options**, and **Mains Meter Options** submenus, this command sets the meter to **RMS**.

For more information about RMS meter display, see Metering.

Playback Meter Options > Peak + RMS

Available in the **Playback Meter Options**, **Record Meter Options**, and **Mains Meter Options** submenus, this command sets the meter to **Peak + RMS**.

For more information about Peak + RMS meter display, see Metering.

Playback Meter Options > Show Labels

This command toggles on/off the meter labels.

Playback Meter Options > Hold Peaks

This command causes a meter to hold the most recent peak for a short time. The peak volume level recorded by the meter is marked by a small white line which remains for a moment if lock peaks is not checked or until the end of playback or recording if **Lock Peaks** is checked.

Playback Meter Options > Lock Peaks

This command when checked and the Hold Peaks is also checked causes the peak to be locked at its highest point on the meter until the end of playback or recording.

Output Bus Meter Options > Peak

Available in the **Playback Meter Options**, **Record Meter Options**, and **Mains Meter Options** submenus, this command sets the meter to show peaks.

For more information about Peak meter display, see Metering.

Output Bus Meter Options > RMS

Available in the **Playback Meter Options**, **Record Meter Options**, and **Mains Meter Options** submenus, this command sets the meter to **RMS**.

For more information about RMS meter display, see Metering.

Output Bus Meter Options > Peak + RMS

Available in the **Playback Meter Options**, **Record Meter Options**, and **Mains Meter Options** submenus, this command sets the meter to **Peak + RMS**.

For more information about Peak + RMS meter display, see Metering.

Output Bus Meter Options > Show Labels

This command toggles on/off the meter labels.

Output Bus Meter Options > Hold Peaks

This command causes a meter to hold the most recent peak for a short time. The peak volume level recorded by the meter is marked by a small white line which remains for a moment if lock peaks is not checked or until the end of playback or recording if Lock Peaks is checked.

Output Bus Meter Options > Lock Peaks

This command when checked and the Hold Peaks is also checked causes the peak to be locked at its highest point on the meter until the end of playback or recording.

Playback Meter Options > Pre Fader

This command sets the meter to measure the volume level in the signal path prior to entering the fader.

Output Bus Meter Options > Pre Fader

This command sets the meter to measure the volume level in the signal path prior to entering the fader.

Playback Meter Options > Post Fader

This command sets the meter to measure the volume level in the signal path after exiting the fader.

Output Bus Meter Options > Post Fader

This command sets the meter to measure the volume level in the signal path after exiting the fader.

Output Bus Meter Options > Pre Fader Post FX

This command sets the meter to measure the volume level in the signal path after the effects bin and prior to the fader.

Default Fade-In Curve > Linear

This command sets as a default a linear, or steady fade-in curve when dragging the beginning of a clip.

For more information about crossfades, see Fades and Crossfades.

Default Fade-In Curve > Fast Curve

This command sets as a default a fast fade-in curve when dragging the beginning of a clip.

For more information about crossfades, see Fades and Crossfades.

Default Fade-In Curve > Slow Curve

This command sets as a default a slow fade-in curve when dragging the beginning of a clip.

For more information about crossfades, see Fades and Crossfades.

Default Fade-Out Curve > Linear

This command sets as a default a linear, or steady fade-out curve when dragging the end of a clip.

For more information about crossfades, see Fades and Crossfades.

Default Fade-Out Curve > Fast Curve

This command sets as a default a fast fade-out curve when dragging the end of a clip.

For more information about crossfades, see Fades and Crossfades.

Default Fade-Out Curve > Slow Curve

This command sets as a default a slow fade-out curve when dragging the end of a clip.

For more information about crossfades, see Fades and Crossfades.

Default Crossfade Curves > Linear Out - Linear In

This command sets as default a crossfade in which the first clip fades out at a steady rate and the second clip fades in at a steady rate.

For more information about crossfades, see Fades and Crossfades.

Default Crossfade Curves > Fast Out - Fast In

This command sets as default a crossfade in which the first clip fades out fast and the second clip fades in fast.

For more information about crossfades, see Fades and Crossfades.

Default Crossfade Curves > Slow Out - Slow In

This command sets as default a crossfade in which the first clip fades out slowly and the second clip fades in slowly.

For more information about crossfades, see Fades and Crossfades.

Default Crossfade Curves > Fast Out - Slow In

This command sets as default a crossfade in which the first clip fades out fast and the second clip fades in slowly.

For more information about crossfades, see Fades and Crossfades.

Default Crossfade Curves > Slow Out - Fast In

This command sets as default a crossfade in which the first clip fades out slowly and the second clip fades in fast.

For more information about crossfades, see Fades and Crossfades.

Default Crossfade Curves > Linear Out - Fast In

This command sets as default a crossfade in which the first clip fades out at a steady rate and the second clip fades in fast.

For more information about crossfades, see Fades and Crossfades.

Default Crossfade Curves > Linear Out - Slow In

This command sets as default a crossfade in which the first clip fades out at a steady rate and the second clip fades in slowly.

For more information about crossfades, see Fades and Crossfades.

Default Crossfade Curves > Fast Out - Linear In

This command sets as default a crossfade in which the first clip fades out fast and the second clip fades in at a steady rate.

For more information about crossfades, see Fades and Crossfades.

Default Crossfade Curves > Slow Out - Linear In

This command sets as default a crossfade in which the first clip fades out slowly and the second clip fades in at a steady rate.

For more information about crossfades, see Fades and Crossfades.

Percentage

This command sets the Audio Scaling ruler to display the percentage of the waveform being shown.

dB

This command sets the Audio Scaling ruler to display the dB level of the waveform being shown.

Zoom Factor

This command sets the Audio Scaling ruler to display the zoom factor (a multiple of the default zoom level, i.e. a zoom factor of 10 shows the waveform at 10 times the detail) of the waveform being shown.

Show and Fit Selection

This command zooms vertically and horizontally in the Track view to fit just the selected clips.

Fit Tracks to Window

This command resizes all shown tracks to fit into the Track view window.

Fit Tracks and Buses to Window

This command fits your entire project, or as many tracks as possible, into the Track view.

Show only Selected Tracks

Hides all tracks which are not selected.

Hide Selected Tracks

Hides all selected tracks.

Show All Tracks and Buses

Shows all tracks and buses in your project.

Undo View Change

Reverts the following parameters to their previous state:

- Individual track sizes
- Height factors
- Scaling

There are 16 levels of undo for this command.

Redo View Change

Negates the last Undo View Change command.

Show All Envelopes

Shows all track and clip envelopes in your project.

Hide All Envelopes

Hides all track and clip envelopes in your project.

Show Volume Envelopes

Shows all volume envelopes in your project.

Show Pan Envelopes

Shows all pan envelopes in your project.

Show Bus Send Envelopes

Shows all bus send envelopes in your project.

Show Plug-in Envelopes

Shows all effects envelopes in your project.

Show Automated Mute Envelopes

Shows all automated mute envelopes in your project.

Show MIDI Envelopes

Shows all MIDI envelopes in your project.

Create Track Envelopes Using Linear Shapes

This command, when checked, causes newly inserted envelopes to have a node at both the beginning and end of the track. If unchecked, an envelope appears as a dotted line with no active nodes.

Velocity

The Velocity command opens the **Velocity** dialog where you can set the default velocity value for each note entered using the Pattern Brush. If the Use Pattern Velocities command is checked, this value is not used. For more information about the Use Pattern Velocities command, see Use Pattern Velocities.

Use Pattern Velocities

When the Use Pattern Velocities command is checked, the Pattern Brush creates notes using the actual velocity values saved in the current pattern file. For more information about pattern files and the Pattern Brush, see The Pattern Brush Tool.

Use Pattern Polyphony

When the Use Pattern Polyphony command is checked, the Pattern Brush creates notes using the actual pitch values saved in the current pattern file, regardless of where the mouse is in the Drum Grid pane. For more information about pattern files and the Pattern Brush, see The Pattern Brush Tool.

Use Note Duration

When the Use Note Duration command is checked, the Pattern Brush uses the current note duration setting in the **Piano Roll view** toolbar as the interval between notes. For more information about pattern files and the Pattern Brush, see The Pattern Brush Tool.

Auto Erase

When the Auto Erase command is checked, the Draw tool can create new notes by clicking where there are no existing notes and can delete current notes by clicking on them.

Quarter Note

An option in the **Show/Hide Grid** button, the **Quarter Note** option creates grid lines in the Drum Grid pane at quarter note intervals.

Quarter Note Triplet

An option in the **Show/Hide Grid** button, the **Quarter Note Triplet** option creates grid lines in the Drum Grid pane at quarter note triplet intervals (three lines per half note).

Eighth Note

An option in the **Show/Hide Grid** button, the **Eighth Note** option creates grid lines in the Drum Grid pane at eighth note intervals.

Eighth Note Triplet

An option in the **Show/Hide Grid** button, the **Eighth Note** option creates grid lines in the Drum Grid pane at eighth note triplet intervals (three lines per quarter note).

Sixteenth Note

An option in the **Show/Hide Grid** button, the **Sixteenth Note** option creates grid lines in the Drum Grid pane at sixteenth note intervals.

Sixteenth Note Triplet

An option in the **Show/Hide Grid** button, the **Sixteenth Note** option creates grid lines in the Drum Grid pane at sixteenth note triplet intervals (three lines per eighth note).

32nd Note

An option in the **Show/Hide Grid** button, the **32nd Note** option creates grid lines in the Drum Grid pane at 32nd note intervals.

32nd Note Triplet

An option in the **Show/Hide Grid** button, the **32nd Note** option creates grid lines in the Drum Grid pane at 16th note triplet intervals (three lines per 32nd note).

64th Note

An option in the **Show/Hide Grid** button, the **64th Note** option creates grid lines in the Drum Grid pane at 64th note intervals.

Follow Snap Resolution

An option in the **Show/Hide Grid** button, the **Follow Snap Resolution** command sets the grid lines to match the current Snap to Grid setting.

Show/Hide Inspector

Toggles on or off the Track/Bus Inspector. The keyboard shortcut for this command is I.

Vertical FX Bins

Creates a vertical FX bin in the Track view. FX bins are vertical when this command is checked.

Envelope Draw Tool > Freehand Mode

Use the Envelope Draw tool in Freehand mode to edit envelopes by drawing freehand shapes.

Envelope Draw Tool > Sine Mode

Use the Envelope Draw tool in Sine mode to edit envelopes by drawing sine shapes.

Envelope Draw Tool > Triangle Mode

Use the Envelope Draw tool in Triangle mode to edit envelopes by drawing triangle shapes.

Envelope Draw Tool > Square Mode

Use the Envelope Draw tool in Square mode to edit envelopes by drawing square shapes.

Envelope Draw Tool > Saw Mode

Use the Envelope Draw tool in Saw mode to edit envelopes by drawing triangle shapes.

Envelope Draw Tool > Random Mode

Use the Envelope Draw tool in Random mode to edit envelopes by drawing random shapes.

Save As Track Template

This command is available from the track context menu by right-clicking on a track. This command opens the **Export Track Template** dialog. Use this command to save a track template using the currently selected track as a template. For more information about track templates, see Working with Track Templates.

V-Vocal > Create V-Vocal Clip

This command creates a V-Vocal clip on top of selected audio data.

For more information about V-Vocal clips, see V-Vocal Clips.

V-Vocal > Remove V-Vocal

This command removes the V-Vocal processor from the V-Vocal clip.

For more information about V-Vocal clips, see V-Vocal Clips.

V-Vocal > Bypass All V-Vocal Clips

This command bypasses or unbypasses all V-Vocal clips in a single track.

For more information about V-Vocal clips, see V-Vocal Clips.

V-Vocal > Bypass/Unbypass

This command bypasses or unbypasses all V-Vocal clips in a single track.

For more information about V-Vocal clips, see V-Vocal Clips.

V-Vocal > V-Vocal Editor

This command opens the V-Vocal interface.

For more information about V-Vocal clips, see V-Vocal Clips.

Pick Tracks Menu

Use this menu to choose what tracks you want to display.

Snap to Grid

Click this button to turn **Snap to Grid** on or off. Use the drop-down menu that is next to it to set the Snap to Grid options.

Select Tool

Use this to select data.

Erase Tool

Use this to erase data.

Draw Tool

Use this to draw data or events.

Scrub tool

Plays all displayed tracks as you drag the cursor forward or backward.

Unlink Step Sequencer Clips

This command unlinks the selected step sequencer clips, allowing each clip to be edited separately from each other.

See:

To unlink copied Step Sequencer clips

Convert MIDI Clip(s) To Step Sequencer

This command lets you convert any selected MIDI clip to a step sequncer clip.

See:

To convert a MIDI clip(s) to a Step Sequencer clip(s)

Convert to Mono

This command lets you convert any selected stereo audio clip(s) to mono.

Open Clip Effects Bin

This command opens the clip effects bin.

See:

Effects on Clips

Insert New Track(s) or Bus(es)

Click this button to choose from a variety of insertion options. You can insert a single audio or MIDI track, multiple tracks, a track folder, a track template, or a single stereo or surround (SONAR Producer only) bus.

Free Edit Tool

This button activates the Free Edit tool, which allows you to perform both time based selection and clip selection.

See:

Free Edit tool

Envelope Tool

This button activates the Envelope tool, which allows you to edit only envelopes without accidentally editing other types of data.

Click the down arrow on the right side of the **Envelope** combo button to see the display options menu for the envelopes.

See:

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Envelope Draw Tool

This button activates the Envelope Draw tool, which allows you to draw both freehand and preset shapes on an existing envelope.

See:

Using the Envelope Draw Tool

Enable/Disable Automatic Crossfades

Click this button turn enable or disable automatic crossfades. Click the down arrow to select crossfade options.

See:

Fades and Crossfades

Show/Hide Meters

Click this button to show or hide all meters in the Track view. Click the down arrow to display a menu with options for showing or hiding specific meter types. Set options for the display of each meter type in the appropriate submenu.

See:

Changing the Meters' Display

Split Tool

This button activates the Split tool, which allows you to split a clip into separate clips. You can click on a clip once to create a single split, or click and drag over a section of a clip to create two splits. The Split tool follows the current Snap to Grid settings.

See:

Splitting and Combining Clips

Mute Tool

This button activates the Mute tool, which allows you to mute an umute individual clips. Set options for this tool by clicking the small down arrow to the right of the button.

See:

Clip Muting and Isolating (Clip Soloing)

Show/Hide Navigator

Click this button to show or hide the Navigator pane in the Track view. The keyboard shortcut for hiding or showing the Navigator pane is D.

See:

Using the Navigator View

Show/Hide Video

Click this button to toggle on or off the display of the Video Thumbnails track. The Video Thumbnails track can be displayed even if there is no video in your project. You can also show or hide the this track by pressing **I** on your keyboard.

See:

Video playback, import, and export

PRV Select Tool

This command activates the Inline Piano Roll Select tool.

For more information about using the Inline Piano Roll view, see The Inline Piano Roll View.

See:

The Inline Piano Roll View

PRV Draw Tool

This command activates the Inline Piano Roll Draw tool.

For more information about using the Inline Piano Roll view, see The Inline Piano Roll View.

See:

The Inline Piano Roll View

PRV Erase Tool

This command activates the Inline Piano Roll Erase tool.

For more information about using the Inline Piano Roll view, see The Inline Piano Roll View.

See:

The Inline Piano Roll View

Microscope Mode

This button activates Piano Roll Microscope mode. When Microscope mode is enabled, a transparent rounded square centered on the mouse cursor shows a zoomed in region of the Piano Roll data underneath it.

See:

Piano Roll Microscope mode

Select Controllers Along with Notes

When**Select Controllers Along with Notes** is enabled, selecting a Note event or a range of Note events will also automatically select any Controller events that exist within the time range of the Note event(s).

See:

Select controllers within note duration

Restores View to Previous State

This command returns the Track view to the previous zoom level (undo zoom).

For more information about displaying tracks, see Configuring the Console and Track Views.

Restore state of the view prior to undoing

This command negates the last Undo View Change command (redo zoom).

For more information about displaying tracks, see Configuring the Console and Track Views.

Aim Assist

Use this button to show or hide the Aim Assist line, which is a vertical white line that shows the mouse pointer's horizontal position in the Clips pane.

See:

Aim Assist line

Exclusive Solo

This button enables Exclusive Solo mode. When you solo a track or bus in Exclusive Solo mode, all other soloed tracks or buses are automatically unsoloed.

See:

Exclusive Solo mode

Edit > Select > All AudioSnap/Stretched Clips

The **Edit > Select > All AudioSnap/Stretched Clips** command selects all AudioSnap and stretched audio clips.

See:

AudioSnap

Selecting Clips

Create selection group from selected clips

This command places all selected clips in a new selection group.

See:

Clip selection groups:

Remove selected clips from selection groups

This command removes all selected clips from any selection groups they may belong to.

See:

Clip selection groups:

Process > Global Bypass Effects Bins

The **Process > Global Bypass Effects Bins** command lets you temporarily bypass all track, bus and clip effects. You can also toggle this option by pressing CTRL+SHIFT+Y.

See:

Global effects bypass

Transport > Live Input PDC Override

The **Transport > Live Input PDC Override** command enables or disables Automatic Plug-in Delay Compensation (PDC) on live tracks (an input monitored track or synth track), thereby removing the latency during playback and recording of such tracks. You can also toggle this command by pressing CTRL+D.

Note: *If the live track being monitored also contains track data (or MIDI data in the case of a synth track), the streamed track data will not be delay compensated. As a result the recorded track data will not be in sync with other tracks. You should either mute any clips on the live tracks, work with an empty region of the track, or use an entirely new track while recording.*

See:

Live Input PDC override

Transient Tool

This button activates the Transient tool, which allows you to edit AudioSnap transient markers and perform various tasks related to time stretching and tempo mapping.

See:

Using the Transient tool

AudioSnap

Set project tempo from clip

This command copies the clip's tempo map to the project's global tempo map. This allows the project's measure boundaries to align with the audio clip. Whenever the project's tempo map is generated from a clip, the clip's **Lock Position** property is enabled automatically.

See:

Synchronizing audio and the project tempo

AudioSnap

Clip follows project tempo

This command forces the selected audio clips to follow the project's global tempo map.

See:

Synchronizing audio and the project tempo

AudioSnap

Edit clip tempo map

This command shows/hides controls that allow you to edit a clip's tempo map.

See:

Editing a clip's tempo map

AudioSnap

Save as groove

This command opens the **Define Groove** dialog, which lets you save the groove to a file. The groove can then be applied to other audio or MIDI clips.

See:

To Groove Quantize an audio clip

AudioSnap

Copy as MIDI

This command copies the selected audio clip's beats to the Clipboard as MIDI notes, which you can paste into a MIDI track. You select the MIDI note that the transients in the audio clip will be converted to in the **AudioSnap Options** dialog, which opens when you click the **Options** button in the AudioSnap palette.

See:

To extract MIDI timing from an audio clip

AudioSnap

Add Clip to Pool

This command adds or deletes the clip's transient markers from the Pool. The markers do not have to be visible to be added to the Pool. See "Using the Pool" on page 404 for more information.

See:

Using the Pool

AudioSnap

Show Pool Lines

This command hides or shows the Pool lines.

See:

Using the Pool

AudioSnap

Add MBT to Pool

This command adds the time ruler to the Pool.

Tip: *In the **Snap to Grid** dialog, set the **Musical Time** value to the resolution you would like to add to the Pool.*

See:

Using the Pool

AudioSnap

Quantize to Pool

This command opens the **Quantize to AudioSnap Pool** dialog, which lets you quantize audio beats to the Pool.

See:

To quantize an audio clip to another audio clip (Quantize to Pool)

AudioSnap

Beginner's Guide to Cakewalk Software

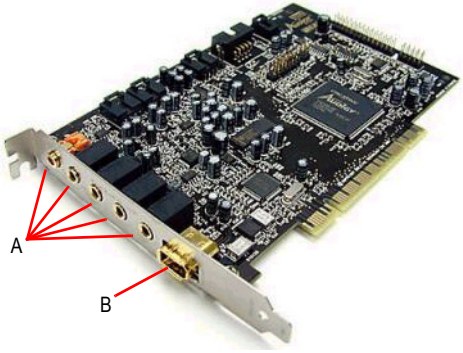
If you have little or no experience using music software to play and record music, this guide is for you. This guide explains the terms and concepts you need to know to use music software. You can get much more help in every Cakewalk program by using the **Help** menu, or by pressing F1 when you have any view or dialog box open. All Cakewalk programs have very basic tutorials in the Online

Help that cover recording and playback. To view these tutorials, open the **Help** menu, click **Help Topics**, and look for topics called **Getting Started** or **Tutorials**.

Note: *The graphics in this document are from different varieties of Cakewalk software, including older versions.*

The basic way that you use a computer to record and play sound is this: your computer has a circuit board in it called a *sound card*, which converts the sound from an electric instrument or microphone into a long string of numbers, which a computer stores and then converts back into sound when you want to play the recording. Almost every computer comes with a sound card which is good enough to make very good, but not fully professional-level recordings.

The sound card has inputs and outputs on it, which you can see by looking at the back of your computer.



A. *Inputs and outputs* ***B.*** *Joystick port*

To record, for example, an electric guitar into the computer, you plug one end of your guitar cable into your guitar, and plug the other end into the Line input of your sound card. Then you would click

the **Record** button in your Cakewalk software, start playing your instrument, and then click the **Stop** button (or press the SPACEBAR). The Line input has a little icon next to it, which is very hard to recognize, so it usually helps to look at the documentation that came with your sound card or computer. A guitar cable has a plug on it that is 1/4 inch wide (diameter), and the Line input on low-priced sound cards is 1/8 inch wide. You need to connect your guitar cable to a 1/8 inch adapter in order to plug it into most sound cards. These adapters are inexpensive and are available at most electronics supply stores.

1/4 inch to 1/8 inch adapter

If you want to record an acoustic instrument or vocal, you would use a microphone. You connect the microphone's cable to the adapter and plug the adapter into the Mic input of the sound card. You can get a better sound, however, by plugging the microphone cable into a preamp, or a mixer with a preamp, and plugging the outputs of the mixer or preamp into the Line input of the sound card, instead of the Mic input. You would then need an adapter to connect the two outputs (left and right) of the mixer or preamp to the 1/8 inch Line input. Ask the store where you buy your preamp or mixer what kind of adapter you need to connect to a sound card that has 1/8 inch inputs.

Professional-quality sound cards do not use 1/8 inch inputs, so you do not need one of these adapters to use a professional-grade sound card.

To play back the music, you need to connect powered speakers or headphones to the output of the sound card, which on new computers is usually painted green. Then you click the **Rewind** button (or press **w**) in your Cakewalk software, and then click the **Play** button (or press the SPACEBAR) to play back what you recorded.

Music software uses two different formats to play and record sound—MIDI and Audio. Knowing the differences between the two formats is essential for using most music software. However, some Cakewalk programs, such as Guitar Tracks Pro, do not use MIDI.

For more information, see:

MIDI

Audio

Audio Hardware (Sound Cards) and Drivers

MIDI

Besides introducing MIDI in this section, we'll explain the following MIDI topics:

- MIDI Channels, Interfaces, Inputs, and Outputs
- MIDI Drivers

- MIDI Files, Projects, Tracks, and Clips
- Controlling Which Sounds You Hear

Short for Musical Instrument Digital Interface, MIDI is a system that lets an electronic instrument or computer control other instruments. MIDI is largely a set of commands, called MIDI messages, that cause an electronic instrument to play specific sounds at specific times, and also to play those sounds in the style that you dictate. A MIDI instrument functions very much like a player piano, only instead of using a roll of paper with holes punched in it, a MIDI instrument needs a software program or other MIDI instrument to turn its notes on and off. When you record MIDI, you don't record the sound of the instrument you're recording—you record the commands that play that instrument in the way you want it to be played. For example, when you press a key on a MIDI keyboard while your Cakewalk software is recording, the software just records the fact that a certain note was pressed and then released—the software doesn't record the actual sound of the note. When you play back the recording, the software takes control of your MIDI instrument and turns the note on and then off at the same time in the song that you did. MIDI notes can be read and displayed by a music notation program. Digital audio, the sound format used by CDs, Wave files, and MP3s, can not. After you record your MIDI data you can use Cakewalk to convert the MIDI data into digital audio so that you can create CDs, MP3s, or Windows Media files.

MIDI has advantages and disadvantages when compared to digital audio. MIDI files are much smaller than audio files, since MIDI data is only made up of the commands to play instruments, instead of the actual sound of the instruments themselves. You can usually copy one or more MIDI files onto a floppy disk. You can easily email MIDI files. You can save a MIDI file in a format called a Standard MIDI File, and then open it and use it in many different programs. You can record MIDI music as slowly as you want, and then change the tempo in your software to play it back at any tempo you want. Audio files, however, can only play back at approximately the same tempo they were recorded at without drastically altering the sound quality. It's easy to edit and transpose MIDI files, since they are so small and you're just editing commands, not actual sound. MIDI files can be printed out as standard musical notation or lead sheets. It can be harder to make MIDI music sound as natural as audio. If you don't record MIDI music in real time, it can sound mechanical. Some MIDI instruments, especially some of the acoustic-sounding instruments such as brass, strings, and guitars that you find on the built-in synthesizers of low-priced sound cards, sound artificial. However, percussive sounds usually sound quite good on MIDI instruments, and are much easier to record than a real drum set. You can also play back MIDI data through any number of hardware or software samplers that use recordings (samples) of any instrument you can imagine as sound sources.

For more information, see:

MIDI Channels, Interfaces, Inputs, and Outputs

MIDI Drivers

MIDI Files, Projects, Tracks, and Clips

Controlling Which Sounds You Hear

MIDI

Audio

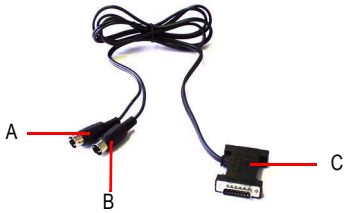
Audio Hardware (Sound Cards) and Drivers

MIDI Channels, Interfaces, Inputs, and Outputs

Most MIDI instruments can play at least 16 different sounds at the same time—instruments that can play more than one sound at a time are called **multi-timbral** (pronounced multi-*tambral*). In order to control which sounds respond to which commands, MIDI messages are marked with a channel number from 1 to 16. That way a MIDI sound module, such as a drum machine, can tell which messages are meant for which of the sounds it is capable of playing. Each instrument has a limit to the number of notes it can play at one time, counting all the notes it is playing on all the sounds it is using combined. That number is usually between 32 and 128, and is called **polyphony**.

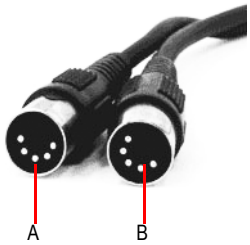
You need some way to get MIDI messages into and out of your computer, so a MIDI system needs a piece of hardware called a **MIDI interface**, which can be a stand-alone module connected to your computer's parallel, serial, or USB port; an internal module installed in a slot inside your computer; or can be part of your sound card (the sound cards that come with most computers frequently use the joystick port as an input and output for MIDI data). Your computer sends MIDI messages to your MIDI interface, which then sends them on to your MIDI instruments. That's how MIDI software plays MIDI instruments. A MIDI interface contains inputs and outputs, labeled **MIDI IN** and **MIDI OUT**, which you connect MIDI cables to so you can send MIDI messages to and from MIDI instruments. MIDI instruments can be stand-alone synthesizers or can be built into your sound card. Most inexpensive sound cards have internal synthesizers that can make at least 128 different sounds (if you're using a synthesizer that's built into your sound card, you don't have to connect that to the sound card, since the connections are internal to the sound card).

Figure 261. *Joystick connector—use this if your MIDI interface is the joystick port on your sound card.*



A. *Insert this MIIDI IN plug into the MIDI OUT port on your MIDI instrument* ***B.*** *Insert this MIIDI OUT plug into the MIDI IN port on your MIDI instrument* ***C.*** *Insert this plug into the joystick port on your sound card*

Figure 262. *Standard MIDI cable—use this if your MIDI interface has standard 5-pin input and output ports*



A. *Connect one end to an OUT on your MIDI interface* ***B.*** *Connect the other end to an IN on your MIDI instrument*

MIDI instruments have inputs and outputs labeled MIDI IN and MIDI OUT. You connect a MIDI cable from one of your MIDI interface's MIDI OUTs to a MIDI IN on an instrument. You also connect a MIDI cable from the MIDI OUT on one of your MIDI instruments to the MIDI IN on your MIDI interface. The instrument that you connect to the MIDI IN of your interface is called a **controller**, and typically has a piano-style keyboard for sending note on/off messages, pitch and modulation wheels, and perhaps some sliders on it for sending other MIDI messages to the interface. You can also get MIDI converter modules that turn guitars, drums, and other instruments into controllers. You can use a controller to record yourself playing in real time. When you play your controller, the MIDI messages go to the interface, then into your computer, and then back to the interface and to a specific MIDI instrument that's connected to the interface. You choose what instrument the messages come back to by using the software. This process of a computer sending back out the MIDI messages that it just received is called **echoing**. By using echoing, you can play one MIDI instrument, but cause other MIDI instruments to play. Your controller usually has a setting on it called **Local On/Off**. When your controller is connected to your interface, you need to set the Local On/Off setting to Local Off. That's because if your software is set to send MIDI messages back to your controller, when you play a note on your controller, it is sent to the computer, and then back to the controller again through its MIDI IN, causing it to play **two notes every time you play one note** on it. When your controller is set to Local Off, it won't play a note on the controller when you press a key, but only when the Note On message comes back from the computer, which happens instantaneously. Remember to set it back to Local On if you're going to use the controller separate from the computer.

MIDI instruments have a third port called a **MIDI THRU** port. This port passes through MIDI messages without changing them in any way. You can chain MIDI instruments together by connecting the MIDI THRU port on one MIDI instrument to the MIDI IN port on another instrument, with several instruments chained together that way. If you had a MIDI interface that had 8 outputs, and you chained 3 instruments together on each of those outputs by using the MIDI THRU ports, you would be able to play 24 instruments at one time.

For more information, see:

MIDI Drivers

MIDI Files, Projects, Tracks, and Clips

Controlling Which Sounds You Hear

MIDI

Audio

Audio Hardware (Sound Cards) and Drivers

MIDI Channels, Interfaces, Inputs, and Outputs

MIDI Drivers

Your MIDI interface needs a driver to function. A driver is a small software program that controls input and output for a peripheral device. To use a MIDI interface in Cakewalk, you need to make sure that your interface's driver is installed, and that you have told Cakewalk to use it. That way, Cakewalk knows to use the driver and to list all of your interface's inputs and outputs in the proper menus. If your MIDI interface is part of your sound card, you probably installed its driver when you installed the sound card. You can check this in Cakewalk by using the **Options > MIDI Devices** command to open the **MIDI Devices** dialog. In the **Outputs** list, see if the name of your MIDI interface is listed. It should be called something like **SB Live MIDI Out**. Make sure it is highlighted. In the Inputs list, you should see something like SB Live MIDI In. Make sure this is highlighted and click **OK**. If you don't see the name of your interface listed, you need to install its driver from the CD, floppy disk, or Web site that your interface's documentation recommends.

After you have installed the driver and restarted your PC, you need to **tell Cakewalk to use this** particular driver. Use the **Options > MIDI Devices** command to open the **MIDI Devices** dialog. In the **Outputs** list, make sure that the name of your interface's driver is highlighted. If it isn't, click it to highlight it. If your interface has more than one output, make sure you highlight the names of all the outputs. The **order of the outputs** in the list determines what output numbers Cakewalk gives to each output. So even if an output on your interface has a label that says 1 or A, if it is not first in the list in the **MIDI Devices** dialog, it will not be labeled 1 in Cakewalk. You can change the order in the list by temporarily deselecting all the outputs except the one you want to move to the top, and then clicking the **Move Selected Devices To Top** button that's at the bottom of the dialog. Then make sure you reselect the other outputs you want to use.

For more information, see:

MIDI Files, Projects, Tracks, and Clips

Controlling Which Sounds You Hear

MIDI

Audio

Audio Hardware (Sound Cards) and Drivers

MIDI Channels, Interfaces, Inputs, and Outputs

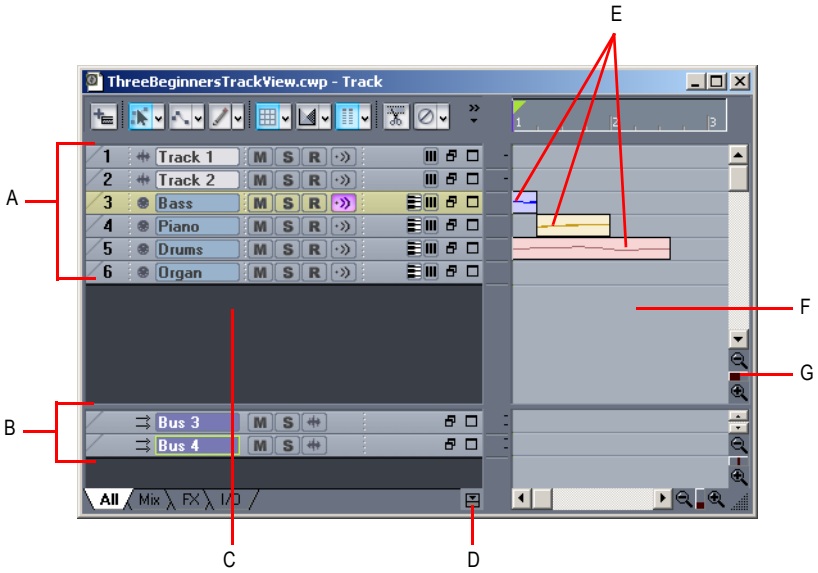
MIDI Drivers

MIDI Files, Projects, Tracks, and Clips

In Cakewalk programs, the file that you use to store usually a single song's data is called a **project**. This is the file you use to record, play back, and edit your song. The file extension for a project is .wrk in older Cakewalk programs and .cwp in newer ones. Projects that use only the MIDI format (no digital audio) can be saved in a format called a **Standard MIDI File**, and can then be played back in any program or machine that plays MIDI files. These files have the extension .mid.

The MIDI messages within a project are usually separated into smaller containers called **tracks**, and even smaller containers called **clips**, which are sections of a track. You usually use tracks to separate the MIDI messages that are intended to play one kind of sound from the MIDI messages that play other sounds. You usually assign each track to its own MIDI channel. A typical MIDI project might have separate tracks for drums, bass, and piano. In this example, you might assign the bass track to Channel 2, and the piano track to Channel 5. Then you would set your MIDI sound module to play a bass sound on Channel 2, and a piano sound on Channel 5. Instead of manually setting your MIDI modules to play these sounds, you can send Program Change messages to tell your sound module what sounds to play on what channels (see Controlling Which Sounds You Hear). You usually assign drum tracks to Channel 10. Because you stored the MIDI messages that are assigned to each sound on separate tracks, you can then control and edit the stored MIDI messages that go to one sound without changing the messages that are sent to other sounds.

Figure 263. *Cakewalk Track view*



A. *Tracks 1 through 6* ***B.*** *Buses* ***C.*** *Track pane* ***D.*** *Show//Hide Bus pane button* ***E.*** *MIDI messages recorded in Tracks 3,4, and 5* ***F.*** *Clips pane* ***G.*** *Vertical Zoom fader—drag to change track height*

Notice that when you record any data into a track, that Cakewalk displays a visual representation of the track's data in the Clips pane. In the above picture, Tracks 1, 2, and 6 are still empty, while Tracks 3, 4, and 5 contain recorded data. Also notice that Track 3 is a different color from the other tracks, meaning that it has the **focus**, and will make the bass sound when you play your MIDI

keyboard (controller). If you click one of the other MIDI tracks to change the focus, the sound that's selected for that track will sound when you play your controller.

Figure 264. *Track 3 zoomed in to expose track property fields*

A. *Track 3's volume* ***B.*** *MIDI instrument that Track 3 is playing* ***C.*** *MIDI channel of Track 3* ***D.*** *Patch name of Track 3* ***E.*** *Transpose field*

In the above picture, we zoomed in far enough by dragging the Vertical Zoom fader (see previous picture) to expose the track property fields for each track. Use these to **choose what MIDI channel** each track is sending its messages out on, what sound (patch) the track is sending the messages to, how loud the overall track volume is, what MIDI instrument you're sending the track's data to, and several other property choices. Notice that the track's number and its MIDI channel are not the same. **Track numbers and MIDI channels have nothing to do with each other**, although you may want to keep them the same in a small project to make remembering them easier. We could have sent Track 3's MIDI messages out on any channel we wanted, just by selecting a different number in the **Ch** field. Notice the MIDI cable logo just in front of the track name; the audio track above it has a different logo to identify it as an audio track. The audio track has different track property fields from the MIDI track (notice there's no **Ch** field).

For more information, see:

Controlling Which Sounds You Hear

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MIDI Drivers

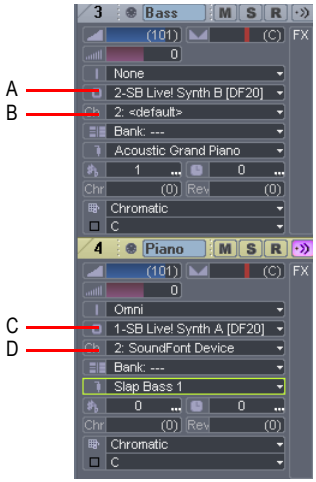
MIDI Files, Projects, Tracks, and Clips

Controlling Which Sounds You Hear

Because each MIDI instrument can probably play many different sounds at the same time, you need a way to tell each instrument which tracks are meant for which sounds. You do this by assigning a MIDI channel to each track, and by assigning a specific sound, called a **patch** or **program**, to each track.

Because there are only 16 MIDI channels, and each instrument can probably play 16 different sounds at the same time, you need a way to **create more MIDI channels** to make sure that instruments play only the notes that are specifically meant for them. The way a MIDI program gets around this limitation is by **assigning an output number** to each group of 16 MIDI channels. For example, if your MIDI interface has 8 outputs, you might set your first 16 tracks to use output 1, the next 16 tracks to use output 2, and so on. The MIDI messages on the first 16 tracks would only be sent out through the cable that comes out of the first output port, the messages from the next 16 tracks would only come out of output 2, and so on. So if your MIDI interface has 8 outputs, you effectively have 128 MIDI channels to work with. Of course, the way you choose what output you want to send a track's data out of is determined by what instrument is connected to that output. So, even if you only had a keyboard track and a drum track in your project, and your favorite keyboard instrument was connected to output 1 of your MIDI interface and your drum machine was connected to output 2, you would assign the keyboard track to use output 1 and the drum track to use output 2.

In the picture below, notice that the two tracks both use Channel 2. But these are not the same channel! The tracks are assigned to different outputs, so the MIDI messages in these two tracks will be sent to different instruments. The bass track will send its data out on Channel 2 of Output 2. The piano track will send its data out on Channel 2 of Output 1.



***A.** Output **B.** MIDI channel **C.** Output **D.** MIDI channel*

If your interface only has one output, and you chain several instruments to that output by using the MIDI THRU ports on the instruments, you can use the individual instruments' own control panels to choose what MIDI channels they will respond to. That way, **an instrument can ignore** any notes or

other messages that are meant for a different instrument on the chain. This setting is usually called **MIDI Receive**, and might be abbreviated on an instrument's control panel as MIDI RX.

Since most projects have several tracks in them, and each track is usually assigned to a different sound, how do you **control what sound you hear when you press a key** on your MIDI controller? In Cakewalk programs, one of your tracks is always a tan color, because it has the focus. Whatever track you click grabs the focus, and the sound that's selected for that track will sound when you play your keyboard.

For more information, see:

Audio

Audio Hardware (Sound Cards) and Drivers

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Controlling Which Sounds You Hear

MIDI

Audio

The audio format works by converting any sound that's recorded into a long series of numbers, storing and usually editing the numbers, and then converting the numbers back into sound.

When you record sound using this format, the microphone you use causes the voltage in its cable to change rapidly as the mic's diaphragm vibrates. These rapid changes in voltage are measured and recorded by an **analog-to-digital converter**, and these measurements make up what we call digital audio. To convert digital audio back into sound, a **digital-to-analog converter** uses the stored numbers to cause the voltage in a cable to change rapidly, and this voltage then moves the diaphragm in a loudspeaker in a similar way to the way that the microphone's diaphragm moved originally (unless the numbers have been edited to produce a more desirable sound). These converters, commonly referred to as A to D or A/D, and D to A or D/A, are part of your computer's sound card. Better sound cards usually keep their converters in a separate box that's not in the computer itself, because the computer's fan and disk drives add noise to the sound card's signal.

Digital audio works like cartoon animation. In a cartoon, a series of still photographs is displayed rapidly in sequence to make it look as if the objects in the photographs are moving. When digital audio is converted back into sound, the voltage is changed at regular intervals to simulate continuous sound. To make high-quality sound, the original voltage during recording has to be measured, or "sampled," at rapid enough intervals to fool your ears into hearing continuous sound. Audio CDs use a sampling rate of 44,100 per second. To store and edit so many numbers places a big load on most PCs, much bigger than the processing of MIDI data causes.

For more information, see:

Audio Playback in Cakewalk

Tracks

Clips

Track-by-Track Playback

Connecting an Instrument, Home Stereo, or Microphone to your Sound Card

Choosing Inputs

Audio Recording

Audio Hardware (Sound Cards) and Drivers

Audio

MIDI

Audio Playback in Cakewalk

To use digital audio in Cakewalk, you first have to make sure that your sound card and its driver are properly installed. For information about sound card and driver installation, see your sound card's documentation, and also Audio Hardware (Sound Cards) and Drivers.

After you've successfully tested your sound card and driver, you should play back one of the sample files that came with your Cakewalk software.

To play back a sample file, use the **File > Open** command, navigate to a folder that has bundle files in it (they have the extension .bun or .cwb), select a bundle file, and click **Open**. After the file loads, make sure that your speakers are turned on, and play the file by pressing the SPACEBAR. You also can stop the file's playback by pressing the SPACEBAR again. You should hear something. You can rewind the file by pressing W, or by clicking the **Rewind** button in the **Transport** toolbar.

If you don't hear anything, here are several steps to take:

Playback Troubleshooting Table

Possible problem	What to do
The volume setting is turned down on your software mixer, or wave playback is muted.	If your sound card only has one stereo output, your sound card probably responds to the Windows Mixer. If your sound card has more than one stereo output, it might not respond to the Windows Mixer—launch your sound card's own mixer software if it has it, and make sure all volume settings are turned up and nothing is muted. To open the Windows Mixer—double-click the **Speaker** icon that's on your Windows taskbar to open the **Play Control** dialog. If you don't see the Speaker icon on your taskbar, you can open the Windows Mixer by using the **Start > Programs > Accessories > Entertainment > Volume Control** command. Make sure that both the Wave Direct Sound slider and the Play Control slider are turned up, and that none of the **Mute** or **Mute All** check boxes at the bottom of the dialog are checked.
Your speakers aren't connected properly, or the volume is turned down.	Make sure your speakers are on and the volume is turned up.
Your sound card isn't hooked up correctly.	Run the Microsoft Sound Recorder (**Start > Programs > Accessories > Entertainment > Sound Recorder**). Open any wave file and see if it plays sound correctly through your speakers. If not, check your sound card documentation to make sure it is properly installed and configured.
Your tracks' initial volume settings are too low, or the tracks are muted.	See Track-by-Track Playback.
Your audio tracks are assigned to the wrong playback device.	Check the playback device assignment for an audio track by clicking the track's **Output** button or **Out** field. If the name of your sound card (the one you have connected to an amp and speakers) is not selected on the pop-up menu, select it. If it's not listed, use the **Options > Audio** command to open the **Audio Options** dialog. In the **Audio Options** dialog box, make sure the name of your sound card is highlighted on the Drivers tab under Output Drivers, and also on the General tab under Playback Timing Master. If you don't see anything resembling the name of your sound card, anywhere, see the next step.
Cakewalk doesn't recognize your sound card.	Choose **Options > Audio**, click the **General** tab, and then click the **Wave Profiler** button to test your audio hardware. Then try playing the file again.

Table 224.

For more information, see:

Tracks

Clips

Track-by-Track Playback

Connecting an Instrument, Home Stereo, or Microphone to your Sound Card

Choosing Inputs

Audio Recording

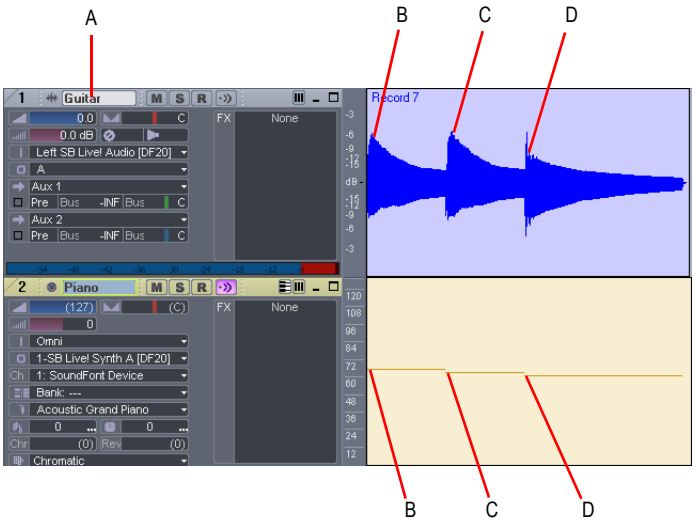
Audio Hardware (Sound Cards) and Drivers

MIDI

Tracks

A track is represented by a horizontal strip in the Track view that has a name and number on the left side (each track is also represented by a vertical module in the Console view). A track is a container you usually use to keep the sound from each instrument separate from the others—you usually keep the sound from each instrument on a separate track.

In the following picture, you can see the visual results of recording the first 3 notes of "Three Blind Mice" as audio in Track 1, and as MIDI in Track 2.



***A.** Name of Track 1 **B.** Three **C.** Blind **C.** Mice*

Notice that the graph (or *picture*, Cakewalk stores these picture files in the Picture Cache folder in the Cakewalk Projects folder) of the audio data follows the natural decay in loudness of a sound

after each note is struck. This is as expected since the pictures represent the actual sound that is recorded. The MIDI track's graph is much simpler, since it only represents commands to turn a certain note on for a certain time period, then turn another note on, etc. We zoomed in on these two tracks far enough to expose all the track property fields, such as Volume, Pan, Input, Output, etc. Notice the different logos left of the track names that distinguish audio tracks from MIDI tracks. Notice the data in the audio track's **Out** field: A. This is the name of the output driver that this particular sound card uses. If your sound card only has one pair of outputs (or one stereo output), you don't have to change anything in the **Out** field. Cakewalk fills it in automatically as soon as Cakewalk finishes running the Wave Profiler. If your sound card has more than one pair of outputs, or you have more than one sound card installed and enabled on your computer, you can use this field to choose what pair of outputs you want to hear a specific track played back through.

For more information, see:

Clips

Track-by-Track Playback

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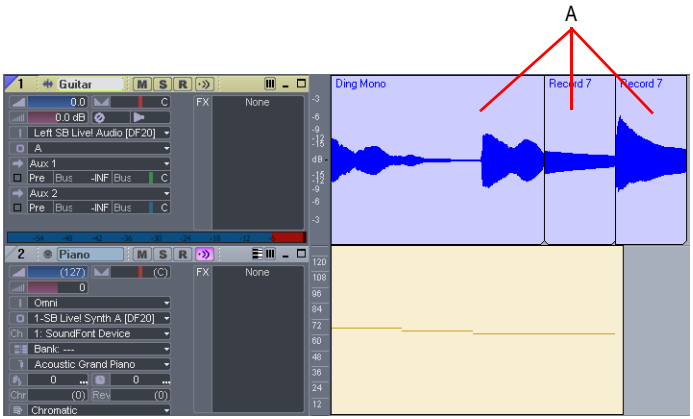
MIDI

Clips

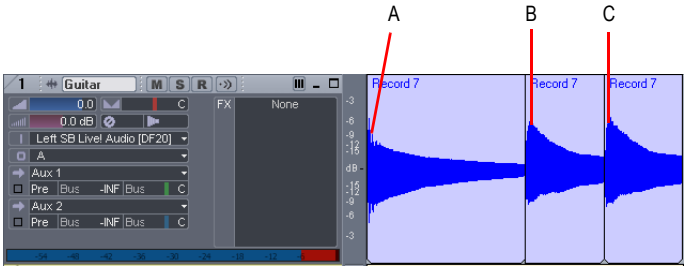
A clip is a portion of the audio or MIDI data in a track that is bounded by a vertical line on each end of the clip. You can click a clip to select it—a selected clip becomes highlighted. After you select a clip, you can copy it, drag it to a new location, delete it, or use any command in the **Edit** menu to alter it. A clip can be any size. A clip that is an exact number of beats or measures and is suitable for repetition, such as a drum pattern, is frequently called a *loop*. Clips are also sometimes called *events*. A track can have no clips (no data at all), one clip (all the track's data is in one clip), or many clips. Having lots of clips in a track increases processing time for your computer.

In the following picture, the Scissors tool in the **Track view** toolbar was used to separate the audio in Track 1 into three clips. You can activate the Scissors tool by pressing **c** on your keyboard, at which time the cursor turns into a small scissors icon. You can press **c** again to deactivate it, or press **t** to activate the Select tool, which is the default Track view tool. After you activate the Scissors tool you can click the track data at the points where you want to split it into clips. If your Cakewalk version doesn't have the Scissors tool, you can use the **Edit > Split** command, or right-click a clip and choose **Split** from the Clips pane pop-up menu.



A. Clips

You can rearrange the sound in both audio and MIDI tracks by dragging and/or copying clips. The precision of the clips' movement is governed by the **Snap to Grid** button , which you can configure by right-clicking it or by clicking the drop-down arrow that's next to it. In the following picture, the clips in Track 1 have been moved around to reverse their order, so instead of the first three notes of Three Blind Mice, we now have Mice Blind Three.



A. *Mice* ***B.*** *Blind* ***C.*** *Three*

For more information, see:

Track-by-Track Playback

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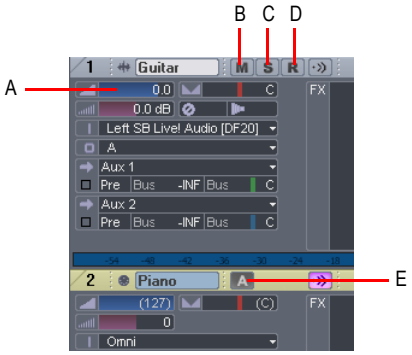
Track-by-Track Playback

You can change a track's volume by dragging its volume fader (see picture below). You can silence a track by clicking its **Mute** button (any button you click lights up when it's enabled). You can also silence all other tracks besides one if you click a track's **Solo** button. You can click either of these buttons while a project is playing, and you can mute or solo as many tracks as you want. You can also silence a track by *archiving* it, but you have to stop playback to archive or un-archive a track. To archive or un-archive a track, click the track's number to select it, and use the **Tracks > Archive** command. Archiving a track removes its data from your computer's memory (RAM), freeing up more memory for other tracks that you may be working on.



***A.** Track volume fader—drag left or right to change **B.** Mute button **C.** Solo button **D.** Arm button **E.** Archived track*

The following table summarizes muting, soloing, and archiving:

Track status	What it means
Normal	The track plays unless one or more of your other tracks is soloed.
Muted	The track is not played, but you can turn it on while playback is in progress.
Archived	The track is not played, and you must stop playback to re-enable it. Archived tracks do not tax your CPU during playback so they can be used to store alternate takes.
Soloed	Only those tracks that are designated as solo tracks are played; all others are muted.

Table 225.

If a track is both muted and soloed, it does not play. Mute has precedence.

For more information, see:

Audio Recording

Connecting an Instrument, Home Stereo, or Microphone to your Sound Card

Choosing Inputs

Audio Hardware (Sound Cards) and Drivers

MIDI

Audio Recording

If your sound card and driver are properly installed, recording audio data is mostly a matter of accomplishing two tasks:

- Connecting an instrument, home stereo, or microphone to an input on your sound card
- Choosing that same input in Cakewalk, your sound card's software, and/or Windows

For more information, see:

Connecting an Instrument, Home Stereo, or Microphone to your Sound Card

Choosing Inputs

Audio Recording

Audio Hardware (Sound Cards) and Drivers

MIDI

Connecting an Instrument, Home Stereo, or Microphone to your Sound Card

You need a cable with the correct plug on the end of it to connect an instrument or mic to your sound card. Low-priced sound cards usually have 1/8 inch analog jacks (inputs) marked Mic and Line, and might have a digital input marked S/PDIF. The Line input is the correct one for most electronic instruments such as electric guitars. The Mic input is calibrated to accept the input from microphones (however, you can usually get a better recorded sound by plugging a mic into a preamp or mixer with preamp, and plugging the preamp or mixer into the Line input). The S/PDIF input is the one to use for digital audio sources such as samplers and some CD players. Guitar cables usually have a 1/4 inch plug on the end, so to connect an electric guitar to a 1/8 inch jack, you need a 1/4 inch-to-1/8 inch adapter, which is readily available at electronics supply stores. If you're not sure what kind of inputs your sound card has, you can actually measure their width (diameter).

If you have a more professional-grade sound card, the input jacks will probably be 1/4 inch, and you might also have some XLR inputs for low-impedance microphones, and S/PDIF and possibly AES/EBU connections for digital input and output. If your microphone cable has an XLR plug on the end of it (an XLR plug has 3 pins sticking out of it), and your sound card only has 1/4 inch input jacks, you need to put an XLR-to-1/4 inch adapter on the end of your microphone cable.

The following table summarizes the possible sound card inputs, types of cables required, and the inputs to plug into:

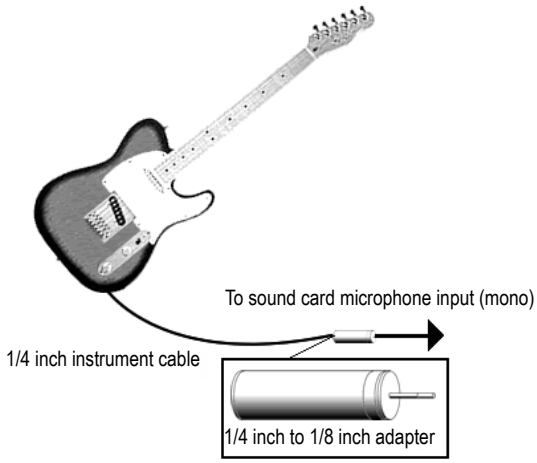
Type of sound card inputs	Cables and adapters needed	Inputs to plug into
1/8 inch MIc and Line	For most electric instruments: 1/4 inch balanced cable connected to 1/4 inch-to-1/8 inch adapter. For mics that have an XLR plug on their cable: XLR-to-1/4 inch adapter connected to 1/4 inch-to-1/8 inch adapter.	Plug instruments into the Line input; plug microphones into the Mic input. Alternatively, plug mics into preamps, and plug preamps into Line inputs.
1/4 inch Left and Right	No adapter required for normal electric instrument cable. For mics that have an XLR plug on their cable: XLR-to-1/4 inch adapter.	Plug both instruments and mics into the Left or Right input of a pair of inputs. If your instrument has stereo pickups and a stereo cable, you can plug the cable into both the Left and Right inputs.
1/4 inch Left and Right, XLR Left and Right	No adapters required	Plug instruments into the 1/4 inch Left, Right, or both inputs. Plug a mic into the XLR Left or XLR Right input.
S/PDIF (Sony/Phillips Digital Interface)	No adapters required. Use a a 75 ohm coaxial video cable, or special S/PDIF cable. Do not use standard stereo component cables.	Connect your digital source (probably a sampler or CD player with digital outputs) to your sound card's S/PDIF input using a 75 ohm coaxial video cable, or special S/PDIF cable. See To Record Through the S/PDIF Input.

Table 226.

Electric Guitar Direct In

You can connect an electric guitar directly to your sound card using a 1/4 inch mono to 1/8 inch stereo adapter. The following diagram shows this setup:

Figure 265. *Electric guitar direct in*

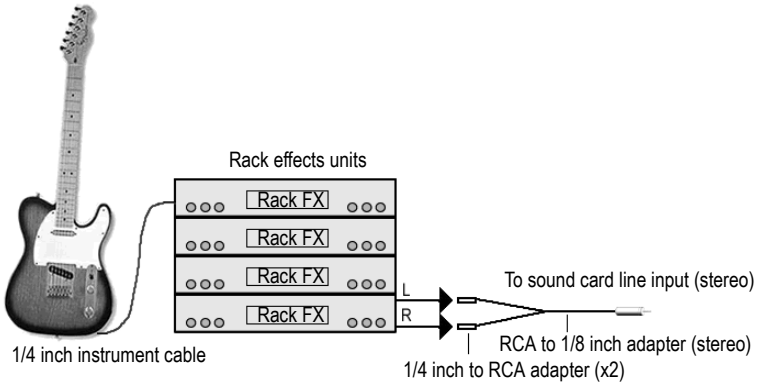


The 1/8 inch plug should be plugged into the sound card's Line input, although plugging into the Mic input will also work. If you use the Line input, make sure you have selected **Line-In** on the **Windows Record Control** dialog (Windows Mixer). If you use the Mic input, select **Microphone**. To open the Windows Mixer—double-click the **Speaker** icon that's on your Windows taskbar to open the **Play Control** dialog. In the **Play Control** dialog, use the **Options > Properties** command, select **Recording** (under **Adjust volume for**), make sure **Line-In** and **Microphone** are checked, and click **OK**. In the **Record Control** dialog, click the **Select** check box in either the **Line-In** or **Microphone** column, make sure the sliders are in the upper half of their range, and click **OK**. If you don't see the Speaker icon on your taskbar, you can open the Windows Mixer by using the **Start > Programs > Accessories > Entertainment > Volume Control** command.

Electric Guitar Through Effects Rack

You can also plug an electric guitar into an effects rack, then send the output of the rack to the sound card's input, as shown in the following diagram:

Figure 266. *Electric guitar through effects rack*



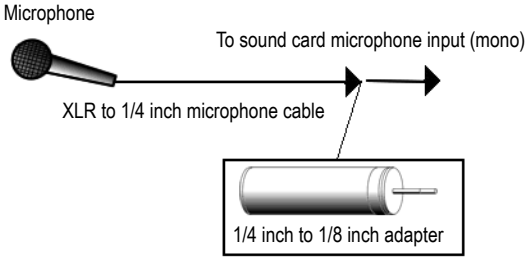
This diagram assumes that the output of the rack is at line level (consult your rack's documentation). If it is at pro level instead (+4 dB), and your sound card does not accept a +4 db input, you will need to attenuate (lower) the F/X rack's signal. To do this, use a mixer between the rack's output and the Y-adapter. If the rack has only a mono output, a 1/4 inch mono to 1/8 inch stereo adapter should be used instead of a Y-adapter.

If you want to connect a guitar amplifier's direct output to the sound card, you should base your setup on this example.

Microphone Direct-In

Microphones can be plugged into the sound card's Mic input. Some inexpensive microphones are made especially for use with sound cards and come equipped with 1/8 inch plugs. However, better quality microphones take better quality cables, which do not terminate in 1/8 inch plugs. The diagram below illustrates how to connect a microphone that terminates in a 1/4 inch plug to a 1/8 inch input:

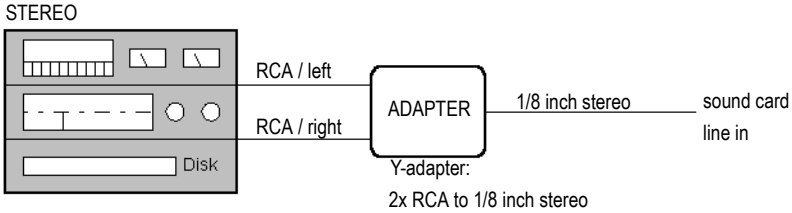
Figure 267. *Microphone direct in*



Home Stereo, CD Player, Radio Tuner, Preamp Output

The output of a stereo component can be connected to the sound card's Line input, using a dual RCA to 1/8 inch stereo mini Y-adapter. Many portable cassette players come with this kind of adapter, or even with a single cable with all the necessary plugs. In the following diagram, a stereo component is connected to the Y-adapter using standard RCA cables:

Figure 268. *Home stereo, CD player, radio tuner, preamp output*



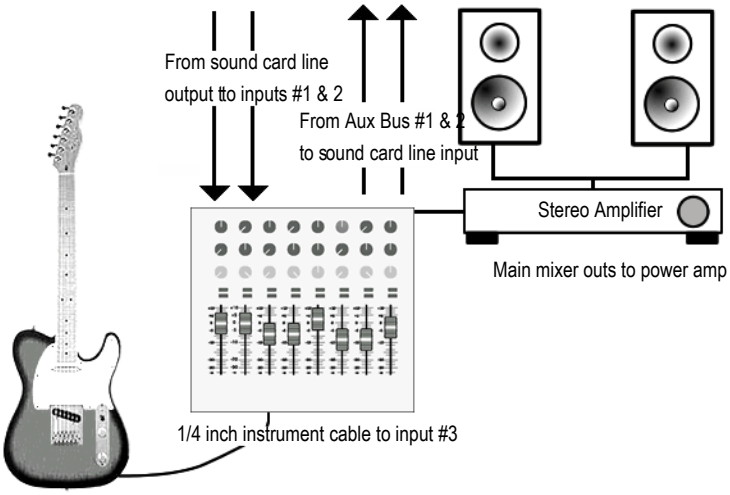
Internal CD Player

If you are using your computer's internal CD player, and it does not have its audio output cable connected internally to the sound card, run a cable from the CD player's Headphone jack to the card's Line input. If there is no Headphone jack, you'll need to use an external CD player.

Mixer

You can connect a mixer to the sound card with a setup of the following kind:

Figure 269. *Mixer*



Let's trace the signal flow in the above picture:

1. Your pre-recorded tracks flow out of the sound card's outputs into mixer inputs #1 and 2.
2. Both the pre-recorded tracks and the live guitar's sound flow into the main mixer outs, where you can hear them (monitor them) through the stereo amplifier and speakers.
3. If you turn up the bus send #1 on the guitar input (mixer input #3), the guitar sound flows into a sound card line input out of bus #1. You could turn up the bus send #2 control on the guitar input if you wanted to use that instead, since both buses #1 and #2 are patched into the sound card's line input. You could also use both bus sends at the same time to double the guitar's mono signal if you wanted (not the usual way to record).
4. Since you're already hearing the guitar through the main outputs, you probably don't want to hear its signal again coming back through the sound card's outputs, so mute the sound card's line-in on its Play Control page of its mixer software (not its Record Control page—you want to record the line-in, but not play it back).
5. If you plug other instruments into other inputs, you can send them into your sound card's line input by turning up bus send #1 and/or #2 on each of the mixer's channels.
6. If the guitar in the above picture had a stereo pickup and stereo cable, you could plug the left plug on the cable into input #3 and turn up bus send #1, and plug the right plug into input #4, and turn up bus send #2 on that input. You would then be sending a stereo signal from the guitar through buses #1 and #2 to the sound card's line input.
7. In the above setup, do not turn up the bus sends on inputs #1 or #2 (where the sound card's line outputs connect to the mixer)—this creates a feedback loop, feeding the sound card's outputs back into its inputs through the buses.

For more information, see:

Choosing Inputs
Audio Recording
Audio Hardware (Sound Cards) and Drivers
MIDI

Choosing Inputs

After you've connected your instrument or other sound source to your sound card, you need to tell your sound card's software, Cakewalk, and possibly the Windows Mixer which input you're recording through. If you're recording through the S/PDIF input, the procedure is a little different (see To Record Through the S/PDIF Input).

If your sound card only has one pair of inputs (one stereo Line input, usually, or Line and Mic inputs that can't be used simultaneously), then your sound card probably responds to the Windows Mixer.

Use the following procedure to record a track using the Windows Mixer.

To Record with Cakewalk and the Windows Mixer

1. Open the Windows Mixer—double-click the **Speaker** icon that's on your Windows taskbar to open the **Play Control** dialog. If you don't see the Speaker icon on your taskbar, you can open the Windows Mixer by using the **Start > Programs > Accessories > Entertainment > Volume Control** command.
2. In the **Play Control** dialog, use the **Options > Properties** command, and select **Recording** (under **Adjust Volume For**).
3. Under **Adjust Volume For**, make sure **Line-In** and **Microphone** are checked, and click **OK**.

   The **Record Control** dialog appears.
4. If you're recording through the Line input, click the **Select** check box that's at the bottom of the **Line-In** column, and make sure that the volume slider in that column is in the upper half of its range (if you're recording through the Mic input, do the same actions in the **Microphone** column). Minimize the Windows Mixer window.
5. In Cakewalk's Track view, use the **In** field in a track you want to record in to select the input you're using—select either the **Left** input of your sound card to record in mono or the **Stereo** input to record in stereo.
6. Arm the track for recording (click its **R** button so that it's red), and play your instrument. You should see the Record Meter at the bottom of the track's property fields light up. If the meter doesn't move, see the table immediately following this procedure.
7. Adjust your instrument's volume, and/or the volume slider in the **Record Control** dialog so that the level in the Record meter almost reaches the red zone when you play your loudest notes.
8. Record some sound by pressing **r** to start recording, and pressing the SPACEBAR when you're finished. You can rewind by pressing **w**.

After you stop recording, you should see a picture of your audio data in the Clips pane of the track you're recording in. Don't forget to disarm the track and save your project if you want to keep what you recorded.

If you don't see any movement in the track's record meter when you play your instrument, try some of the following:

Possible problem	Solution
You have chosen a Right input of your sound card as an input, but your instrument is plugged into a Left input.	Click the armed track's **Input** button and choose the opposite input from the currently selected one. If that doesn't help, try selecting the Stereo input.
Your instrument is plugged into a different-numbered input from the one you selected as an input.	Try choosing different-numbered Inputs until the meter starts to move.
Your instrument is not turned up or its cable is bad.	Turn up the instrument and try different cables.
You're using an adapter that doesn't quite fit the sound card input.	Try moving the adapter in or out slightly, and make sure the cable is plugged all the way into it.

Table 227.

If your sound card has multiple inputs and has its own mixer software, you probably don't need to select inputs in the Windows Mixer. To record through the analog inputs on your sound card, you probably only need to set your sound card's clock to internal, and in Cakewalk's Track view, choose the correct number of the inputs you're connected to in the **In** field of the track you're recording.

To record through the digital input (S/PDIF), see the following procedure.

To Record Through the S/PDIF Input

1. Connect the instrument or CD player you want to record from to your sound card's S/PDIF input using a 75 ohm coaxial video cable or special S/PDIF cable. You may need to turn off the power on your computer, sound card, and sound source first. See your sound card's documentation.
2. Use your sound card's mixer software to set its clock to external or S/PDIF.
3. Leave Cakewalk's clock setting at the default choice, which is Audio. You can choose clock settings by using the **Options > Project** command and clicking the **Clock** tab.
4. Arm a track, test the input level and adjust input volume, and record your track.
5. When you're finished recording, set your sound card's clock back to internal, and listen to your recording.

There's one more type of audio connection you may find on occasion called AES/EBU, which stands for Audio Engineering Society/European Broadcasting Union, and is the highest bandwidth digital audio connection. An AES/EBU connection can use cables longer than 33 feet, which is the limit for S/PDIF cables. If your sound source has an AES/EBU connection, you can use your sound card's S/PDIF jacks to send data to and from the AES/EBU jacks by purchasing an inexpensive converter, such as the Hosa CDL-313 (www.hosatech.com).

For more information, see:

Audio Hardware (Sound Cards) and Drivers

Audio

MIDI

Audio Hardware (Sound Cards) and Drivers

There are many different brands of sound cards on the market today. This section aims to help you get the best out of yours.

See:

Consumer and Professional

Consumer and Professional

There are many sound cards to choose from. Nearly every PC comes with one. Some are nationally known brands and others are proprietary sound cards that are made specifically for a single manufacturer. These sound cards are called “consumer” cards. They are designed to handle the general multimedia tasks most PC users have, like playing CDs or MP3s, using your PC as a telephone, or playing computer games. Most consumer sound cards fit the bill nicely for the average PC user. They can play and record both audio and MIDI, but there are certain limitations which are relevant for Cakewalk users. The following list covers the characteristics of most consumer sound cards. This list is very general and does not necessarily reflect every sound card that comes bundled with a PC.

Consumer grade sound card characteristics:

- **Number of inputs and outputs.** Consumer cards nearly always have two inputs, mic and line in, and one output. Usually, these inputs and outputs are stereo, meaning there is a left and right channel.
- **Type of inputs and outputs.** Consumer cards almost always have eighth inch jacks, requiring an adaptor to use with standard quarter inch cables (guitar cables, patch cables, etc.).
- **Simultaneous recording and playback.** Some older consumer sound cards aren’t capable of simultaneous recording and playback. These cards are called half-duplex. Cards that are capable of simultaneous recording a playback are called full-duplex.
- **16-bit, 44100 resolution.** Consumer cards are only capable of 16-bit audio and a sampling rate of 44.1 KHz. While these settings are at CD quality, Cakewalk software is capable of 24-bit audio at a sampling rate of up to 96 KHz.
- **Internal.** Consumer sound cards are installed in PCI slots (or ISA for older sound cards) on your PC’s motherboard. While professional sound cards are also frequently installed in PCI slots, some provide a “breakout box” which houses the analog to digital (A to D) and digital to analog (D to A) converters, keeping them away from the internal noise a PC generates (fans, hard drives,

etc.).

Professional sound card characteristics:

- **Multiple inputs and outputs.** Many professional sound cards have multiple inputs and/or outputs. Some have analog and digital inputs or outputs for use with ADATs and digital mixers.
- **Type of inputs and outputs.** Professional sound cards use quarter inch (mono or TRS), XLR or RCA inputs rather than the eighth inch jacks found on consumer grade sound cards. Some cards also have digital inputs and/or outputs like S/PDIF and ADAT.
- **Higher bit-depths and sampling rates.** Most newer professional sound cards allow you to record at 20, 22 or 24-bit, and at a sampling rate of up to 96 KHz.
- **Onboard DSP.** Some sound cards have effects processors for things like reverb and delay built into the sound card. These can take a big load off of your computer.
- **High quality A to D and D to A converters (Analog to Digital and Digital to Analog).** The quality of your recordings ultimately depends on the quality of sound that you initially record. Professional sound cards have higher-quality components that convert the sound into and back out of the digital format.

See:

How do I know if I have a hardware conflict?

How do I know if I have a hardware conflict?

If you have a hardware conflict, you may see the following:

- one or more devices not working properly
- one or more devices not showing up in Device Manager
- your system crashing every time you use the device(s)

See:

Installation and Drivers

WDM and MME

IRQs

Cakewalk and Audio Hardware

Installation and Drivers

When you install a sound card, you are installing both the hardware and software called a driver. The sound card driver is what allows your operating system and your sound card to communicate. This section is aimed at preventing problems when installing both your sound card and its driver.

Installing a Sound Card

Follow your sound card's documentation for installing the sound card in your PC. If you are installing a PCI card, or any hardware that requires you to open the cover of your PC, be careful to discharge any static electricity you are carrying by touching the metal casing of your PC before handling the sound card itself. Static electricity can damage a sound card's circuitry.

Installing a Driver on Windows 98 and Windows Me

You sound card should come with software, too. Some manufacturers provide a driver setup program that takes you through the driver installation. Always use the manufacturer's software installation program if one is provided. If one is not provided, follow this procedure:

1. Click the **Start** button and select **Settings > Control Panel**.
2. In the Control Panel, double-click on **Add New Hardware**.
3. In the **Add New Hardware** wizard, click the **Next** button.
4. Select **No** when the **Add New Hardware** wizard asks you "Do you want Windows to search for your new hardware?"
5. From the list of Hardware types, select **Sound, Video and Game Controllers**, and click the **Next** button.
6. Select **Have Disk**.
7. If the driver is on a CD-ROM or a diskette, place it in the appropriate drive.
8. In the **Open** dialog, use the **Browse** button to navigate to where the driver is located and select it.
9. Click **OK**.
10. Click **Finish**.
11. In the **Driver Set Up** dialog, select the hardware settings that match what the multimedia device is physically set to, and click **OK**.
12. Click **Yes** to restart your computer.

Installing a Driver on Windows 2000 and Windows XP

You sound card should come with software, too. Some manufacturers provide a driver setup program that takes you through the driver installation. Always use the manufacturer's software installation program if one is provided. If one is not provided, follow this procedure:

1. Click the **Start** button and select **Settings > Control Panel**.
2. In the Control Panel, double-click on **Add New Hardware**.

   The **Add/Remove Hardware Wizard** dialog appears.
3. Click **Next**.
4. Select **Add/Troubleshoot a Device** and click **Next**.

   The system searches then asks you to select from a list of devices.
5. Select **Add a New Device** and click **Next**.
6. Select **No, I Want to Select the Hardware from a List** and click **Next**.

7. In the list of hardware types, select **Sound, Video and Game Controllers** and click **Next**.
8. Click **Have Disk**.

   The **Install From Disk** dialog appears.
9. Using the **Browse** button, navigate to the directory where the sound card driver is located (CD-ROM, diskette, hard disk, etc.) and click **OK**.

   The **Locate a File** dialog appears.
10. Select the driver file you want to use for your sound card and click **Open**.

    The **Install From Disk** dialog appears again.
11. Click **OK**.

    The **Add/Remove Hardware Wizard** dialog appears again.
12. Select the your hardware model from the list in the **Models** field and click **Next**.
13. Click **Next** to start installation.
14. Click **Finish**.

WDM and MME

In most situations, the newer WDM (Windows Driver Model) sound card drivers that most sound card vendors are creating are a much better choice than the older MME (Multi-Media Extensions) drivers. If your sound card vendor has a WDM driver, it's usually a good idea use it. The following table compares their characteristics:

WDM	MME
Lower latency	Usually higher latency
Works with Windows 2000, ME, 98 SE, but not 98 Gold	Works with Windows 98, and ME. Some MME drivers may work with Windows 2000.
Not every sound card vendor has produced a WDM driver.	MME drivers are widely available. **Note:** If you use two or more sound cards at the same time, and not all of them have WDM drivers, you must force the WDM drivers to function as MME drivers. Do this in the **Audio Options** dialog box (except in GT Pro) on the Advanced tab by checking the Always Use MME Interface Even When WDM Drivers Are Available check box. In GT Pro, see the README document that came with your software.

Table 228.

IRQs

An IRQ (Interrupt Request) is an assigned location where the CPU expects to be interrupted by a device when it has completed a task. There are 16 IRQs on a PC. Usually, three or four are taken by the system, leaving 12 or 13 for other devices, like printers, USB devices, hard disks, floppy disk drives, keyboard and sound card. Some of these devices can share an IRQ with other devices, but for the most part this is not a good thing, and for a sound card which can use a lot of CPU power, it

can be a real problem. IRQ conflicts can cause your system to freeze or fail to boot up properly, or the system may fail to recognize your sound card. Sometimes the problem only reveals itself when you attempt to use the device that is sharing an IRQ.

Checking IRQ Settings in Windows 98 and Windows Me

If your computer is running Windows 98 or Windows Me, use this procedure:

1. Right-click on the **My Computer** icon on your desktop and select **Properties** from the menu that appears.

   The **System Properties** dialog appears.
2. Click the **Device Manager** tab.
3. In the **Device Manager** section, click on the **Computer** entry at the very top and click the **Properties** button.

   The **Computer Properties** dialog appears.
4. If necessary, click the **Interrupt request (IRQ)** radio button.

   The IRQ settings appear.

Look for your sound card in the **Hardware Using the Setting** column. Check all other devices to determine if other devices are sharing an IRQ with your sound card (**Note**: IRQ Holder for PCI Steering is not a device, and does not cause a conflict). If your sound card shares an IRQ with another device, and you are experiencing problems with your sound card, see IRQ Conflicts.

Checking IRQ Settings in Windows 2000 and Windows XP

If your computer is running Windows 2000, use this procedure:

1. Right-click on the **My Computer** icon on your desktop and select **Properties** from the menu that appears.

   The **System Properties** dialog appears.
2. Click the **Hardware** tab.
3. In the **Hardware** section, click the **Device Manager** button.

   The **Device Manager** dialog appears.
4. In the **Device Manager** dialog, click the **View** button and select **View Resource by Type**.
5. Expand the **Interrupt request (IRQ)** entry to expand it.

   The IRQ settings appear.

Look for your sound card in the **Hardware Using the Setting** column. Check all other devices to determine if other devices are sharing an IRQ with your sound card (**Note**: IRQ Holder for PCI Steering is not a device, and does not cause a conflict). If your sound card shares an IRQ with another device, and you are experiencing problems with your sound card, see IRQ Conflicts.

IRQ Conflicts

Newer motherboards often use something called ACPI (Advanced Configuration and Power Interface) which controls IRQ settings, in effect overriding the motherboard IRQ settings. ACPI, just like Plug and Play, can sometimes lead to shared IRQs and problems with your sound card.

Checking for ACPI on Your System:

1. Look at your IRQ settings. If you don't know how, see Checking IRQ Settings in Windows 98 and Windows Me or Checking IRQ Settings in Windows 2000 and Windows XP.
2. Look for an entry that says **ACPI**.

Resolving IRQ Conflicts on a Non-ACPI System

The easiest way to resolve a conflict may be to remove the piece of hardware that is conflicting with your sound card. Of course, this is not always possible, but if you have a modem, network card, or some other hardware device that you do not use, removing it (and its driver) may free up an IRQ for your sound card.

Sometimes you can change a sound card's IRQ setting by physically moving the card to another PCI/ISA slot, or by moving several hardware devices to new slots. To do this, uninstall the hardware you want to move, along with its driver, put the hardware devices in their new slots and reinstall their drivers. Once you have completed this, check the IRQ settings again.

If moving or removing hardware did not help, you may be able to use the system BIOS to change an IRQ setting. To see if your BIOS allows you to make changes to your systems IRQ settings, consult your motherboard's documentation.

Resolving IRQ Conflicts on an ACPI System

If you are experiencing an IRQ conflict on an ACPI system, you may want to turn off ACPI. This varies depending on your OS, BIOS and motherboard. Consult your PC manufacturer's documentation or technical support for instructions on how to do this.

Cakewalk and Audio Hardware

The following tips will help you get the most out of your sound card and Cakewalk software:

- **Use Cakewalk's Wave Profiler anytime your install a new sound card.** Wave Profiler determines the correct settings for your sound card.
- **Read the documentation for your sound card.** You can save yourself a lot of time by learning about your hardware before you try to use it. Many sound cards have their own control panels which allow you to customize the card's settings.

For more information, see:

Audio

MIDI

Audio Hardware (Sound Cards) and Drivers

Audio Playback in CakewalkTracks

Tracks

Clips

Track-by-Track Playback

Connecting an Instrument, Home Stereo, or Microphone to your Sound Card

Dialog Reference

Use the **Contents** tab, **Index** or **Search** tab to find the dialog you are looking for.

About SONAR dialog

When you use the **Help > About SONAR** command, the Cakewalk logo appears, with the version number of your Cakewalk product listed below it.

Apply Audio Effects dialog

This dialog gives you several options when applying audio effects:

Delete the effects from the track effects bin. This option lets you either keep your effects patched in the selected track(s) after the effects have been applied, or delete the effect from the track(s).

Fast bounce. This option is normally enabled but should be disabled if the track you are bouncing contains the External Insert plug-in (see “External Insert plug-in” on page 632). If you bounce audio that uses the External Insert plug-in, the bounce operation must be performed in real-time.

Audible bounce. The **Audible bounce** option is only available when in real-time bounce mode (when *Fast bounce* is unchecked). When Audible bounce is unchecked, no audio output will be heard during the bounce process. When in real-time bounce mode (Fast bounce unchecked) and Audible bounce is enabled, you can hear the output of the mixdown.

Note: *Depending on the gainstages used in the project and the mixdown options selected–such as bouncing with source category assigned to Tracks, or with mute/solo or automation disabled in the bounce settings or while freezing tracks–the output may be louder or softer than during normal playback. Please be sure to turn down the master output level before using real-time audible bounce under these scenarios to avoid the possibility of speaker damage.*

Apply MIDI Effects dialog

When you select **Apply MIDI Effects** from the **Process** menu, the **Apply MIDI Effects** dialog box appears. This dialog box lets you select options for applying MIDI effects to selected MIDI data. You can choose to delete the effect from the patch point after it is applied, so that it will not be reapplied on playback.

See also:

Applying MIDI Effects

Assign Instruments dialog

The **Options > Instruments** command opens the **Assign Instruments** dialog box. This command lets you choose one or more output/channel configurations and assign an instrument to it or them.

SONAR lets you assign a MIDI instrument definition to each available MIDI output and channel. The assignments you make determine the MIDI bank names, patch names, note names, and controller names that you see during your SONAR session.

Suppose that you have a Roland GS compatible synthesizer attached to MIDI output 1. By assigning all 16 channels of MIDI output 1 to the Roland GS instrument definition, you ensure that the bank, patch, note and controller name lists you see displayed in SONAR are the ones that match your synthesizer.

Often, you want to assign a different instrument to channel 10, which is usually used for percussion. For example, you might assign the Roland GS instrument definition to channels 1 through 9 and 11 through 16, but you would most likely want to assign the Roland GS Drumsets instrument definition to channel 10. If you have several MIDI outputs, with a different instrument attached to each one, you would normally assign a different instrument to each MIDI output.

For convenience, you can assign a block of channels to one instrument, and then change the assignment of one or more of those channels without changing the others. For example, you can highlight all 16 channels of the first MIDI output and assign them to the Roland GS instrument definition. Then, you can highlight channel 10 of the first MIDI output and assign it to the Roland GS Drumset instrument definition. Channels 1 through 9 and 11 through 16 on the first MIDI output will stay assigned to Roland GS.

You might also want to split channels to different instruments if you have several instruments attached to a single MIDI output. For example, you might have a Roland synth receiving on MIDI channels 1-9, a Roland drum machine receiving on channel 10, and a basic GM-compatible synth receiving on channels 11 through 16. In this case, you'd use three different instrument definitions for your one and only MIDI output.

The **Assign Instruments** dialog box has the following fields:

Output/Channel

This field lists all your MIDI outputs and all the channels for each output. Highlight the output/channel combination you want to assign an instrument definition to. You can select several output/channel combinations at the same time (for example, all 16 channels of a output) by CTRL-clicking or SHIFT-clicking.

Uses Instrument

This field lists all the instrument definitions that are currently stored by SONAR. Selecting one binds it to any output/channel combinations that are selected in the **Output/Channel** field.

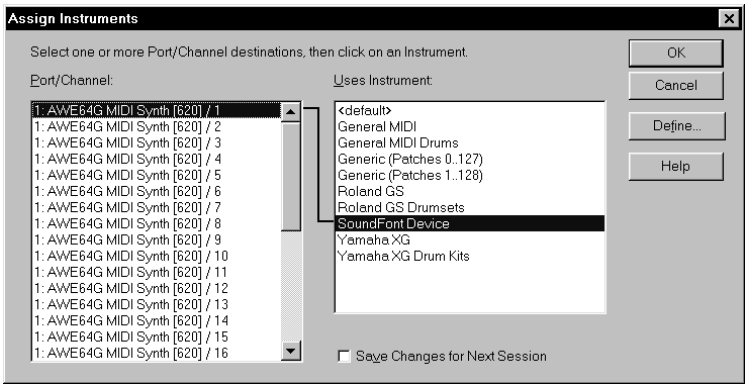
Save Changes for Next Session

Click this check box if you want to reuse any new combinations you made the next time you open SONAR.

Define button

Clicking this button opens the **Define Instruments and Names** dialog box, which allows you to define your own MIDI instruments, if they are not MIDI standard.

Figure 261. *The **Assign Instruments** dialog*



For step by step instructions, see:

To Assign Instrument Definitions to MIDI Outputs and Channels

To Clear Instrument Assignments

To Create a New Instrument

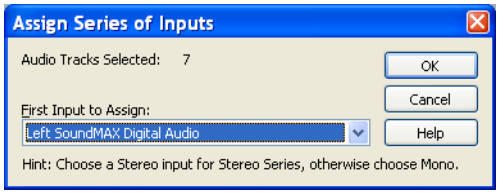
Assign Series of Inputs dialog

The **Selected Track Input Series** command in the Track view **Input** control drop-down menu opens the **Assign Series of Inputs** dialog.

Use this command to assign a series of consecutive mono input ports to the selected audio tracks.

The First Input to Assign combobox lets you specify the audio input port that should be assigned to the first selected track. If a left or right input is selected, then mono inputs will be assigned. If a stereo input is selected, then stereo inputs will be assigned.

Figure 262. *The **Assign Series of Inputs** dialog*



See:

To assign different audio input ports to multiple tracks

Audio CD Burner dialog

The **Tools > Burn Audio CD** command opens the **Audio CD Burner** dialog. Use this command to burn your tracks to an audio CD. Tracks must meet the following criteria:

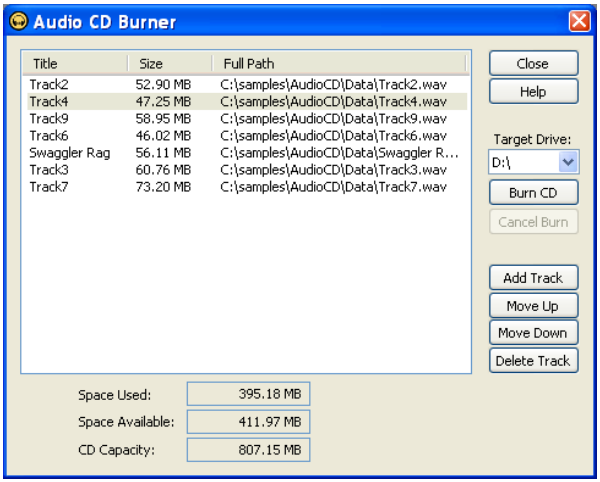
- All audio tracks must be stereo Wave files (extension .wav).
- Sample rate must be 44,100 Hz.
- Bit depth must be 16.

The **Audio CD Burner** dialog has the following controls:

- **Track List.** The main area of the window is the track list. The tracks comprise the sounds that will be written (burned) to an audio CD. Each track is contained on its own line.
- **Add Track.** Browse to your local file system and add a new track to the list. All Audio Tracks must be stereo .wav files with a sample rate of 44,100 Hz, and a bit depth of 16. New tracks will go at the end of the list but can be moved anywhere. After a track is added, its size is added to the **Space Used** field, and subtracted from the **Space Available** field.
- **Move Up / Down.** Move the selected item(s) up or down in the track list order.
- **Delete Track.** Remove a track from the list.
- **Target Drive.** The Target Drive specifies the CD writing device to be used. The program scans your system to locate all available CD writing devices. Click on the arrow next to the drive letter to refresh the Target Drive. This process will verify if a blank CD has been placed in the drive. Once the blank CD has been verified, the available CD capacity is listed below the Track List.
- **Burn CD.** Verifies, performs a layout of the tracks and writes the current track list to CD medium in the selected drive. After the disk is completed, the disk is ejected from the drive.

- **Test Burn.** Verifies, performs a layout of the tracks and simulates burning the current track list to CD.
- **Cancel Burn.** This button appears when either **Burn CD** or **Test Burn** has been selected. It causes the current operation to be aborted.

Figure 263. *The **Audio CD Burner** dialog*



Audio Meter Settings dialog

SONAR's meters are extremely adjustable. The **Audio Meter Settings** dialog allows you to adjust the rise and fall times of both the RMS and Peak Meters. These settings control meter ballistics globally for all types of meters in SONAR.

The following is a description of each option:

Refresh Rate (msec)

This field determines how often the meters are updated. Valid values range from 25 msec (forty times per second) to 250 msec (four times per second).

Peak Hold

- **Decay Rate (msec/dB).** When **Hold Peaks** is enabled (see Changing the Meters' Display), this setting describes how fast the peaks fall after the established Hold Time.
- **Hold Time (msecec).** When **Hold Peaks** is enabled (see Changing the Meters' Display), this setting describes for how long peaks will sit still before dropping

Rise/Fall Times (times to change 20dB)

- RMS

  - **Rise (msecec).** The time it takes for an RMS meter to register a 20dB rise in signal.
  - **Fall (msecec).** The time it takes for an RMS meter to register a 20dB fall in signal.
- Peak
  - **Rise (msecec).** The time it takes for a Peak meter to register a 20dB rise in signal.
  - **Fall (msecec).** The time it takes for a Peak meter to register a 20dB fall in signal.

Here are the default values for the various settings:

- Refresh Rate = 40 msec
- Peak Hold – Decay Rate = 50 msec
- Peak Hold – Hold Time = 750 msec
- RMS Rise = 300 msec
- RMS Fall = 300 msec
- Peak Rise = 0 msec
- Peak Fall = 1000 msec

Segmented Meters

The **Track View** and **Console View** check boxes let you display the meters in segmented fashion in the respective views.

For more information, see Metering.

Audio Mixdown Options dialog

Clicking the **Mixdown Options** button in the **Export Video** dialog opens the **Audio Mixdown Options** dialog. This dialog lets you control the characteristics of the audio file you export when you export a video from SONAR.

This dialog has the following fields:

- **Preset.** You can name and save a preset which includes the source bus and all mix enable selections.
- **Channel Format.** Choose **Mono**, **Stereo**, or **Multichannel**.
- **Sample Rate.** Choose the sample rate that you want your exported audio to use.
- **Bit Depth.** Choose the bit depth that you want your exported audio to use.
- **Dithering.** Choose between five available types of dithering.
- **Source Bus(es).** Choose the bus or sound card driver you want to use to export your audio file.
- **Mix Enables.** Choose all the different audio components you want to include in your exported audio file. You usually include everything. If you include either **Track FX** or **Bus FX**, it's a good idea to add an extra measure to the end of your project to contain any reverb tails that your effects produce. Checking **Fast Bounce** causes the audio export process to go as fast as possible, as opposed to exporting in real-time. The **Audible bounce** option is only available when in real-time

bounce mode (when *Fast Bounce* is unchecked). When Audible bounce is unchecked, no audio output will be heard during the bounce process. When in real-time bounce mode (Fast Bounce unchecked) and Audible bounce is enabled, you can hear the output of the mixdown.

Note: *Depending on the gainstages used in the project and the mixdown options selected–such as bouncing with source category assigned to Tracks, or with mute/solo or automation disabled in the bounce settings or while freezing tracks–the output may be louder or softer than during normal playback. Please be sure to turn down the master output level before using real-time audible bounce under these scenarios to avoid the possibility of speaker damage.*

Audio Options dialog—General

The **Options > Audio** command opens the **Audio Options** dialog box. Choose the **General** tab to control the following options:

Playback Timing Master and Record Timing Master

These two options determine which sound cards should control timing for the song, if you're using multiple wave drivers for playback or recording. Note that if you've got two wave drivers, but all audio tracks are playing on only one wave driver, then that driver will be the timing master no matter what you choose.

Every sound card's clock crystal is slightly different, which causes minor differences in the actual playback rate on each card. These differences may lead to slight synchronization problems if you use one card for recording and a different one for playback. Multiple wave drivers on the same card will not have sync problems.

Audio Driver Bit Depth

Determines the number of bits per sample used for communicating with the audio hardware for playback. Your audio hardware must be capable of supporting the setting you supply here. In SONAR, choose between 16, 18, 20, 22 and 24. In most cases, even if your hardware is "advertised" as being 18 or 20 bit, you will want to set this value to 24 for optimum performance. SONAR 16-bit only.

Note: *Using an audio driver bit depth that is greater than 16 means you also need to choose a preferred setting in the **Stream >16 Bit Data As** field on the **Driver Profiles** tab of this dialog box.*

Double-precision Engine

Enabling this check box chooses 64-bit (double-precision) mixing in SONAR throughout the entire signal path. This includes dithering and plug-ins. SONAR will send and receive 64-bit data to and from all plug-ins that accept 64-bit data. If a plug-in requires 32-bit data, SONAR will send and receive 32-bit data.

Stereo Panning Law

Use this menu to choose a panning law for the current project and new projects. The current project's panning law is also displayed in the File Stats window, which appears when you open the **File Info** dialog (**File > Info** command), and click the **File Stats** button.

Determines the mathematical formula used to control panning. The choices are:

- **(Default) 0 dB center, sin/cos taper, constant power.** This choice causes a 3 dB boost in a signal that's panned hard left or right, and no dip in output level in either channel when the signal is center panned.
- **-3dB center, sin/cos taper, constant power.** This choice causes no boost in a signal that's panned hard left or right, and 3dB dip in output level in either channel when the signal is center panned.
- **0dB center, square-root taper, constant power.** This choice causes a 3 dB boost in a signal that's panned hard left or right, and no dip in output level in either channel when the signal is center panned.
- **-3dB center, square root taper, constant power.** This choice causes no boost in a signal that's panned hard left or right, and 3dB dip in output level in either channel when the signal is center panned.
- **-6dB center, linear taper.** This choice causes no boost in a signal that's panned hard left or right, and 6dB dip in output level in either channel when the signal is center panned.
- **0 dB center, balance control.** This choice causes no boost in a signal that's panned hard left or right, and no dip in output level in either channel when the signal is center panned.

Dim Solo Gain

Dim Solo is a mode in which non-soloed audio tracks/buses are still audible but at a reduced level. The default gain reduction is -6dB, but can also be configured for -12dB and -18dB.

See:

Dim Solo mode

Default Settings for New Projects

- The Sampling Rate drop-down list allows you to enter or select an audio sampling rate for a new .cwp file. Once any audio has been added to a .cwp file—either by recording audio or by using the **File > Import > Audio** command—you can't change the sampling rate for that .cwp file. Therefore, you should choose the sampling rate immediately after choosing **File > New** to start a new song.

  You can choose one of the following sampling rates: 11025 Hz, 22050 Hz, 44100 Hz, 48000 Hz, 88200, 96000, 176400 and 192000 Hz. The default used by SONAR is 44100 Hz, the same rate as audio CDs. However, you may choose a higher rate and later mixdown to 44100.

  You can also enter any hardware supported value in the **Sampling Rate** field. Consult your hardware documentation for supported sampling rates.

Mixing Latency (MME and WDM drivers only)

- The **Buffers in Playback Queue** values determine the buffer characteristics for transfers to and from the audio drivers. Lowering this value improves audio Latency, though making it too low makes your system more susceptible to stuttering or dropouts
- The **Buffer Size Slider** enables you to set mixing latency manually, overriding the value set by the Wave Device Profiler. Lower numbers increase the risk of audio problems. WDM sound card drivers offer lower latency than the older MME type.

Wave Profiler (MME and WDM drivers only)

Wave Profiler attempts to detect the make and model of your sound card, which determine the card's DMA (Direct Memory Access) settings. Once Wave Profiler identifies the card, it displays the results and asks whether you want to use the default settings for that card or to override them:

If Wave Profiler has identified your card correctly, you may accept the default settings. Otherwise, Wave Profiler will run a series of tests to attempt to determine the correct DMA settings. Usually this process is successful; however, if it is not, you will need to enter the correct settings in the **Device Profiles** tab of the **Audio Options** dialog box.

To determine the correct settings, consult your sound card documentation. Our web site, at www.cakewalk.com, contains the latest DMA settings for commonly used sound cards.

The Wave Profiler utility runs automatically the first time you run SONAR. You need not run it again unless you install a new sound card or an updated driver for your current sound card.

Wave Profiler will not analyze the card at the 48 kHz sampling rate. It assumes that 48 kHz settings are the same as 44 kHz settings. If your sound card doesn't sync to 48 kHz, you may need to enter the settings manually.

ASIO Panel (ASIO drivers only)

This button opens a dialog where you can set the buffer size for your ASIO driver and change the driver configuration. See your sound card's documentation for more information.

For more information, see:

Improving Audio Performance

Audio Options dialog—Advanced

The **Options > Audio** command opens the **Audio Options** dialog box. Choose the **Advanced** tab to control the following options:

File System

- **Enable Read Caching and Enable Write Caching.** Choosing either of these options lets SONAR use the Windows disk cache while reading or writing audio data. SONAR will usually perform best with all caching disabled, which is the default setting. If your computer has an older IDE disk controller, or a disk controller that does not use DMA transfers, enabling caching may

improve SONAR's audio performance.

Note: *Changes to these settings only take effect when you restart SONAR.*

- **I/O Buffer Size.** This value determines the buffer characteristics for transfers to and from the disk. Changing this value does not affect audio latency, but will affect the disk throughput for audio tracks. The default setting is 128. A higher value causes more audio to be buffered from the disk ahead of the playback cursor. If you are hearing consistent dropouts/clicks in your audio and if your project contains high bit depth (32/64 bit) or high sample rate audio (88.2K or higher), it may be indicative of a too small I/O buffer size. If so try a higher I/O buffer size like 256 or 512. If audio problems persist, reset to 128 and try a different remedy.

  Also, if you are playing a large file, and using maximum latency, a too-small I/O buffer size may cause dropouts or crashes. Try increasing the buffer size by blocks of 128.

Playback and Recording

- **Driver Mode drop-down menu.** Select from **WDM/KS**, **ASIO** or **MME**. Consult your hardware documentation to determine which driver your hardware uses. WDM/KS drivers are the latest available and typically have very low latency. MME is an older driver type and has higher latencies. ASIO drivers also offer lower latency. Your hardware may have all three driver options. If so, you should try WDM first.
- **Dithering.** Whenever an audio signal is converted from a higher-bit resolution to a lower resolution, it is necessary to apply dither to avoid introducing undesirable quantization noise or harmonic distortion into the signal. The purpose of dither is to reduce the resulting distortion by adding low-level random noise or "dither" to the audio signal. Different mathematical calculations are used to generate dither, each method has advantages and disadvantages depending on the particular operation. SONAR features the *Pow-r* dithering process, short for **P**sycho-acoustically **O**ptimized **W**ordlength **R**eduction, which can produce lower-bit files that sound indistinguishable from higher-bit source files. When this option is turned on, SONAR uses dithering when you export a higher-bit file at a lower resolution, or lower the bit depth of a project's audio files by using the **Tools > Change Audio Format** command, or when you "render" audio (bounce, freeze, or apply effects).

  This option is turned on whenever the **Dithering** field has a value other than **None**. You can choose bit depths for recording, importing, and rendering (bouncing, freezing, and applying effects) on the **Audio Data** tab of the **Global Options** dialog (opens with **Options > Global** command), and for exporting in the Export Audio dialog (**File > Export > Audio** command). SONAR offers five kinds of dithering:

  - **Rectangular.** Essentially white noise, no noise shaping. Advantages: least CPU-intensive, lowest signal-to-noise ratio, preferable to shaped dither when successive dithering can occur (e.g. bouncing, freezing). Disadvantages: suffers from intermodulation distortion, higher perceived loudness than Pow-r dither.
  - **Triangular.** Higher level than rectangular, no noise shaping. Advantages: low CPU-intensive dither, superior to Rectangular as it does not suffer from modulation noise effects. Preferable to shaped (Pow-r) dither when successive dithering can occur (e.g. bouncing, freezing).

Disadvantages: higher perceived loudness than Pow-r dither.

  - **Pow-r 1.** Noise-shaped dither. Advantages: less CPU-intensive than Pow-r types 2 and 3, lower perceived loudness than Rectangular or Triangular. Disadvantages: less noise shaping than Pow-r types 2 and 3, not recommended for operations where dither will be applied successively (e.g. bounce and freeze).
  - **Pow-r 2.** Noise-shaped dither. Advantages: lowest perceived loudness, highest quality settings, recommended for audio export. Disadvantages: highest CPU-intensive settings, not recommended for operations where dither will be applied successively (e.g. bounce and freeze).
  - **Pow-r 3.** Same as Pow-r 2 except most CPU-intensive and transparent of all choices.

- **Share Drivers With Other Programs.** This option allows other software to access device drivers. When this option is checked, other software can access device drivers when SONAR is not the focus of Windows.
- **Use Multiprocessing Engine.** This option is grayed out unless you have a multiprocessor computer. If you have a multiprocessor computer, check this option if you want SONAR to use both processors at all times. If you do not check this option, SONAR still uses the second processor for some tasks.
- **Use MMCSS (Windows Vista).** This option is grayed out unless you use Windows Vista. This option gives real-time applications such as SONAR higher priority for resource scheduling (thread scheduling) under Windows Vista (leave it checked).
- **Play Effect Tails After Stopping.** When checked, this option causes any effect with a “tail” (reverb, delay, etc.) to finish playing when playback is stopped.
- **Always Open All Devices.** With this option checked, SONAR opens all enabled stereo pairs of audio outputs as soon as you press play or turn on the audio engine. Any pairs that don’t have any tracks feeding them stream silence, but are still ready for use. So if you then change a track's output assignment on the fly SONAR doesn’t have to reopen a device, which can cause gaps in playback.
- **Remove DC Offset During Record.** With this option enabled, SONAR filters out any DC Offset disturbances that may be present during recording. See Removing DC Offset for more information.
- **Record Pre-allocate File (seconds).** When this option is set to a value greater than zero, SONAR will pre allocate the file to be recorded to the size specified (in seconds). This means that the file will not be resized while recording until it reaches the allocated size. The setting has the potential to reduce disk activity while recording and allows for more possible tracks. The valid range is 0–14400 seconds and the default value is 0. A reasonable setting would be 10 minutes (600 seconds) to 30 minutes (1800 seconds).
- **Fade On Start (milliseconds).** When this option is set to a value greater than zero, starting playback will cause a gradual fade in of the audio for the specified duration. The valid range is 0–100000 and the default value is 0.
- **Fade On Stop (milliseconds).** When this option is set to a value greater than zero, stopping playback will cause a gradual fade out of the audio for the specified duration. The valid range is 0–100000 and the default value is 0.

Synchronization

SONAR gives you two choices for synchronizing your audio tracks to SMPTE or MIDI Time Code:

- **Trigger and Freewheel.** With this option audio playback starts (or triggers) at the exact timecode, but then the audio plays at its own internal rate. The audio can gradually drift away from SMPTE time due to variations in the timecode signal.
- **Full Chase Lock.** With this option the speed of audio playback is continuously adjusted to stay with the timecode.
- **Timing Offset (msec).** With this option, used for making very fine adjustments to the audio/MIDI synchronization of your project, you can offset the audio in your project by a number of milliseconds. A positive value delays audio by that amount. A negative value delays MIDI by that amount.

Record Latency Adjustment (samples)

If you loop an audio output back into an audio input, and re-record a track this way, the audio doesn't line up. For some sound cards, it is off quite significantly. This record latency adjustment is a compensation for that delay.

You can do an approximate measurement of the delay by turning on samples as the resolution unit in the Time Ruler, and comparing the original track with the re-recorded track. Then you can enter a value in the **Manual Offset** field to compensate.

If you use ASIO mode, enter **0** in the **Manual Offset** field and leave the **Reported Input Latency** check box checked (this check box only appears in ASIO mode). This will line up audio in most cases. If you think you can tweak it closer, use the **Manual Offset** field.

In ASIO mode, the current active ASIO device (remember ASIO can only have one active at a time) reports its "Input Latency." You can't edit this value. This supposedly accounts for buffer size, A/D Conversion latency, etc. The check box allows you to use this reported value. It is checked by default. In any case, the amount entered into the **Manual Offset** field will be combined (added to) the reported value if you have it checked.

Audio Options dialog—Drivers

The **Options > Audio** command opens the **Audio Options** dialog box. Choose the **Drivers** tab to display a two-column list of available drivers, and selectively enable them by clicking the corresponding check box. You can change the driver name by clicking the name in the first column and typing in your preferred name, or friendly name, for the driver.

Input Drivers

These control recording.

Output Drivers

These control playback.

Use Friendly Names to Represent Audio Drivers

If you enable this check box, the **Input** and **Output** menus in audio tracks and buses will use whatever friendly names you've created for your **Input** and **Output** drivers. Friendly driver names are global, not per-project.

For more information, see:

Improving Audio Performance

Audio Options dialog—Driver Profiles

The **Options > Audio** command opens the **Audio Options** dialog box. Choose the **Driver Profiles** tab to view the sound card buffer settings that the Wave Profiler has come up with. The various fields show the following data: This tab only appears when in MME or WDM/KS driver mode.

Show Profile for

This field shows the name of the sound card driver that the displayed settings are for.

Stream > 16 bit data as

Sound cards that handle audio formats greater than 16 bits have a preferred format for the data, the variations of which you can see by clicking the drop-down arrow in this field. Consult your sound card's documentation to choose the optimum setting.

DMA Buffer Sizes

These fields list the buffer characteristics for each sound card that the Wave Device profiler has come up with. In general, it is better not to change these settings without consulting SONAR technical support.

For more information, see:

Improving Audio Performance

AudioSnap Options

This dialog appears when you click the **Options** button in the AudioSnap Palette.

This dialog has the following fields:

Quantize

- **Pool Transient Window (ms).** When you double-click a marker, not only does the marker become selected, but all markers to the right of the marker become selected if they are located less than this field's value away from the original marker.

MIDI Extraction

- **Convert to MIDI Note.** This field lets you choose what MIDI note all the transients in the clip will be converted to.
- **Note Velocities**
  - **Vary with Pulse Level.** This option causes the velocities of the notes in the MIDI clip to vary with the level of the transients in the audio clip.
  - **Set All to Same Value.** This field lets you enter a velocity that all the MIDI notes in the clip will use.

Split Beats

- **Auto Fade Split Clips.** Enabling this check box causes a cross fade to be added to all split clips, using a fade length in milliseconds that you set in the ms field in this section.

Radius Mix Advanced Settings

- **Radius Smoothness.** The **Smoothness** (pitch coherence) slider lets you preserve naturalness of timbre for pitched solo voices, such as human speech, saxophone or vocals. While traditional vocoders can smear these signals in time and randomize phase, the pitch coherence parameter of Radius preserves phase coherence for these signals. High values of pitch coherence will avoid phasiness in Radius's output at the expense of roughness (modulation) in processed polyphonic recordings.

Automation Read/Write Parameters

This dialog appears when you right-click the name of a plug-in in an FX bin and choose **Read Enable Parameter** or **Write Enable Parameter** from the pop-up menu.

This dialog has the following fields:

Parameter Read Enabled

Parameter “n” check box. The enabled check boxes in this list show what parameters of the plug-in are automation read-enabled. You can check or uncheck each of these check boxes.

Parameter Write Enabled

Parameter “n” check box. The enabled check boxes in this list show what parameters of the plug-in are automation write-enabled. You can check or uncheck each of these check boxes.

Enable All

Click this button to enable all check boxes.

Disable All

Click this button to disable all check boxes.

Auto-Send Sysx dialog

The **Auto-Send Sysx** dialog box appears when you open a project that contains Sysx data. The dialog box lets you choose whether to send the System Exclusive data to your MIDI instrument at that time. If you don't want to, click **Cancel**. You can send the data later, if you choose to, by using the Sysx view.

See also:

Using the System Exclusive View

AVI Encoder Options dialog

Clicking the **Encoding Options** button in the **Video** dialog opens the **AVI Encoder Options** dialog. This dialog lists the AVI video and audio codecs (compression-decompression programs) that are currently installed on your computer. The **AVI Encoder Options** dialog has the following fields:

Video Codec

Choose a compression format, but note the following:

- Not all compression codecs listed may necessarily be compatible while re-compressing video through "Export to AVI." If an incompatible compression codec is selected an error message may be displayed during the export.
- If No Compression is selected, the video retains its original compression.
- The following video compression codecs have been found to be compatible. Different codecs provide varying degrees of compression performance.
  - MJPEG Compressor
  - DV Video Encoder
  - Indeo Video 5.04
  - Intel I.263
  - Cinepak Codec by Radius
  - Microsoft Video 1
  - Microsoft RLE
- These codecs have been found not to work:
  - H.261
  - H.263
  - Intel 4:2:0 Video V2.50
  - MSScreen 9 encoder

- MSScreen encoder
- WMVideo Encoder DMO
- WM9Video Encoder DMO

Audio Codec

Note: *If you're exporting an AVI file to either a 24-bit audio format or to a multi-channel (surround sound) format, set the Audio Codec to* ***No Compression****.*

The following audio compression codecs have been found to be compatible (you may see different codecs installed on your system):

- CCITT - A Law
- CCITT - U Law
- DSP Group TrueSpeech
- PCM (this is the standard uncompressed format for wav files)
- GSM 6.10
- IMA ADPCM

Keyframe Rate

This field is greyed-out if you choose the **Default Codec** in the **Video** field.

Note: *If you intend to do a lot of seeking around or looping and editing while a video file is loaded, make sure that your video file has sufficient keyframes. Since each frame has to be computed from the last keyframe encountered, if you have very few keyframes in the video, performance may be slow. To change the number of keyframes, you may recompress the file using* ***File > Export > Video*** *and specify more frequent keyframes. Choose a suitable video compressor such as "Indeo Video 5.04" and change the KeyFrame Rate parameter to a number between 1-5. A value of 1 makes every frame a keyframe, and higher numbers insert a keyframe after that many frames.*

Data Rate

This field is greyed-out if you choose the **Default Codec** in the **Video** field. If you are compressing a file to be played over the Internet, use a data rate that doesn't exceed the capacity of the media players you expect will be used to play your file.

Quality

Lower quality values provide faster transmission and vice versa.

Change AVI settings

Checking this box causes another dialog box to appear after you click the **Save** button. This is the **Properties** dialog box that allows you finer control over the configuration of the AVI file you are creating. The available parameters are **Microsoft Direct Show** settings.

Bank Name dialog

When you select a bank in the Sysx view and click the **Name** button, the **Bank Name** dialog box appears. This dialog box lets you specify the name of the bank you selected. A bank must contain some Sysx data before you can name it.

See also:

Using the System Exclusive View

Bank Output dialog

When you select a bank in the Sysx view and click the **Output** button, the **Bank Output** dialog box appears. This dialog box lets you specify which MIDI output you want the bank transmitted to. This is useful when you have MIDI playback modules connected to several different ports of your MIDI interface and you want to control which module receives a particular Sysx message.

See also:

Using the System Exclusive View

Bank/Patch Change dialog

Select **Insert > Bank/Patch Change** to open the **Bank Patch Change** dialog box.

The output and channel of the selected track appear in the upper left corner.

Bank Select Method:

Choose from one of the following MIDI standard protocols:

- Normal
- Controller 0
- Controller 32
- Patch 100...127

For more information see Assigning the Bank Select Method.

Bank:

Select the Bank you want to use.

Patch:

Select the Patch you want to use.

If you want to use the Patch Browser dialog, click the **Patch Browser** icon.

See also:

To insert a bank/patch change

Choosing the instrument sound (bank and patch)

Bounce to Track(s) dialog

Select **Edit > Bounce to Track(s)** to open the **Bounce to Track(s)** dialog box.

This command lets you process the effects and/or automation together with the audio data in tracks to create one or several new tracks in order to lighten the load on your computer. Once you've bounced the tracks, you can archive or delete the source tracks to free up your computer's resources.

Note 1: *If you **select** any data in your project, only that data is included when you choose to bounce tracks. Alternatively, you can **mute** tracks you don't want to include in the mixdown, and then check **Track Mute/Solo** in the **Mix Enables** field so that SONAR uses that information as a guide when picking what tracks to include in the bounce. If a project is using any effects that add a "tail" to the end of an audio track, such as reverb or delay, then you should make sure that you select extra time in the time ruler (duration needed to hear the tail) at the end of the current selection before using the **Edit > Bounce to Track(s)** command. This ensures that the "tail" is included in the audio mixdown.*

Note 2: *You control the bit depth of all rendering operations (bouncing, freezing, applying effects) on the **Audio Data** tab of the **Global Options** dialog (**Options > Global** command) in the **Render Bit Depth** field. The default value for render bit depth is **32**. **64** can be selected to preserve the greater mixing and rendering precision that the 64 bit double precision mix engine provides. Values of **16** and **24** can also be selected. See "Bit Depths for Rendering Audio" on page 849 for more information.*

The dialog box has the following fields:

Destination

Assign the track to which you want to mixdown. If you are creating more than one track of audio, the destination track must be the first of consecutive blank or unwanted tracks.

Preset

You can create a preset out of your bounce settings, in case you use the same settings regularly. When the dialog box is set the way you want it, type a name in the **Preset** box and click the floppy disk icon that's next to it to save the preset.

Source Category

Select one of the following options:

- **Tracks.** Creates a new track or tracks (the **Split Mono** option in the **Channel Format** field) for each track that you select in the **Source Buses/Tracks** field.
- **Buses.** Creates a new track or tracks (the **Split Mono** option in the **Channel Format** field) for each bus that you select in the **Source Buses/Tracks** field.
- **Main Outputs.** Creates a new track or tracks (the **Split Mono** option in the **Channel Format** field) for each Main Output that you select in the **Source Buses/Tracks** field.
- **Entire Mix.** Creates a new track or tracks (the **Split Mono** option in the **Channel Format** field) from your entire mix.

Source Bus(es)/Track(s)

Choose the buses or tracks you want to use as a source to create your tracks. If you chose Tracks in the **Source Category** field, only tracks will show up as choices in this field.

Channel Format

Select from one of the following options:

- **Mono.** Creates a separate mono track for each track or bus selected in the **Source Buses/ Tracks** field.
- **Stereo.** Creates a separate stereo track for each track or bus selected in the **Source Buses/ Tracks** field.
- **Split Mono.** Creates separate mono tracks for each track or bus selected in the **Source Buses/ Tracks** field. If the selected track or bus is stereo, the selected track or bus will produce two new tracks. If the selected bus is a surround bus, the selected bus produces as many mono tracks as the bus has channels.

Dithering

Select from five available dithering types.

- Rectangular
- Triangular
- Pow-r 1
- Pow-r 2
- Pow-r 3

For more information, see "Dithering" on page 679.

Mix Enables

As default, each of the Mix Enables options is checked, meaning that your mixdown will sound the same as playback. You can check or uncheck each of the following settings to include or exclude them from the mix:

- **Track Mute/Solo.** If you check this option, tracks that are currently muted are not mixed down. Also with this option checked, if any tracks are soloed, only those tracks are included in the mixdown.
- **Bus Mute/Solo.** If you check this option, buses that are currently muted are not mixed down. Also with this option, if any buses are soloed, only the buses soloed are included in the mixdown.
- **Track Automation.** If you don't check this option, any volume and pan automation, **including initial volume and pan settings**, is ignored when creating the new track(s). The amplitude of the raw data in the tracks is used, and the pan is C, or centered.
- **Clip Automation.** If you don't check this option, any clip automation, **including any trim settings**, is ignored when creating the new track(s).
- **Bus Automation**
- **FX Automation**
- **Track FX.** If you don't check this option, any effects patched into various tracks' patch points, **including any plug-in synthesizers patched into track fx patch points**, are ignored when creating the new track(s).
- **Bus FX.** If you don't check this option, any effects patched into buses, **including any plug-in synthesizers patched into buses**, are ignored when creating the new track(s).
- **Fast Bounce.** When checked, SONAR bounces to tracks as fast as your computer will allow. If unchecked, bouncing to tracks happens in real time. Uncheck this option if you are using a synth that only works in real time. This option is checked by default.
- **Audible Bounce.** The **Audible Bounce** option is only available when in real-time bounce mode (when *Fast Bounce* is unchecked). When **Audible Bounce** is unchecked, no audio output will be heard during the bounce process. When in real-time bounce mode (Fast Bounce unchecked) and Audible Bounce is enabled, you can hear the output of the mixdown.

Note: *Depending on the gainstages used in the project and the mixdown options selected–such as bouncing with source category assigned to Tracks, or with mute/solo or automation disabled in the bounce settings or while freezing tracks–the output may be louder or softer than during normal playback. Please be sure to turn down the master output level before using real-time audible bounce under these scenarios to avoid the possibility of speaker damage.*

- **64-bit Engine.** This option lets you turn on the 64-bit mix engine temporarily while you bounce your tracks. This produces a higher-quality bounce without taxing your CPU during the rest of your session.

For more information, see:

To Mix Down (Bounce) Audio Tracks

To Convert Your Soft Synth Tracks to New Audio Tracks

Change Audio Format dialog

Use the **Tools > Change Audio Format** command if you want to rewrite the audio in a project to a different bit depth. Your sound card must be capable of playing the project at the new bit depth,

The **Change Audio Format** dialog box has the following fields:

New Bit Depth

Choose **16**, **24**, **32**, or **64**, depending on what audio format you want for this project.

Dither

This choice is available when you are converting to a lower bit-depth. Dithering means to add a certain audio signal to lower-bit audio to make it sound more like it did as a higher-bit signal.

For more information, see Bit Depths, and Float Resolution; Improving Audio Performance; and Dithering.

Chord Fret Number dialog

When you right-click a chord symbol in the Staff view, the **Chord Properties** dialog box appears. If there is a grid in the dialog box and you click to the right of it, the **Chord Fret Number** dialog box appears. This dialog box lets you enter a fret number to label the fret where the index finger goes (Finger 1). Create your grid and finger positions first, then label the index finger fret.

See also:

Adding Chord Symbols

Chord Properties dialog

In the Staff view, right-click a guitar chord or chord symbol to open the **Chord Properties** dialog box. This dialog box lets you edit the guitar chord.

See also:

Adding Chord Symbols

Choose Track Type dialog

Using the INSERT key in the Track view inserts a new track of the same type as the current track, unless you use it in an empty project that has no tracks yet. In that case, the **Choose Track Type** dialog box appears, offering you the choice to insert either an audio or MIDI track.

See also:

Arranging and editing

Chromatic Tuner

The Tuner view helps you to tune your instrument by analyzing any input signal from the sound card and displaying the pitch on a meter.

Note: *The tuner only works with audio hardware that supports 16-bit audio and a 44.1 sample rate.*

See:

Tuning an Instrument

Clean Audio Folder dialog

The **Tools > Clean Audio Folder** command opens the **Clean Audio Folder** dialog box. Use this command to delete digital audio files from an audio data folder that are no longer used by any of your projects. You should use this command from time to time to free up disk space.

Important: *Make sure that all of your important project (.cwp and .wrk) files are stored in your local hard disk(s) before using this command. If your project files are stored elsewhere, such as a floppy drive, removable drive, or network drive, you risk accidentally deleting important audio files that are associated with your projects.*

Note: *The Cakewalk Audio Finder (CWAFTool) is a more advanced utility for finding and removing unused projects and audio files. This utility can be installed from the **AutoRun** menu of the SONAR CD. If you have an older version of Cakewalk, you can download the Cakewalk Audio Finder from the Cakewalk Website.*

Under Windows, deleted files are normally placed in the Recycle Bin. As a result, you should empty the Recycle Bin after using the **Clean Audio Folder** command, or the unused files will still physically remain on your hard disk.

If you are using another utility program that protects you from accidentally deleting important files (such as Norton Protect), you may need to disable that program. Otherwise, the next time you use the **Clean Audio Folder** command you may once again find these not-quite deleted files.

The **Clean Audio Folder** dialog box has the following fields:

Audio Path

Specify the directory in which you want to search for audio files.

Recurse

When checked, SONAR searches for audio files in all folders within the Audio Path directory.

File window

The file window lists all the unused audio files that SONAR finds.

Find button

Click this button to find all unused audio files and list them in the file window.

Play button

Click this button to play the audio file that is highlighted in the file window.

Delete button

Click this button to delete the audio file that is highlighted in the file window.

Delete All button

Click this button to delete all the audio files that are listed in the file window.

For more information, see:

To Delete Unused Audio Files

Clip Properties dialog—General

In the Clips pane, when you right-click a clip and choose **Properties** from the pop-up menu, the **Clip Properties** dialog box appears, which you use to set and view the properties of the clip you clicked.

The Clip Properties **General** tab has the following fields:

Name

Use this field to type a new name for the selected clip, if you want to.

Start

Use this field to move the selected clip forward or backward in the track by setting a new start time.

Length

This field displays the length of the selected clip.

Snap Offset (for audio clips only)

The value of this field is the snap offset of the selected clip, in samples. When you set a snap offset value for a clip, and then drag the clip, the left edge of the clip does not snap to the current snap resolution—the clip snaps to a point on the clip that is the distance from the left edge of the clip to the snap offset value. For example, if you set the snap resolution to move to a measure, and the snap offset of a clip to 1500 samples, when you drag the clip, instead of the left edge of the clip moving to a measure line, the spot on the clip that's 1500 samples right of the beginning of the clip moves to the measure line.

M:B:T

Enable this button to display the clip's **Start** and **Length** properties in M:B:T (Measure: Beat:Tick) format.

Samples

Enable this button to display the clip's **Start** and **Length** properties in number of samples format.

H:M:S:F

Enable this button to display the clip's **Start** and **Length** properties in H:M:S:F (Hour: Minute:Second:Frame) format.

Seconds

Enable this button to display the clip's **Start** and **Length** properties in number of seconds format.

Original Time

The Original Time property stores and shows the original SMPTE time stamp associated with the clip. This is the SMPTE time stamp at which the clip was recorded or imported into the project. The Original Time property can not be edited.

Revert

If a clip has been moved from its original position, you can click **Revert** to move the clip back to its original SMPTE time location.

Time Base

Choose one of the two options in this section to control what happens to a locked clip when you change the tempo:

- **Musical (M:B:T).** If the clip is set to the Musical time base, the clip's M:B:T position stays constant, and its Absolute position shifts.

- **Absolute.** If the clip is set to the Absolute time base, its Absolute position stays constant, and its M:B:T position shifts.

Clip Mute

Check this to mute the clip.

Lock

Check this to lock the clip's data and/or position. Use the drop-down menu that's next to this check box to choose options.

Enable Automation Read

Check this is you want the clip to respond to clip envelopes.

Clips Linked to this Clip

This field tells you how many clips are linked to this clip.

Foreground Color

This field sets the waveform color of the selected clip, which you can change by clicking the **Choose Color** button, which opens the **Color** dialog box.

Background Color

This field sets the clip background color of the selected clip, which you can change by clicking the **Choose Color** button, which opens the **Color** dialog box.

Use Default Track Colors

Checking this option returns selected clip's color to the default as set in the **Color** dialog.

Clip Effects

When you insert an effect onto a clip, the clip's FX bin appears in the **Clip Effects** field.

See also:

Arranging Clips

Effects on Clips

Clip Properties dialog—Audio Stretching

You have two different (and independent) ways to stretch clips: by using either Groove clips or AudioSnap. Groove Clip markers are typically placed at a zero-crossing point before a transient; AudioSnap markers are placed directly on a transient. The AudioSnap feature can extract tempo from a clip. Groove Clip stretching is preferred for more extreme stretching. There are numerous other differences between the two features (see Working Groove Clip audio, and AudioSnap).

The Audio Stretching tab has a section of options for Groove Clips, and a separate section for AudioSnap, described as follows:

Groove Clips

Both MIDI and audio clips can be set to act as groove clips. The options you see in this dialog for audio clips are different from the options for MIDI clips.

The Groove Clips section of the Audio Stretching tab has the following options:

- **Enable Looping.** Checking the Enable Looping check box allows you to loop clips in the Track view by dragging the right side of a clip with your mouse. When Enable Looping is not checked, you are able to slip edit the clip. For more information about slip editing, see Applying Fades and Crossfades Offline.
- **Stretch to Project Tempo [audio clips only].** The Stretch to Project Tempo check box instructs SONAR to stretch or shrink the clip to fit the project's tempo. SONAR uses the Beats in Clip and Original Tempo parameters are used to make the change.
- **Beats in Clip.** The number of beats (quarter notes) in the clip.
- **Original Tempo [audio clips only].** The tempo at which the clip was recorded.
- **Follow Project Pitch.** The **Follow Project Pitch** option transposes the loop, if necessary, to the key of the project. A loop recorded in the key of A, used in a project in the key of C, would be transposed up three semitones if the **Follow Project Pitch** check box was checked.
- **Reference Note.** The Reference Note represents the key in which the loop was recorded. The Follow Project Pitch feature uses this information, when checked, to transpose the loop to match the project's key.
- **Pitch (semitones).** You can set the transposition of a clip, independent from the project pitch, using the **Pitch (semitones)** field. A positive number transposes the clip up by that number of semitones. A negative number transposes the clip down by that number of semitones. Remember that, if the **Follow Project Pitch** option is checked, the clip follows the project's pitch, so any transposition changes you make using this option are changes to the project pitch, not the clip pitch.

  An example: The project key is C. The clip key is D. If the **Follow Project Pitch** option is checked, the clip is transposed down by two semitones. A value entered into the **Pitch (semitone)** field adjusts the pitch from C. If you enter **-1** the pitch would be transposed down by one additional semitone to B.

  Another example: The clip pitch is E. The desired clip pitch is D. If the **Follow Project Pitch** option is not checked, and a value of **-2** is entered in the **Pitch (semitones)** field, the clip is transposed down two semitones to D from the original pitch of E.
- **Fine Pitch (cents) [audio clips only].** The **Fine Pitch (cents)** field allows you to make tuning adjustments or to transpose the pitch of a clip up to 50 cents. There are 100 cents in one semitone. A **Fine Pitch** setting of **1** adjusts the pitch up one hundredth of a semitone. The **Fine Pitch** option can "fine tune" a slightly out of tune clip so that it is in pitch with the remaining clips in a project.

For more information, see:

Working with Loops

Working Groove Clip audio

Creating and Editing Groove Clips

AudioSnap

The AudioSnap section of the Audio Stretching tab has the following options:

- **Enable AudioSnap.** Enabling this check box enables the clip's AudioSnap feature, which makes the following options available:
  - **Show Transients.** Enabling this check box displays the clip's transients.
  - **Add Transients to Pool.** Enabling this check box displays vertical grid lines at the beginning of each of the clip's transients, extending vertically across the Clips pane.
  - **Auto Stretch (Follow Tempo).** Enabling this check box causes the clip to automatically follow any project tempo changes.
- **Enable Time Stretching.** This check box is unavailable if the **Auto Stretch (Follow Tempo)** check box is enabled, but is available whether or not the clip is AudioSnap-enabled. You can use this check box and related fields to stretch the clip by either a percentage amount , or to a new **Duration**, or to a new **Thru Time**. If you set one field, and Tab out of the field, the other 2 fields update automatically.
  - **Stretch Amount (%).** Choose by what percentage you want to stretch the clip.
  - **New Duration.** Choose what duration you want to stretch the clip to.
  - **New Thru Time.** Choose by Thru Time you want to stretch the clip to.
  - **Online Algorithm.** Choose the algorithm you want to use to stretch the clip:

Algorithm	Description
Default	This means the algorithm that is listed in the **Online** field of the **AudioSnap Options** dialog.
Groove clip	This choice works faster, using less processing power.
Percussion	This is the best choice for percussive sounds.

Table 224.

  - **Offline Algorithm.** Choose the algorithm you want to use to stretch the clip:

Algorithm	Description
Default	This means the algorithm that is listed in the **Offline Rendering** field of the **AudioSnap Options** dialog.
Same as Online	Uses the same choice as the **Online** field.

Table 225.

Algorithm	Description
iZotope Radius Mix	This is better for clips containing polyphonic, stereo data.
iZotope Radius Solo	This is better for clips containing monophonic, solo instruments.
iZotope Radius Solo (Bass)	This is better for clips containing solo bass instruments.
iZotope Radius Solo (Vocal)	This is better for clips containing solo vocals

Table 225.

For more information, see AudioSnap.

Clip Properties dialog—Audio Files

The Audio Files tab of the **Clip Properties** dialog lists:

- The audio file(s) that make up the selected clip
- The pathname(s) the files are stored under
- The bit depth of the clip

Recompute Picture(s)

Click **Recompute Picture(s)** to redraw waveforms for individual clips that may have a corrupt waveform display.

Clone Track(s) dialog

The **Tracks > Clone** command opens the **Clone** dialog box. Use this command to copy a track or tracks to a new track or tracks. The **Clone** dialog box has the following fields:

Selected Tracks

This field lists the tracks that are currently selected.

Clone Tracks

- **Clone Events.** Check this check box if you want to copy the MIDI and audio clips in the selected track(s).
  - **Link to Original Clip(s).** Check this check box if you want the clips in the new track(s) to become linked clips with the identical clips in the original track(s).
- **Clone Properties.** Check this check box if you want to copy the properties of the highlighted track(s), such as the name, output, channel, etc.

- **Clone Effects.** Check this check box if you want the new track(s) to use the same real-time effects that are patched into the original track.
- **Clone Sends.** Check this check box if you want the new track(s) to use the same sends that are patched into the original track(s).
- **Repetitions.** The number of tracks you want to create from the selected track(s).
- **Starting Track.** The track at which your cloned track(s) appear. Existing tracks are moved down to make room, not overwritten.

See also:

Copying Tracks

Clip View Options dialog

If you right-click in the Clips pane and choose **View Options** from the pop-up menu, the **Clip View Options** dialog box appears, which you use to control the appearance and behavior of the Clips pane.

The **Clip View Options** dialog box has the following fields:

Display Track Separators

Enabling this option causes SONAR to display a horizontal line in the Clips pane between each track.

Display Clip Names

If you name any of your clips, enabling this option causes SONAR to display the names.

Display Clip Contents

Enabling this option causes SONAR to display a graphical depiction of the audio or MIDI data that the track contains, including automation data.

Left Click Sets Now

Enabling this option allows you to set the Now Time by left-clicking a location in the Clips pane.

Right Click Sets Now

Enabling this option allows you to set the Now Time by right-clicking a location in the Clips pane.

Left Click Locks Scroll

Enabling this option prevents the Clips pane from scrolling horizontally during playback while you edit data. This allows you to focus on the edit location without worrying that the screen will eventually scroll away from the edit location. When you are done with the edit and want the Clips pane to scroll again during playback, click in the background of the Clips pane to clear auto scroll lock.

Show Audio Scale

Check this option to display the Audio Scale Ruler in the splitter bar between the Clips pane and the Track pane.

Double-click to Open View

Double-clicking a clip in the Clips pane automatically opens another view to edit the clip in, You can choose what view you want to open for both MIDI and audio clips in these two menus:

- **MIDI Clips.** Choose what view opens when you double-click a MIDI clip.
- **Audio Clips.** Choose what view opens when you double-click an audio clip.

Vertical Rules

Enabling this option causes SONAR to display vertical lines in the Clips pane that are one measure apart.

There are three options for vertical grid lines:

- **None.** No vertical grid lines are displayed.
- **Behind Clips.** Vertical grid lines are displayed, but clips will draw on top of them, so clip contents will not be obstructed.
- **In Front of Clips.** Vertical grid lines are displayed and drawn on top of clips, always visible.

See Also:

Displaying Clips

Complete Registration dialog

New Cakewalk products will require product registration. When you register your product, you provide some information including your name and email address, as well as the serial number for your product.

Product registration can be done quickly on the internet or by phone.

To register anytime log onto:

www.cakewalk.com/register

or call 888-CAKEWALK (U.S.) or 617-423-9004 (outside the U.S.) between 9 AM and 8 PM Eastern Standard Time. If you live outside of North America, please visit our distributor's page at:

www.cakewalk.com/Dealers/International.asp

To get the telephone number of your local distributor, or use the table below: You'll need to supply your serial number, your name, and a valid email address. In return for this information, we'll email you a registration code that will allow you to keep using the software forever. We recommend you write this registration code on the serial number sticker for safekeeping.

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If you have any questions about our Privacy Policy, you may contact us at the following address:

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Attention: Privacy Policy
268 Summer St
Boston, MA 02210

Country/Distributor	Phone number	Fax number
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Sweden/Roland Scandinavia	+46 (0)8-702 00 20	+46 (0)8-643 74 05
UK, Scotland, Wales & Ireland/Edirol Europe	0870 350 1515	
Australia/Intelliware Australia Pty. Ltd.	(02) 9981 8088	(02) 9981 3968
Japan/Edirol Corporation	81-53-439-1144	81-53-439-1099

Table 226.

If your local distributor is not listed, please call 1.617.423.9004 between 9 AM and 8 PM Eastern Standard Time.

Configure Colors dialog

The **Options > Colors** command opens the **Configure Colors** dialog box, which allows you to choose colors for most items that SONAR displays.

You can create lots of different color schemes and save each one as a preset. After you create a color scheme that you like, type a name for it in the Presets window, and then click the floppy disk icon to save the preset. When you want to load the preset, just select it in the Presets window. To delete a preset, select it and then click the **Delete** button .

The **Configure Colors** dialog box has the following fields:

Color Category

This list shows different areas where color can be adjusted. Choosing one of these categories helps filter out screen elements you may not wish to deal with at the moment. The categories also provide a convenient way to adjust brightness, hue, and saturation of a related collection of screen elements without hunting through a long list.

Screen Element

This list shows all the items in SONAR you can set the color of. Highlight the one you want to change. You can change multiple Elements simultaneously by CTRL-clicking or CTRL-dragging.

Follow System Color

This field lets you choose the same color for a highlighted item in the **Screen Element** list that Microsoft Windows uses for certain screen elements. For example, because Windows usually uses black for button text, if you highlight Window Background in the **Screen Element** list and then click **Button Text** in the **Follow System Color** field, all the window backgrounds in SONAR turn black (or whatever color you have set up for button text in your Windows preferences).

Note: *If you set any other screen element to the same color as Window background, you'll make that screen element invisible!*

Use Specific Color

Choosing this option instead of the **Follow System Color** option allows you to pick a specific color for the highlighted item in the **Screen Element** list. Click the **Choose Color** button to open the **Color** dialog box, click the color you want, and click **OK**. The highlighted item in the Screen Element list changes to the color you chose.

Brightness Slider

This control increases or decreases the luminance of the selected color, making it either more bright or more dull in appearance.

Hue Slider

This control determines the color type, such as red, green or blue.

Saturation Slider

This control increases or decreases the vibrancy of the selected color. A lower saturation value will input more “grayness” to the color, making it appear more faded.

Reset Button

Pressing the **Reset** button resets the **Brightness**, **Hue**, and **Saturation** sliders to default values.

Save Changes for Next Session

Check this check box if you want SONAR to use any new color assignments the next time you open SONAR.

Wallpaper

The options in this field allow you to set the color and design of SONAR’s background area. The options are:

- **Default.** Choosing this option causes SONAR to use its original color and design for the background.
- **None.** Choosing this option causes SONAR to use a flat, grey color for the background.
- **Custom.** Choosing this option opens the **Wallpaper Bitmap** dialog box, which allows you to choose a graphics file (bitmap) to use as the background.

Defaults button

Clicking this button restores all of SONAR’s color settings to their original values.

Import button

This button opens the **Import Color Set** dialog, which allows you to import a color arrangement, or a group of presets.

Export button

This button opens the **Export Color Set** dialog, which allows you to export a color arrangement, or a group of presets.

The table below identifies each of the screen elements in SONAR:

Screen element	Explanation
Window background	Background color for the entire program window
Window text	Text color
Rules in the Tempo view	Vertical lines in the Tempo view used to mark time intervals
Major Rules	Major lines used to mark larger intervals of time
Beat Rules	Color of the Beat rule lines

Table 227.

Screen element	Explanation
Grid Rules	Color of the Grid rule lines
Values	Color of selected events and tempo changes in the Tempo view
Drawing	Colors used to show your drawing in the Piano Roll and Tempo views
Erasing	Color used to show your erasing in the Tempo views
Markers	Color of markers in time rulers
Pitch Markers	Color of pitch markers in the Time Ruler
Loop Markers	Color of loop point markers
Punch Record Markers	Color of punch recording markers
Now Time Marker	Color of the Now Time Marker in the Track view
Time Ruler Background	Color of the area behind the Time Ruler markings
Track View Time Ruler Digits	Color of the Time Ruler markings
Time Ruler Tick Marks	Color of the Time Ruler beat and measure lines
AudioSnap Pool Lines	The color of the vertical lines in the Track view that show tranisient locations
Musical Snap Pool Lines	
Clip Fades	Color for the fade line and fade shading
Clip Zero Amplitude Lines	Color for the line that marks a silent volume level for a clip
Snap Offset Markers	Color of the Snap offset markers
Clip Gain Envelope	Color of the Gain envelopes in clips
Clip Pan Envelope	Color of the Pan envelopes in clips
Clip Velocity Envelope	Color of velocity envelopes in clips
Selected Clip	Color of clips that are currently selected
Muted MIDI Clip Data	Color of the MIDI data in a muted area of a clip. Also used for the outline of event muted notes in the Piano Roll.
Folder Clip Background	Color of an area of a folder clip where there is no data
Folder Clip Text	Color of text label on a folder clip

Table 227.

Screen element	Explanation
Folder Line	Color of the line on the left side of the Track pane connecting a track folder to the tracks that are contained in the folder
Record Preview Clip Background	The background color in the Clips pane of an armed track
Recording Waveform Previews	Color of the waveform in a clip during preview while recording
Bus Waveform Preview	Color of the waveform that a bus's or synth track's output generates
Waveform Preview (>= 0dB)	Color of the waveform in a clip during preview while recording if the amplitude is greater than or equal to 0dB
Frozen Track Background	The background color of a frozen track in the Clips pane
V-Vocal Clip Background	The color of a V-Vocal clip.
Audio Tracks 1, 11, 21...Foreground	Foreground color of all audio tracks that end in the number "1" (1, 11, 21, etc.)
Audio Tracks 1, 11, 21...Background	Background color of all audio tracks that end in the number "1" (1, 11, 21, etc.)
Audio Tracks 2, 12, 22...Foreground	Foreground color of all audio tracks that end in the number "2" (2, 12, 22, etc.)
Audio Tracks 2, 12, 22...Background	Background color of all audio tracks that end in the number "2" (2, 12, 22, etc.)
Audio Tracks 3, 13, 23...Foreground	Foreground color of all audio tracks that end in the number "3" (3, 13, 23, etc.)
Audio Tracks 3, 13, 23...Background	Background color of all audio tracks that end in the number "3" (3, 13, 23, etc.)
Audio Tracks 4, 14, 24...Foreground	Foreground color of all audio tracks that end in the number "4" (4, 14, 24, etc.)
Audio Tracks 4, 14, 24...Background	Background color of all audio tracks that end in the number "4" (4, 14, 24, etc.)
Audio Tracks 5, 15, 25...Foreground	Foreground color of all audio tracks that end in the number "5" (5, 15, 25, etc.)
Audio Tracks 5, 15, 25...Background	Background color of all audio tracks that end in the number "5" (5, 15, 25, etc.)

Table 227.

Screen element	Explanation
Audio Tracks 6, 16, 26...Foreground	Foreground color of all audio tracks that end in the number “6” (6, 16, 26, etc.)
Audio Tracks 6, 16, 26...Background	Background color of all audio tracks that end in the number “6” (6, 16, 26, etc.)
Audio Tracks 7, 17, 27...Foreground	Foreground color of all audio tracks that end in the number “7” (7, 17, 27, etc.)
Audio Tracks 7, 17, 27...Background	Background color of all audio tracks that end in the number “7” (7, 17, 27, etc.)
Audio Tracks 8, 18, 28...Foreground	Foreground color of all audio tracks that end in the number “8” (8, 18, 28, etc.)
Audio Tracks 8, 18, 28...Background	Background color of all audio tracks that end in the number “8” (8, 18, 28, etc.)
Audio Tracks 9, 19, 29...Foreground	Foreground color of all audio tracks that end in the number “9” (9, 19, 29, etc.)
Audio Tracks 9, 19, 29...Background	Background color of all audio tracks that end in the number “9” (9, 19, 29, etc.)
Audio Tracks 10, 20, 30...Foreground	Foreground color of all audio tracks that end in the number “0” (10, 20, 30, etc.)
Audio Tracks 10, 20, 30...Background	Background color of all audio tracks that end in the number “0” (10, 20, 30, etc.)
MIDI Tracks 1, 11, 21...Foreground	Foreground color of all MIDI tracks that end in the number “1” (1, 11, 21, etc.)
MIDI Tracks 1, 11, 21...Background	Background color of all MIDI tracks that end in the number “1” (1, 11, 21, etc.)
MIDI Tracks 2, 12, 22...Foreground	Foreground color of all MIDI tracks that end in the number “2” (2, 12, 22, etc.)
MIDI Tracks 2, 12, 22...Background	Background color of all MIDI tracks that end in the number “2” (2, 12, 22, etc.)
MIDI Tracks 3, 13, 23...Foreground	Foreground color of all MIDI tracks that end in the number “3” (3, 13, 23, etc.)
MIDI Tracks 3, 13, 23...Background	Background color of all MIDI tracks that end in the number “3” (3, 13, 23, etc.)
MIDI Tracks 4, 14, 24...Foreground	Foreground color of all MIDI tracks that end in the number “4” (4, 14, 24, etc.)

Table 227.

Screen element	Explanation
MIDI Tracks 4, 14, 24...Background	Background color of all MIDI tracks that end in the number “4” (4, 14, 24, etc.)
MIDI Tracks 5, 15, 25...Foreground	Foreground color of all MIDI tracks that end in the number “5” (5, 15, 25, etc.)
MIDI Tracks 5, 15, 25...Background	Background color of all MIDI tracks that end in the number “5” (5, 15, 25, etc.)
MIDI Tracks 6, 16, 26...Foreground.	Foreground color of all MIDI tracks that end in the number “6” (6, 16, 26, etc.)
MIDI Tracks 6, 16, 26...Background	Background color of all MIDI tracks that end in the number “6” (6, 16, 26, etc.)
MIDI Tracks 7, 17, 27...Foreground	Foreground color of all MIDI tracks that end in the number “7” (7, 17, 27, etc.)
MIDI Tracks 7, 17, 27...Background	Background color of all MIDI tracks that end in the number “7” (7, 17, 27, etc.)
MIDI Tracks 8, 18, 28...Foreground	Foreground color of all MIDI tracks that end in the number “8” (8, 18, 28, etc.)
MIDI Tracks 8, 18, 28...Background	Background color of all MIDI tracks that end in the number “8” (8, 18, 28, etc.)
MIDI Tracks 9, 19, 29...Foreground	Foreground color of all MIDI tracks that end in the number “9” (9, 19, 29, etc.)
MIDI Tracks 9, 19, 29...Background	Background color of all MIDI tracks that end in the number “9” (9, 19, 29, etc.)
MIDI Tracks 10, 20, 30...Foreground	Foreground color of all MIDI tracks that end in the number “0” (10, 20, 30, etc.)
MIDI Tracks 10, 20, 30...Background	Background color of all MIDI tracks that end in the number “0” (10, 20, 30, etc.)
Track View Active Outline	Color of the border around the active pane in the Track view: if the Bus pane is active, it displays this color; if the Track pane is active, it displays this color.
Track View Clips Pane Background	Color of the Clips pane’s background.
Clips Pane Ellipse	Color of dots which appear where there are no clips in the Clips pane
Active Track	Sets the color of the track that has the focus

Table 227.

Screen element	Explanation
Selected Track	Sets the color of any selected tracks
Strip Selection	Sets the color of any selected strip selector
Track View Control Icon	Sets the color of the icons that label the various controls in a track
Partially selected Track Folder	Color just to the left of the folder icon that indicates whether all the tracks in the folder are selected, or just some of them
Partially selected strips in Track Folder	Color on the upper left corner of the folder icon that indicates whether all the strips in the folder are selected, or just some of them
Track View Track Header Tint	Color of a track's header bar
Track View Header Control Outline	Color outline around track header controls
Track View Track Header Peak Text	Color of the text on the right end of a track's title bar that displays the peak level that the track's audio meter measures
Track View Header Warning Text	Color of the text described above when the track's level is in danger of clipping
Peak Marker (< 0 dB)	The color of the Peak Marker when amplitude peaks are less than 0dB
Peak Marker (>= 0 dB)	The color of the Peak Marker when amplitude peaks are greater than or equal to 0dB
Peak Marker Text	The color of the text on the Peak Marker
Track view Header Track Number	Color of the track number in the track header
Track View Audio Track Name Background	Color of the background for audio tracks in the track name field
Track View Audio Track Name Text	Color of text of audio tracks in the track name field
Track View MIDI Track Name Background	Color of the background in MIDI tracks
Track View MIDI Track Name Text	Color of the text for MIDI tracks in the track name field
Track View Synth Track Name Background	Color of the background for synth tracks in the track name field
Track View Synth Track Name Text	Color of the text for synth tracks in the track name field
Track View Bus Track Name Background	Color of the background for buses in the bus name field

Table 227.

Screen element	Explanation
Track View Bus Name Text	Color of the text for buses in the bus name field
Track View Track Folder Name Background	Color of the background for track folders in the folder name field
Track View Track Folder Name Text	Color of the text for track folders in the folder name field
Track View Strip Background	Background color outside the control fields in a track
Track View Control Background	Background color inside the control fields in a track
Track View Control Text and Values	Color of the text in Track view controls
Track View Disabled Control Text	Color of disabled controls in a track
Track View Control Outline	Color of the control outlines
Track View Control Borders	Color of Track view control's borders
Track View Current Control Outline	Color of current Track view control outlines
Track View Strip Under	Color of empty space in the Track pane
Track View Volume Control / Envelope	Sets the color of this parameter's automation envelope
Track View Pan Control / Envelope	Sets the color of this parameter's automation envelope
Track View MIDI Chorus Control / Envelope	Sets the color of this parameter's automation envelope
Track View MIDI Reverb Control / Envelope	Sets the color of this parameter's automation envelope
Track View Trim Control	Sets the color of the background in the trim control field
Track View Bus Input Pan Control	Color of bus input pan control
Quick Group	Sets the color that appears on controls that are part of a Quick Group
Track View Track Icons Background	Sets the color surrounding a Track Icon in the Track view
Track View Mute Envelope	Sets the color of this parameter's automation envelope
Surround Angle Envelope	Color of automation envelope for surround angle
Surround Focus Envelope	Color of automation envelope for surround focus
Surround LFE Send Control/Envelope	Color of automation envelope for LFE send control
Surround Width Envelope	Color of automation envelope for surround width
Front/Rear Balance Envelope	Color of automation envelope for surround front/rear balance

Table 227.

Screen element	Explanation
Track View Bus Send Level 1, 9 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Level 2, 10 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Level 3, 11 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send 4, 12 Level Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Level 5, 13 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Level 6, 14 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Level 7, 15 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Level 8, 16 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Pan 1, 9 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Pan 2, 10 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Pan 3, 11 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Pan 4, 12 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Pan 5, 13 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Pan 6, 14 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Pan 7, 15 Control / Envelope	Sets the color of this parameter's automation envelope
Track View Bus Send Pan 8, 16 Control / Envelope	Sets the color of this parameter's automation envelope
Bus Send Angle 1, 9 Envelope	Sets the color of this parameter's automation envelope
Bus Send Angle 2, 10 Envelope	Sets the color of this parameter's automation envelope

Table 227.

Screen element	Explanation
Bus Send Angle 3, 11 Envelope	Sets the color of this parameter's automation envelope
Bus Send Angle 4, 12 Envelope	Sets the color of this parameter's automation envelope
Bus Send Angle 5, 13 Envelope	Sets the color of this parameter's automation envelope
Bus Send Angle 6, 14 Envelope	Sets the color of this parameter's automation envelope
Bus Send Angle 7, 15 Envelope	Sets the color of this parameter's automation envelope
Bus Send Angle 8, 16 Envelope	Sets the color of this parameter's automation envelope
Bus Send Focus1, 9 Envelope	Sets the color of this parameter's automation envelope
Bus Send Focus 2, 10 Envelope	Sets the color of this parameter's automation envelope
Bus Send Focus 3, 11 Envelope	Sets the color of this parameter's automation envelope
Bus Send Focus 4, 12 Envelope	Sets the color of this parameter's automation envelope
Bus Send Focus 5, 13 Envelope	Sets the color of this parameter's automation envelope
Bus Send Focus 6, 14 Envelope	Sets the color of this parameter's automation envelope
Bus Send Focus 7, 15 Envelope	Sets the color of this parameter's automation envelope
Bus Send Focus 8, 16 Envelope	Sets the color of this parameter's automation envelope
Bus Send LFE 1, 9 Envelope	Sets the color of this parameter's automation envelope
Bus Send LFE 2, 10 Envelope	Sets the color of this parameter's automation envelope
Bus Send LFE 3, 11 Envelope	Sets the color of this parameter's automation envelope
Bus Send LFE 4, 12 Envelope	Sets the color of this parameter's automation envelope
Bus Send LFE 5, 13 Envelope	Sets the color of this parameter's automation envelope
Bus Send LFE 6, 14 Envelope	Sets the color of this parameter's automation envelope
Bus Send LFE 7, 15 Envelope	Sets the color of this parameter's automation envelope
Bus Send LFE 8, 16 Envelope	Sets the color of this parameter's automation envelope
Bus Send Width 1, 9 Envelope	Sets the color of this parameter's automation envelope
Bus Send Width 2, 10 Envelope	Sets the color of this parameter's automation envelope
Bus Send Width 3, 11 Envelope	Sets the color of this parameter's automation envelope
Bus Send Width 4, 12 Envelope	Sets the color of this parameter's automation envelope

Table 227.

Screen element	Explanation
Bus Send Width 5, 13 Envelope	Sets the color of this parameter's automation envelope
Bus Send Width 6, 14 Envelope	Sets the color of this parameter's automation envelope
Bus Send Width 7, 15 Envelope	Sets the color of this parameter's automation envelope
Bus Send Width 8, 16 Envelope	Sets the color of this parameter's automation envelope
Bus Send Front/Rear Balance 1, 9 Envelope	Sets the color of this parameter's automation envelope
Bus Send Front/Rear Balance 2, 10 Envelope	Sets the color of this parameter's automation envelope
Bus Send Front/Rear Balance 3, 11 Envelope	Sets the color of this parameter's automation envelope
Bus Send Front/Rear Balance 4, 12 Envelope	Sets the color of this parameter's automation envelope
Bus Send Front/Rear Balance 5, 13 Envelope	Sets the color of this parameter's automation envelope
Bus Send Front/Rear Balance 6, 14 Envelope	Sets the color of this parameter's automation envelope
Bus Send Front/Rear Balance 7, 15 Envelope	Sets the color of this parameter's automation envelope
Bus Send Front/Rear Balance 8, 16 Envelope	Sets the color of this parameter's automation envelope
Event List Note Events	Color of note events in the Event List view
Event List KeyAft Events	Color of key aftertouch events in the Event List view
Event List Control Events	Color of controller events in the Event List view
Event List Patch Events	Color of patch events in the Event List view
Event List ChanAft Events	Color of channel aftertouch events in the Event List view
Event List Wheel Events	Color of pitch wheel events in the Event List view
Event List Sysx Events	Color of System Exclusive events in the Event List view
Event List Special Events	Color of other, special events in the Event List view
Track View MIDI Chorus Control / Envelope	Sets the color of this parameter's automation envelope
Track View MIDI Reverb Control / Envelope	Sets the color of this parameter's automation envelope
Note that is on	Color of currently playing notes
Events	Color of selected events in the Piano Roll view
Navigator Background	Color of background in Navigator pane and view
Navigator Track Rectangle	Color of the Navigator pane triangle that shows what the part of the Clips pane is currently displayed

Table 227.

Screen element	Explanation
Toolbar Background *	Color of the empty space surrounding toolbars (* means you have to restart the application to see the new color)
Toolbar Background-In Views *	Color of empty space surrounding toolbars in views
Toolbar LCD Text *	Color of numbers or text in variable fields of toolbars
Toolbar LCD Background *	Background color of variable fields in toolbars
Toolbar Static Text *	Color of toolbar text in non-variable fields
Console View Label Text	Color of the Console view label
Console View Control Text	Color of Console view text
Console View Slider	Color of Console view slider
PRV Drag Contents	The color that a MIDI event becomes while you're dragging the event
Snap to Scale Excluded Rows	Color of pitch rows in Piano Roll view (or Inline PRV) that become unavailable when Snap to Scale is enabled.
Continuous Event 1	The color of the first type of continuous event entered into the Piano Roll or Inline Piano Roll view
Continuous Event 2	The color of the second type of continuous event entered into the Piano Roll or Inline Piano Roll view
Continuous Event 3	The color of the third type of continuous event entered into the Piano Roll or Inline Piano Roll view
Continuous Event 4	The color of the fourth type of continuous event entered into the Piano Roll or Inline Piano Roll view
Continuous Event 5	The color of the fifth type of continuous event entered into the Piano Roll or Inline Piano Roll view
Continuous Event 6	The color of the sixth type of continuous event entered into the Piano Roll or Inline Piano Roll view
Continuous Event 7	The color of the seventh type of continuous event entered into the Piano Roll or Inline Piano Roll view
Continuous Event 8	The color of the eighth type of continuous event entered into the Piano Roll or Inline Piano Roll view
VU Lo level	Sets the color of the lower portion of a non-segmented meter.

Table 227.

Screen element	Explanation
VU Hi level	Sets the color of the higher portion of a non-segmented meter.
VU Tick Marks	Sets the color of the numbers and calibration lines of a non-segmented meter.
Enable/Disable Toggles	Sets the color of the enable/disable check box on effects and other objects that have an on/off switch
Console View FX Bin	Color of effects bin in Console view
Console FX Bin Text	Color of text in Console View's FX bin
Console View Control Text and Values	Color of text on Console View's controls
Console View Slider	Color of Console view fields controlled by sliders
Console View Slider Background	Color of border area of Console view fields controlled by sliders
Console Drop-down Controls	Color of drop-down menus in Console view
Console View Strip Background	Color of empty space in Console view
Console View Blank Background	Color of space between Track pane and Bus pane in Console view
Console Strip Track Icons Background	Color of space surrounding Track Icons in Console view
Console Audio Track Name Background	Color of background of audio track names in Console view
Console Audio Track Name Text	Color of text of audio track names in Console view
Console MIDI Track Name Background	Color of background of MIDI track names in Console view
Console MIDI Track Name Text	Color of text of MIDI track names in Console view
Console Synth Track Name Background	Color of background of Synth track names in Console view
Console Synth Track Name Text	Color of text of Synth track names in Console view
Console Bus Name Background	Color of background of Bus names in Console view
Console Bus Name Text	Color of text of Bus names in Console view
Console Main Output Name Text	Color of text of Main Output names in Console view
Console EQ Plot Grid	Color of grid lines in per-channel EQ plot in Console view
Console EQ Plot Graph	Color of EQ curve in Console view's per-channel EQ plot
Synth Rack Text	Color of text in the Synth Rack

Table 227.

Screen element	Explanation
Synth Rack Parameter Background	Background color around parameter controls in the Synth Rack
Synth Rack Focus	Border color around the space in the Synth Rack that has the focus
Dialog Box Banner Text	Color of the headings that separate different parts of a dialog page
Dialog Banner Background	Color of the background behind a dialog banner heading
First Connected Control Surface	Highlight color of any SONAR controls being controlled by the first control surface listed in the **Controllers/Surfaces** dialog.
Second Connected Control Surface	Highlight color of any SONAR controls being controlled by the second control surface listed in the **Controllers/Surfaces** dialog.
Third Connected Control Surface	Highlight color of any SONAR controls being controlled by the third control surface listed in the **Controllers/Surfaces** dialog.
Fourth Connected Control Surface	Highlight color of any SONAR controls being controlled by the fourth control surface listed in the **Controllers/Surfaces** dialog.
Font for Control Surface Channel Display	Color of text in control surface channel display

Table 227.

For more information, see:

Screen colors and wallpaper

Controller/Surface Settings dialog

The **Controller/Surface Settings** dialog opens when you click the **Add** button in the **Controllers/Surfaces** dialog. The **Controller/Surface Settings** dialog also opens when you select a control surface from the **Connected Controllers/Surfaces** list in the **Controllers/Surfaces** dialog, and then click the **Property Page** button that's in the **Controllers/Surfaces** dialog.

The **Controller/Surface Settings** dialog has the following fields:

- **Control Surface.** Use this field to select the control surface that you want to add to the **Connected Controllers/Surfaces** list (this option is greyed-out if you open the dialog with the **Property Page** button).
- **Input Port.** Use this field to select the MIDI port that the control surface will use to send MIDI

control data to SONAR.

- **Output Port.** Use this field to select the MIDI port that the control surface will use to receive MIDI control data from SONAR.

For more information, see:

Controllers/Surfaces dialog

External Devices

Controllers/Surfaces dialog

Using the **Options > Controllers/Surfaces** command opens the **Controllers/Surfaces** dialog. This dialog allows you to enable as many control surfaces as you want to control with SONAR, and configure the control surfaces' interfaces.

This dialog also has controls to configure the WAI display (Where Am I display) and ACT indicators.

The **Controllers/Surfaces** dialog has the following fields and buttons:

Connected Controllers/Surfaces List

This is a list of all the control surfaces that are currently active and enabled in your project. The list has the following columns:

- **Controller/Surface column.** This column lists the names of all the control surfaces that are currently active and enabled in your project.
- **In Port and Out Port columns.** These columns list MIDI input and MIDI output drivers that each control surface uses to communicate with SONAR. You can click the drop-down arrow next to the name of each one to select a different driver.
- **ACT column.** This column contains a check box for each enabled control surface that allows you to use ACT with each controller/surface. The property page for each controller/surface also has a check box to enable ACT, and this check box must also be enabled in order to use ACT.
- **WAI column.** This column contains a check box for each enabled control surface that allows you to show or hide the WAI markers for each individual surface.
- **WAI color column.** This column contains a drop-down menu for each enabled control surface that allows you to change the color of the WAI markers for each individual surface.

Add Button

Clicking this button opens the Controller/Surface Settings dialog, which lets you to add another control surface to the list.

Delete Button

Clicking this button deletes and disables a selected control surface from the list. You can re-enable it by clicking the **Add** button and selecting it from the drop-down menu.

WAI Display

These check boxes show or hide the WAI markers in the Track view and/or the Console view.

For more information, see:

External Devices

Controller/Surface Settings dialog

Convert MIDI To Shapes dialog

Using the **Edit > Convert MIDI To Shapes** command opens the **Convert MIDI To Shapes** dialog box. This command lets you convert a controller envelope created in the Piano Roll view to a Track view envelope, or *shape*.

Note: *If two clips overlap, the command converts the controller envelopes in both clips, in whatever parts of the clips lie in the selected time range.*

See:

Converting MIDI Envelopes to Shapes

Creating and Editing MIDI Envelopes

Convert MIDI Clip(s) To Step Sequencer dialog

The **Convert MIDI Clip(s) to Step Sequencer** Clips pane context menu command opens the **Convert MIDI Clip(s) to Step Sequencer** dialog. This command lets you convert any selected MIDI clip to a step sequncer clip. There are two available options:

- **Resolution.** The resolution value should correspond to the shortest note value that you expect. For example, if you specify Sixteenth notes, you will get four steps per beat. The choices are:
  - Quarter (1 step per beat)
  - Eigth (2 steps per beat)
  - Eigth Triplet (3 steps per beat)
  - Sixteenth (4 steps per beat)
  - Sixteenth Triplet (6 steps per beat)
  - 32nd (8 steps per beat)
  - 32nd Triplet (12 steps per beat)
- **Preserve original timing (using time offsets).** Select this option if you want the Step Sequencer to preserve the original timing of the note events instead of quantizing them to the

nearest step.

See:

To convert a MIDI clip(s) to a Step Sequencer clip(s)

Copy dialog

The **Edit > Copy** command opens the **Copy** dialog box. which lets you put on the clipboard any selected objects. You can paste the contents of the clipboard elsewhere. See Paste dialog.

To remove rather than copy objects, see Cut dialog.

To make copies of linked clips, see Splitting and Combining Clips.

The **Copy** dialog box has the following fields:

Events in Tracks

If you check this check box, SONAR copies all Events in the selected object.

Clip Automation

If you check this check box, SONAR copies all clip automation in the selection.

Track/Bus Automation

If you check this check box, SONAR copies all Track and Bus automation from the selection.

Tempo Changes

If you check this check box, SONAR copies all tempo changes in the selected object.

Meter/Key Changes

If you check this check box, SONAR copies all meter and key changes in the selected object.

Markers

If you check this check box, SONAR copies all markers in the selected object.

See also:

Moving and Copying Clips

Working with Partial Clips

Importing Material from Another SONAR Project

Importing MIDI Files

Create Fx Envelopes dialog

If you have already patched an automatable effect into a track, you can right-click in the Clips pane and choose **Envelopes > Create > (name of the effect you patched)** to open a dialog box containing a list of the effect's automatable parameters. You can create or delete an envelope for each parameter by checking or unchecking its check box.

If you patched the effect into a bus, you can open the same dialog box by clicking in the Bus pane and choosing **Create > (name of the effect you patched)**.

The dialog box has the following fields:

Envelope Exists list

This is a list of all the automatable parameters for this effect—the ones with checkmarks already have envelopes. You can create new envelopes by checking more check boxes, or delete existing ones by unchecking check boxes.

Choose Color button

Click this button to choose colors for any envelopes whose names are highlighted and checked in the list. When you highlight the name of a checked envelope in the **Envelope Exists** list, the current color of that envelope appears above the **Choose Color** button; click the **Choose Color** button and choose a new color for the highlighted envelope. If you want the same color for several different envelopes, you can highlight as many names at one time as you want by dragging through them, SHIFT-clicking them, or CTRL-clicking them.

For more information, see:

Automating Effects

Crossfade dialog

The **Process > Audio > Crossfade** command lets you specify accurately the shape of a crossfade for a selection, clip, or track. This is a *destructive edit*—it permanently alters the data that you apply it to. To apply a nondestructive volume change to selected data, see Drawing Envelopes on Clips, and Creating and Editing Audio Envelopes.

The **Process > Audio > Fade/Envelope** command opens the **Crossfade** dialog box, which has the following fields:

Name

This field contains a drop-down menu of different graphical shapes for the crossfade volume. The options are:

- **Exponential Crossfade.** This option causes the selected audio to change volume rapidly at first, but much slower toward the end of the crossfade.
- **Inverse Exponential Crossfade.** This option causes the selected audio to change volume

slowly at first, but much faster toward the end of the crossfade.

- **Linear Crossfade.** This option causes the selected audio to change volume at a constant rate throughout the crossfade.

Crossfade graph

The crossfade graph illustrates any type of crossfade you choose in the **Name** field, but you can also drag points on the graph to create any shape you want.

Reset button

Click this button to reset the crossfade graph to the shape that is selected in the **Name** field.

For step by step directions, see Fades and Crossfades.

Controller/Surface Settings dialog

The **Ctrl Surface Settings** dialog appears when you click the **Property Page** button in the **Controllers/Surfaces** dialog. This dialog allows you to choose inputs and outputs for the selected control surface.

The **Controller/Surface** Settings dialog has the following fields:

- **Control Surface.** This field lists the control surface you are choosing inputs and outputs for.
- **Input Port.** Click the name of the input port you want to use.
- **Output Port.** Click the name of the output port you want to use.

For more information, see:

External Devices

Customize Toolbars dialog

The **Customize Toolbars** dialog appears when you right-click a toolbar, and choose **Customize** from the pop-up menu.

The **Customize Toolbars** dialog has the following fields:

- **Available Toolbar Buttons menu.** This menu lists the buttons on all toolbars, and a separator that you can add between buttons. Click an item in the menu, and then click the **Add** button to add the item to the current toolbar.
- **Add button.** Click this to add the highlighted item in the **Available Toolbar Buttons** menu to the **Current Toolbar Buttons** menu.
- **Remove button.** Click this to remove the highlighted item in the **Current Toolbar Buttons** menu from the **Current Toolbar Buttons** menu.

- **Current Toolbar Buttons menu.** This menu lists the buttons and separators that are on the current toolbar.
- **Reset button.** Click this to reset the current toolbar to its default number and arrangement of buttons.
- **Move Up button.** Click this to move a highlighted item toward the top of the **Current Toolbar Buttons** menu.
- **Move Down button.** Click this to move a highlighted item toward the bottom of the **Current Toolbar Buttons** menu.

Toolbar background gradient

`DrawToolbarGradient=<0 or 1> (default=1)`

Global and view toolbars are drawn with a background gradient. If you prefer a flat background, you may disable the gradient drawing by adding the following entry to the `Cakewalk.ini` file in the `[WinCake]` section:

```
[WinCake]
DrawToolbarGradient=0
```

Cut dialog

The **Edit > Cut** command opens the **Cut** dialog box, which lets you remove from the project and put on the clipboard any selected objects. You can paste the contents of the clipboard elsewhere. See Paste dialog.

The **Cut** dialog box has the following fields:

Events in Tracks

If you check this check box, SONAR removes every Event in the selected object.

Clip Automation

If you check this check box, SONAR removes all clip automation in the selection.

Track/Bus Automation

If you check this check box, SONAR removes all Track and Bus automation from the selection.

Tempo Changes

If you check this check box, SONAR removes all tempo changes in the selected object.

Meter/Key Changes

If you check this check box, SONAR removes all meter and key changes in the selected object.

Markers

If you check this check box, SONAR removes all markers in the selected object.

Delete Hole

If you check this check box, SONAR removes the space in the track where the object was. SONAR moves all objects after the deleted object forward in time by the length of the deleted object. Checking the **Shift By Whole Measures** option causes SONAR to move the following clips forward, but only as far as the nearest whole measure.

For more information, see Moving and Copying Clips.

See also:

Erasing Tracks

Define Groove dialog

When you use the **Process > Groove Quantize** command, the **Groove Quantize** dialog box appears, which contains the **Define** button. Clicking the **Define** button opens the **Define Groove** dialog box. which you use to save new groove patterns.

The **Define Groove** dialog box has the following fields:

Groove Source

This field lists the file that contains the currently loaded groove, along with the attributes.

Groove Library File

- **File.** Use this field to select or type a filename, so you can save the current groove in a certain file.
- **Pattern.** Use this field to select or type a pattern name, so you can save the current groove with a name you choose. If you try to save to a pre-existing pattern name, SONAR asks if you want to overwrite (erase) that pattern.

Delete button

Click this button if you want to delete the groove pattern that is listed in the **Pattern** field.

See also:

To Save a Groove Pattern

Changing the Timing of a Recording

Define Instruments and Names dialog

When you use the **Options > Instruments** command, the **Assign Instruments** dialog box appears, which contains the **Define** button. Clicking this button opens the **Define Instruments and Names** dialog box, which has the following fields.:

The **Define Instruments and Names** dialog box contains two trees:

The Instruments Tree

The Instruments tree occupies the left side of the dialog box and lists all defined instruments and their characteristics

The Names Tree

The Names tree shows all the resources you use to define an instrument.

To define an instrument, you drag resources from the Names tree to the appropriate branches on the Instruments tree. Each resource is color-coded—for example, you can only drag a Names list to an Instrument tree branch of the same color.

See also:

Creating Instrument Definitions

Assigning Instruments

Importing Instrument Definitions

Deglitch dialog

The **Process > Deglitch** command opens the **Deglitch** dialog box. When recording MIDI guitar, even the best players occasionally play unintended notes. The Deglitch feature allows you to filter out many of these unintended notes.

There are three filters in the **Deglitch** dialog:

Pitch

With the Pitch filter you can set the maximum pitch allowed in the track. If a MIDI event has a higher pitch than the maximum you set, it is removed.

Velocity

With the Velocity filter you can set a minimum velocity allowed in the track. If a MIDI event has a lower velocity than the one you set, it is removed.

Duration

With the Duration filter you can set a minimum note duration for the track in either ticks or milliseconds. If a MIDI event has a shorter duration than the one you set, it is removed.

For step by step instructions, see To Use the Deglitch Filter.

Delay dialog

Using the **File > Open** command to open a Play List opens the Play List view, which has a **Delay** button.

Clicking the **Delay** button opens the **Delay** dialog box, which lets you specify a different kind of delay before the start of each song.

The **Delay** dialog box has these fields:

No Delay

Click this option to cause the song to start immediately following the previous song.

Wait for Key Press

Click this option to cause the song to start only after you press a key on your computer.

Wait for “N” Seconds

Click this option to cause the song to start only after a period of seconds, the number of which you fill in this field.

Delete dialog

The **Edit > Delete** command opens the **Delete** dialog box, which allows you to remove selected objects from the project. It doesn't put them on the clipboard, so they can not be subsequently pasted. You can specify the following objects to remove:

Events in Tracks

Removes all events in the selected clip(s).

Clip Automation

Removes any clip envelopes in the selected clip(s).

Track/Bus Automation

Removes any track or bus automation from the selected clip(s).

Tempo Changes

Removes all tempo changes in the selected clip(s).

Meter/Key Changes

Removes all meter and key changes in the selected clip(s).

Markers

Removes all markers in the selected clip(s).

You have the following options in the **Delete** dialog:

Delete Hole

If selected, the **Delete Hole** option removes the space in the track where the clip(s) had been. All clips after the deleted clip(s) are moved forward in time by the length of the deleted clip(s). Checking the **Shift by Whole Measures** option causes SONAR to move the following clips forward, but only as far as the nearest whole measure.

For more information, see To Delete Clips.

Delete dialog (with multiple selection)

If you have both a track and an effect selected, the **Delete** dialog appears with the following options:

Current Selection

Check this box if you want to delete the current track or clip selection.

Current Effect

Check this box if you want to delete the selected effect.

Drag and Drop Options dialog

If you right-click in the Clips pane and choose **Drag and Drop Options** from the pop-up menu, the **Drag and Drop** dialog box appears, which you use to control how Clips behave when you drag them.

The **Drag and Drop** dialog box has the following fields:

Copy Entire Clips as Linked Clips

Choosing this option means that when you copy an entire clip and paste it, the new clip is a linked clip with the clip that you copied it from.

What to do with existing material

The fields in this section deal with the situation that occurs when you try to drag some data to a place in a track that already has some data.

- **Blend Old and New.** Choosing this option tells SONAR to mix the new data with the old, with the following option:

- **Replace Old with New.** Choosing this option tells SONAR to delete the old data, with the following option:
  - **Delete Whole Measures.** Choosing this option tells SONAR to delete the old data up to the next measure line, regardless of whether the new data fills the space up to the next measure.
- **Slide Over Old to Make Room.** Choosing this option tells SONAR to slide the old data either forward or backward in the track to make room for the new data. with the following option:
  - **Align to Measures.** Choosing this option tells SONAR to slide the old data up to the next measure line, regardless of whether the new data fills the space up to the next measure.

Ask This Every Time

Choosing this option causes the **Drag and Drop Options** dialog box to open every time you drag some data.

See also:

Moving and Copying Clips

Splitting and Combining Clips

Drum Map Manager dialog

In the **Drum Map Manager** dialog you can create and save drum maps for use with hardware or software samplers. You can customize drum maps to select specific sounds on any of your samplers.

Drum Maps Used in Current Project

This field displays all the currently available drum maps. click the **New** button to create a new drum map and **Delete** to delete a drum map. Select a drum map to display the drum mappings in the Drum Map Manager. All drum maps in this field are saved with the current project.

Presets

Presets can be used to populate the fields in the Drum Map Manager. This field is also used to save new drum maps by entering a name in the field and clicking the **Save** button.

Source/Destination

The Source/Destination section is where you map the following for each In Note (source):

- **In Note.** The source MIDI note value.
- **Out Note.** The MIDI note value that plays on the destination sampler.
- **Name.** The user-defined name for the row.
- **Channel.** The channel on which the note is transmitted. There is an option to follow the track's Channel setting.
- **Out Port.** The hardware output port or software virtual output port to which you are sending the

note.

- **Vel+.** Apply a velocity offset setting to an individual mapped pitch.
- **V Scale.** The V Scale value sets a level of compression or expansion. A value below 100% is compression. A value above 100% is expansion.

Port/Channel Pairs

This section lists each unique Port and Channel pairing. This allows you to make quick global changes that Port and Channel pairing's bank and patch settings.

Dump Request Macro needs your input—Channel/Unit Number

When you click the **Receive** button in the Sysx view, and choose to receive sysx data from a synthesizer your system has trouble identifying, the **Dump Request Macro needs your input** dialog box appears. This dialog box, which appears if the system needs more information and you have two or more of the same synthesizer, lets you specify which channel or unit number you want dumped.

See also:

Using the System Exclusive View

Dump Request Macro needs your input--Patch/Voice/Config Number

When you click the **Receive** button in the Sysx view, and choose to receive sysx data from a synthesizer your system has trouble identifying, the **Dump Request Macro needs your input** dialog box appears. This dialog box, which appears if the system needs more information, lets you specify which patch, voice, or config number you want dumped.

See also:

Using the System Exclusive View

Duration dialog

When you use the **Transport > Step Record** command, the **Step Record** dialog box appears, which contains two **Other** buttons. Clicking the one on the **Duration** side of the dialog box opens the **Duration** dialog box. In the **Duration** field, enter the actual duration of the note you want to enter in Ticks.

See also:

Step Recording

Edit Node dialog

Open the **Edit Node** dialog by right-clicking on a node and selecting **Properties** from the menu that appears.

Level

The node's value (% left or right pan, for example). Change the level by using the + or - keys to the left of the **Level** field or by clicking and dragging up or down.

Time

The node's time location in the track.

Select from the following time measurement options:

- M:B:T
- Samples
- H:M:S:F
- Seconds

  Then change the value in the **Time** field as desired. Change the level by using the + or - keys to the left of the **Level** field or by clicking and dragging up or down.

Edit System Exclusive Bytes dialog

When you select a bank in the Sysx view and click the **Edit** button, the **Edit System Exclusive Bytes** dialog box appears. This dialog box lets you edit your bytes in hex.

See also:

Using the System Exclusive View

Event Filter dialog

If you want information about the **Event Filter - Search** dialog box, see Event Filter Select Some/Search/Replace dialog.

See Also:

Searching for Events
Event Filters
Selecting Events

Event Filter Select Some/Search/Replace dialog

- **Edit > Select > By Filter** opens the **Event Filter-Select Some** dialog box. Use this command to **select** events of a specific nature that you specify in the dialog box. You can then edit all the events with any editing command.
- **Process > Interpolate** opens the **Event Filter-Search** dialog box, which opens the **Event Filter-Replace** dialog box when you click **OK**. Use this command to *select and replace* events of a specific nature with events of a different nature that you specify in the **Event Filter-Replace** dialog box.
- **Go-Search** opens the **Event Filter-Search** dialog box. Use this command to **find the first instance of** an event. Pressing F3 finds the next instance of the event. Pressing F3 repeatedly continues finding the next event until you reach the last one.

The **Event Filter** dialog box contains these fields:

The Save Presets Drop-down List

After you choose all your selection criteria, type a name for them in the text box and click the disk icon to save them. You can reuse each set of selection criteria by choosing the appropriate name from the drop-down list. Use the **X** button next to the disk icon to remove selected items from the list.

Include

Click the **Include** check box for each row of data types you want to include in your selection.

Note

Click the **Note** check box to search for notes of a specific type. You can specify pitch, velocity and duration data to narrow your search. Click any of the **exc** check boxes to **exclude** data from your search. For example, if you click the exc check box under Key, you can exclude notes within the pitch range specified in the **Min** and **Max** fields.

KeyAft

Click **KeyAft** to include key aftertouch data in your selection. Choose the ranges of keys and pressure values you want to include (or exclude, by checking either of the **exc** check boxes).

Control

Click the **Control** check box to include any or all of the standard controllers. Set ranges for which controllers and values you want to include or exclude.

RPN

Click **RPN** to include registered parameter controllers in your selection. Consult your sound module's documentation to see what RPN's it responds to.

NRPN

Click **NRPN** to include non-registered parameter controllers in your selection. Consult your sound module's documentation to see what NRPN's it responds to.

Patch

Click **Patch** to include bank and patch data in your selection. You can set a range of banks and/or patches to include or exclude.

ChanAft

Click **ChanAft** to include channel aftertouch (aftertouch that applies to a whole MIDI channel, not just individual keys) in your selection. Set a range of pressure values to include or exclude.

Wheel

Click **Wheel** to include pitch wheel data in your selection. Set a range of values to include or exclude.

All Non-Special Events

Set ranges in these fields to limit your selection to specific MIDI channels, beats, or ticks.

"Special Events"

Click any of the check boxes in these fields to include instances of the following kinds of data in your selection (no ranges can be set for these events):

- **Audio.** Include audio data in your selection.
- **Shape.** Include shapes in your selection.
- **Text.** Include text boxes in the event list in your selection.
- **Expression.** Include expression marks in your selection.
- **SysxBank.** Include system exclusive bank events.
- **Lyric.** Include lyrics in your selection.
- **Chord.** Include chord symbols in your selection.
- **SysxData.** Include system exclusive data events.
- **MCI.** Include Media Control Interface commands
- **Hairpin.** Include crescendo or decrescendo marks in your selection.

All

Clicking the **All** button places a checkmark into all check boxes in the dialog box.

None

Clicking the **None** button clears the checkmark from all check boxes in the dialog box.

See Also:

Searching for Events

Event Manager dialog

You can open the **Event Manager** dialog box in two ways:

- Right-click in the Event List view and choose **Event Manager** from the pop-up menu.
- Click the **Event Manager** button in the Event List view.

Use the **Event Manager** dialog box to select which types of events to display in the Event List view. The **Event Manager** dialog box has the following fields:

MIDI

Check the different kinds of MIDI events you want to display.

Special

Check the different kinds of special events you want to display.

Notation

Check the different kinds of notation events you want to display.

All/None buttons

Click an **All/None** button under the column of event types that you want to display all of or none of. Clicking the button toggles the display between each extreme.

See also:

Event Filters

Selecting Events

The Event List View

Export Audio dialog

Select **File > Export > Audio** to open the **Export Audio** dialog box. This command lets you export your projects as Wave, MP3 files, and other types of formats.

Note: *If you **select** any data in your project, only that data is included when you choose to export audio. Alternatively, you can **mute** tracks or buses you don't want to include in the mixdown, and then check **Track Mute/Solo** or **Bus Mute/Solo** in the **Mix Enables** field so that SONAR uses that information as a guide when picking what data to include in the exported file. If a project is using any effects that add a "tail" to the end of an audio track, such as reverb or delay, then you should make sure that you select extra time in the time ruler at the end of the current selection before using the **File > Export Audio** command. This ensures that the "tail" is included in the audio mixdown.*

The dialog has the following fields:

Look in

Shows the folder to which you are exporting your audio. Browse your available drives to choose a different directory.

Below the **Look in** field is a list of the selected folder's contents.

File name

Enter a name for the file you are creating.

Files of type

Select from one of the following export formats:

- **Wave.** The standard digital audio format used under Windows and for CD's, with a file extension of .wav.
- **Broadcast Wave (time-stamped).** A wave file with the following embedded information:
  - **Description.** A brief description of the contents of the Broadcast wave. Limited to 256 characters.
  - **Originator.** The author of the Broadcast wave. This information is taken from the **Author** field in the File Info dialog.
  - **Originator Reference.** A unique reference identifier created by SONAR.
  - **Origination Date.** The date the file was created.
  - **Origination Time.** The time the file was created.
  - **Time Reference.** The SMPTE time stamp for the beginning of broadcast wave.
- **Windows Media Advanced Streaming Format.** The Microsoft Corporation's compressed audio format, with the file extension of .wma. If you choose **Windows Media Advanced Streaming Format** you will be prompted for more information about the file by the **Microsoft Audio Encode Options** dialog.

- **MP3.** The mpeg-3 format, with the file extension .mp3.
- **Various surround formats.** If you have installed any 3rd-party surround encoders, you will see them listed here.

Preset

You can create a preset for a mixdown. A preset contains all the settings within the **Bounce Settings** fields and also includes the **File Type**.

Source Category

Select one of the following options:

- **Tracks.** This option creates a separate file or group of files (the **Split Mono** option in the **Channel Format** field) for each track that you select in the **Source Buses/Tracks** field.
- **Buses.** This option creates a separate file or group of files (the **Split Mono** option in the **Channel Format** field) for each bus that you select in the **Source Buses/Tracks** field.
- **Main Outputs.** This option creates a separate file or group of files (the **Split Mono** option in the **Channel Format** field) for each main out that you select in the **Source Buses/Tracks** field.
- **Entire Mix.** This option creates a file or group of files (the **Split Mono** option in the **Channel Format** field) for your entire mix.

Channel Format

Select from one of the following options:

- **Mono.** All exported tracks are mixed down to a mono file or separate mono files, depending on how many tracks or buses you select in the **Source Buses/Tracks** field.
- **Stereo.** All exported tracks are mixed down to a stereo file or separate stereo files., depending on how many tracks or buses you select in the **Source Buses/Tracks** field
- **Split Mono.** All exported tracks are mixed down to a group of mono files, or separate groups of mono files, depending on how many tracks or buses you select in the **Source Buses/Tracks** field.
- **Multichannel.** All exported tracks in a Surround project are mixed down to a multichannel file containing the number of channels listed on the **Surround** tab of the **Project Options** dialog.

Source Buses/Tracks

- Select the tracks or buses that supply the audio data you want to export If you chose **Tracks** in the **Source Category** field, only tracks will show up as choices in this field.

Sample Rate

Set the sample rate for the file. CD audio uses 44100 kHz.

Bit Depth

Set the bit depth for the file. CD audio uses 16 bit. If you don’t have Dithering turned on, this is a good time to turn it on.

Dithering

Whenever an audio signal is converted from a higher-bit resolution to a lower resolution, it is necessary to apply dither to avoid introducing undesirable quantization noise or harmonic distortion into the signal. You can select from four available dithering types.

- Rectangular
- Triangular
- Pow-r 1
- Pow-r 2
- Pow-r 3

For more information see “Dithering” on page 679.

Mix Enables

As default, each of the Mix Enables options is checked, meaning that your mixdown will sound the same as playback. You can check or uncheck each of the following items to include or exclude them from your mix:

- **Track Mute/Solo.** If you check this option, tracks that are currently muted are not mixed down. Also with this option checked, if any tracks are soloed, only those tracks are included in the mixdown.
- **Bus Mute/Solo.** If you check this option, buses that are currently muted are not mixed down. Also with this option checked, if any buses are soloed, only those bus outputs are included in the mixdown.
- **Track Automation.** If you don’t check this option, any volume and pan automation, **including initial volume and pan settings**, is ignored when creating the new file(s). The amplitude of the raw data in the tracks is used, and the pan is C, or centered.
- **Clip Automation.** If you don’t check this option, any clip automation, **including any trim settings**, is ignored when creating the new file(s).
- **Bus Automation**
- **FX Automation**
- **Track FX.** If you don’t check this option, any effects patched into various tracks’ patch points, **including any plug-in synthesizers patched into track fx patch points**, are ignored when creating the new file(s).
- **Bus FX.** If you don’t check this option any effects in buses are ignored when creating the audio file.
- **Fast Bounce.** When checked SONAR exports audio as fast as your computer allows. If unchecked, SONAR exports audio in realtime. Uncheck this option if you are using a synth that works only in realtime. This option is checked by default.
- **Audible bounce.** The **Audible bounce** option is only available when in real-time bounce mode (when *Fast Bounce* is unchecked). When Audible bounce is unchecked, no audio output will be heard during the bounce process. When in real-time bounce mode (Fast Bounce unchecked) and

Audible bounce is enabled, you can hear the output of the mixdown.

Note: *Depending on the gainstages used in the project and the mixdown options selected–such as bouncing with source category assigned to Tracks, or with mute/solo or automation disabled in the bounce settings or while freezing tracks–the output may be louder or softer than during normal playback. Please be sure to turn down the master output level before using real-time audible bounce under these scenarios to avoid the possibility of speaker damage.*

- **64-bit Engine.** If you don't usually run SONAR in 64-bit mode in order to save CPU, you can turn 64-bit mode on when you export audio by enabling this check box. Remember to turn it off after you export your audio, if you don't want to use it during tracking or mixing.

Add to Audio CD Track List

Check the **Add to Audio CD Track List** option when you export audio as a 16-bit, 44,100 Hz stereo Wave file (.wav). The **Audio CD Burner** dialog appears with the Wave file pre-loaded in the **Track** list.

Add to Cakewalk Publisher

Check the **Add to Cakewalk Publisher** option when you export audio as an MP3 file. Publisher launches automatically and the MP3 file is pre-loaded.

For more information, see:

Mixing

To Mix Down (Bounce) Audio Tracks

Converting Your Soft Synth Tracks to Audio

Export Color Set dialog

The **Export Color Set** dialog appears when you click the **Export** button in the **Configure Colors** dialog.

This dialog has the following fields:

Save in

Select the directory in which you want SONAR to store the file that you want to export.

file and folder window

This large window under the **Save in** field lists the files and folders that are inside the current folder.

File name

Type or select the filename you want to open.

Save as type

Select the type of file you want to open.

Export Current Color Set

Enable this check box if you want to export the current color arrangement as a color set file (.clr).

Export Color Preset

Enable this check box if you want to export all the presets in the **Presets** menu as a color set file (.clr).

Export MIDI Groove Clip dialog

The **File > Export > MIDI Groove Clip** command opens the **Export MIDI Groove Clip** dialog. You must first select a MIDI Groove clip before the command becomes available.

The **Export MIDI Groove Clip** dialog has the following fields:

Save In

Use this field to navigate to the folder where you want to store the MIDI Groove clip.

File Name

Type a name in this field for the file you're saving (exporting).

Save as Type

The only option in this field is **MIDI Groove Clip (.mid)**.

File Info

For your exported MIDI clip, this field lists the MIDI Groove clip characteristics that the clip contains, such as **Beats in Clip**, **Follow Project Pitch**, and **Reference Note**.

For more information, see Exporting, and Importing MIDI Groove Clips.

Export OMF dialog

Select **File > Export > OMF** to open the **Export OMF** dialog.

This command lets you save and export your projects OMF files. The dialog box has the following fields:

Save in

Shows the folder to which you are exporting your project. Browse your available drives to choose a different directory.

Below the **Save in** field is a list of the selected folder's contents.

File name

Enter a name for the file you are creating.

File of type

Select from one of the following OMF file formats:

- **OMF version 1.** Compatible with older applications.
- **OMF version 2.** Compatible with newer applications.

Audio Packaging

- **Embed Audio Within OMF.** Saves all audio in the OMF file.
- **Reference Audio Externally.** Saves all audio in a subdirectory of the directory where you save the OMF file.

Audio Format

- **Write RIFF Wave.** Export audio as WAV files.
- **Write AIFC.** Export audio as AIF files.

Split Stereo Tracks to Dual Mono

Check this option to save stereo tracks as a pair of mono tracks.

Include Archived Tracks

Check this option to export tracks in the project that are currently archived.

Mix Each Groove Clip as a Separate Clip

Check this option to save each Groove clip as a separate clip. This option may increase the length of time it takes to export the project as an OMF file if there are many Groove clips in the project.

Expression Text Properties dialog

In the Staff view, when you right-click on a text expression, such as a ***ff*** marking, the **Expression Text Properties** dialog box appears.

This dialog box lets you edit the text and location of your expression text.

See also:

Adding Expression Marks

Export Track Template

The **File > Export > Track Template** and **Save As Track Template** commands open the **Export Track Preset** dialog. You must first select a track before the command becomes available.

The **Export Track Template** dialog has the following fields:

Save In

Use this field to navigate to the folder where you want to store the track template.

File Name

Type a name in this field for the template you want to save (export).

Save as Type

The only option in this field is **Track Template Files (.cwx).**

Fade/Envelope dialog

The **Process > Audio > Fade/Envelope** command lets you specify accurately the shape of a fade for a selection, clip, or track. This is a *destructive edit*—it permanent alters the data that you apply it to. To apply a nondestructive volume change to selected data, see Drawing Envelopes on Clips.

The **Process > Audio > Fade/Envelope** command opens the **Fade/Envelope** dialog box, which has the following fields:

Name. Use this field to choose the kind of fade you want to apply to the selected data, from the following choices:

- Exponential Fade In
- Exponential Fade Out
- Inverse Exponential Fade In
- Inverse Exponential Fade Out
- Linear Fade In
- Linear Fade Out

Fade graph. This graph shows a visual representation of the type of fade you choose in the **Name** field. The graph changes as you drag the line or curve in different directions.

Reset button. Click this button to restore the graph to the shape of the fade that's listed in the Name field.

For step by step directions, see Fades and Crossfades.

Fade Selected Clips dialog

The **Process > Fade Selected Clips** command opens the **Fade Selected Clips** dialog where you can create or edit one or more clip fades.

The **Fade Selected Clips** dialog has the following options:

Fade

Select **Fade** if you want to create a fade-in and fade-out on the selected clips.

Fade In

The number of milliseconds the fade-in lasts.

Fade Out

The number of milliseconds the fade-out lasts.

Fill Gaps, XFade between Audio Clips

Select the **Fill Gaps, XFade between Audio Clips** check box if you want to automatically fill in the gaps and create an automatic crossfade between selected audio clips. Filling the gaps is accomplished automatically by “rolling out” the first clip’s right edge and the second clip’s left edge to create a crossfade.

XFade

The duration of the automatic crossfade.

Max Gap

This value specifies the widest gap that will be filled with an automatic crossfade.

Fade-in Curve

Choose a fade-in type. Options are linear, slow or fast curve.

Fade-out Curve

Choose a fade-out type. Options are linear, slow or fast curve.

Alter Existing Times

Select this option if you wish to change the existing fade lengths. You don’t have to enable this if you’re creating a new fade.

Alter Existing Curves

Select this option if you wish to change the existing fade types. You don’t have to enable this if you’re creating a new fade.

Only Show if Pressing Shift

Select if you want to apply previous dialog settings without opening the dialog. Hold shift when selecting command to override.

File Info dialog

The **File > Info** command opens the **File Info** dialog box. In the **File Info** dialog box, you can document the following information for your project:

Title

Your song's title.

Subtitle

Your song's subtitle.

Instructions

Specific instructions about for playing your song.

Author

The author of the song.

Copyright

Applicable copyright information.

Keywords

Put keywords describing the song here for future reference.

Project Description Text Box

Project description or other information.

See also: File Statistics dialog.

File Statistics dialog

The **File Statistics** dialog box displays the following information about the contents of the project file:

Statistic	What it means
Created	The date the project was first saved.
Editing time	The total time you've had the project open, from the time it was created to the last time it was saved. This does not include time spent editing the project since you last saved it. If you want to update this value, save the project.
Revision	Each time you save a file that has been changed, this number is incremented. If you open a project, make no changes, then save it, the revision number is not changed.
Events	The total number of events in the project.
Sample rate	The sample rate for digital audio.
Bit depth	The bit depth of digital audio.
Pan Law	The project's current pan law setting.
File version	The SONAR version number.

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File Options dialog

The **Options** button in the **Save As** dialog opens the **File Options** dialog.

Check the **Mark for Microsoft Media Player** check box if you plan to use your MIDI files for use with the Microsoft Media Player.

Find Missing Audio File dialog

Use the **Locate Missing Audio File** dialog to find missing audio in your project. The following is a brief description of the options you have in this dialog:

Open. Click this button once you have searched for and found the missing audio file.

Skip. Click this button to move to the next missing file. When you skip and audio file your project opens without that piece of missing audio.

Skip All. Click this button to skip all missing audio files. When you skip all missing audio files, you project opens without those pieces of missing audio.

Search. Click this button to begin a search of all available hard drives for your missing audio file.

After locating the file Options. You can choose to either move an audio file to the project's audio data folder, copy an audio file to the project's audio data folder, or leave an audio file in its current folder.

Fit to Time dialog

The **Process > Fit to Time** command opens the **Fit to Time** dialog box, which you can use to stretch or shrink a selection so that it ends at a specific time, expressed in either measure:beat:tick (MBT) or hours:minutes:seconds:frames (SMPTE) format. This command gives you a choice of modifying the events or modifying the underlying tempo. This is useful when you want to alter a portion of a project to have an exact length. The start time of the selection does not change, but the end time is altered as necessary to fit the required time interval.

Audio can be stretched or condensed up to a factor of 4 (e.g., it can be shrunk to as little as 25 percent of its original length, or expanded to as much as 400 percent of its original length).

The **Fit to Time** dialog box has the following fields:

Original Time Span

This field lists the beginning location of the selection (the **From** value), and the ending location of the selection (the **Thru** value). You can toggle between MBT format and SMPTE format by clicking the **Format** button.

Adjust to End at New Time

Enter a value into the **New Thru** field of the new location where you want the selection to end.

Modify by Changing

Choose how you want to change the selection to change its duration. Usually, you change the Tempo Map; this method preserves the note durations and bar lines of your project. Choose from these options:

- **Tempo Map.** Choose this option to change only the tempo(s) of the selection, leaving note durations and their relationships to bar lines unchanged.
- **Event Times.** Choose this option to change the starting and ending times of all events in the selection, leaving the tempo(s) unchanged. This option is not available if any selected data contains a Groove clip.
- **Stretch Audio.** Choose this option to cause any audio data in the selection to stretch or shrink to fit the new end time. This option has no effect on Groove clips.
  - **Type (disabled unless Stretch Audio is checked).** (this is a SONAR Producer feature only) choose options based on the source material: single voice or instrument versus a group of instruments (ensemble or polyphonic), and how long you want to wait for processing to finish:

better quality can take a long time if you're processing several tracks.

- **Formant Scaling (disabled unless Stretch Audio is checked).** (this is a SONAR Producer feature only) possible values range from -2.000 to 2.000 octaves. Formants give a voice its characteristic sound. If you find that changing the length of your audio changes the timbre too much, you can raise or lower the formant to try and maintain the characteristics of the sound.

Format button

Click the **Format** button to toggle between display in MBT time and SMPTE time formats.

See also:

To Stretch or Shrink to a Specific Length

Stretching and Shrinking Events

Working Groove Clip audio

Folder Properties dialog

Right-clicking a the title bar of a track folder and choosing **Folder Options** opens the **Folder Properties** dialog, which has the following fields:

Name

This field, which you can edit, lists the name of the track folder.

Member Tracks

This field lists the number and kind of tracks that are in the track folder.

Total Events

This field lists the number of events in all the included tracks.

Description

You can type a description of the track folder in this field, and edit the description later if you want.

Freeze Options dialog

The **Freeze Options** dialog has the following options:

Fast Bounce

When checked, SONAR bounces to tracks as fast as your computer will allow. If unchecked, bouncing to tracks happens in real time. Uncheck this option if you are using a synth that only works in real time. This option is checked by default.

Hide MIDI Tracks

Check this box if you want the MIDI tracks associated with your synth to be hidden when the synth is frozen.

Single Bounce Per Track

Check this if you want to create a single clip for all the bounced audio. If you don't check this, each separate clip on a track creates a separate clip when you freeze the track.

Remove Silence

If you checked the previous option, you can check this box and adjust settings in the **Remove Silence** dialog to remove silence in a frozen track. Checking this option will create separate clips from a single clip that has areas of silence in it.

Freeze Tail Duration *n* seconds

This value allows for a reverb or delay tail (the reverberations or signal delay that continue once the source has stopped). Set this value at a high enough value to allow for any delay or reverb or other effect that you may have patched into a track.

Audible bounce

When **Fast bounce** is disabled, the real-time bounce operation can be performed either silently or audibly. To hear the bounce operation while freezing a track, select the **Audible bounce** check box.

Track FX

When selected (default behavior), the track FX bin is rendered into the frozen clip, **Freeze Tail Duration** is applied, and the track FX bin is bypassed.

If the Track FX option is not selected, the track FX bin is not rendered into the frozen clip, which is useful when freezing AudioSnap clips in order to conserve CPU resources.

Tip: *You can right-click any track's **Freeze** button in the Track view to open the **Freeze Options** dialog.*

Gain dialog

The **Process > Audio > Gain** command opens the **Gain** dialog.

This dialog lets you precisely control the gain, phase, and stereo interleave of selected audio data. This dialog has the following controls:

- **New Left Channel-From Left slider.** Drag the From Left slider to determine the amount of the original left channel that will be mixed to the new file (range = -INF to 18.0dB).

Note: *Each group consisting of a slider, a % edit box, and a dB edit box are connected; adjusting one affects the others.*

- **New Left Channel-From Right slider.** Drag the From Right slider to determine the amount of the original right channel that will be mixed to the new file (range = -INF to 18.0dB).
- **Invert left channel phase.** Enable the **Invert left-channel phase** button if you want to reverse the phase of the new left-channel mix.
- **New Right Channel-From Left slider.** Drag the **From Left** slider to determine the amount of the original left channel that will be mixed to the new file (range = -INF to 18.0dB).
- **New Right Channel-From Right slider.** Drag the **From Right** slider to determine the amount of the original right channel that will be mixed to the new file (range = -INF to 18.0dB).
- **Invert right channel phase.** Enable the **Invert right-channel phase** button if you want to reverse the phase of the new right-channel mix.
- **Audition button.** click this button to audition a few seconds of your new settings.
- **Preset window.** use this window and the **Save** and **Delete** buttons that are next to it to save and manage any **Gain** presets you decide to store.

Global Options dialog—General

Using the **Options-Global** command opens the **Global Options** dialog box. Clicking the **General** tab gives you access to options you might want to set for all your projects.

Fill in or check the following fields:

Scan for VST Plug-ins on Startup

Checking this option causes SONAR to search for unregistered VST plug-ins on startup. If you prefer to run the VST Configuration Wizard manually, you can disable this option.

Show Tooltips

Checking this option causes SONAR to show tooltips. Tooltips are small text names or explanations that appear when you hold the mouse over a tool.

Show Status Bar

Checking this option causes SONAR to show the Status bar, which displays whether any tracks are muted, soloed, or armed for recording or automation, and also contains the CPU and Disk meters.

Show MIDI Activity on Windows Taskbar

Check this option to display the MIDI Input/Output Activity icon on the Windows taskbar.

Display All Times as SMPTE

This option, when checked, forces all time displays to appear in SMPTE time regardless of the setting you have in the Time Ruler.

Display Left on Top for MIDI Pan Envelopes

When checked left is at the top of a clip for MIDI pan envelopes.

Display Envelopes on a Percentage Scale

This option, when checked, causes new envelopes to be placed in the clip based on a range where 0 dB is in the middle of the clip. If the current volume is other than 0 dB, a new envelope is created at that location. For example a new envelope created at 6 dB would appear at the very top of the clip where a new envelope created at -20 dB would appear near the bottom of the clip.

Display Waveform Preview While Recording

This option (on by default), causes SONAR to draw a preview waveform of any audio data that you record while you are recording it. If you turn this option off, SONAR creates a red swath in the Clips pane in the area you are recording, while you are recording.

Load Non-SONAR Files in Offset Mode

This option causes .smf, .mid, .rmi, .wrk and .cwb/bun files to open in Offset mode.

For more information about Offset mode, see Envelope Mode and Offset Mode.

Create Default Drum Map for Non-SONAR Files

This option ensures that when you load a Standard MIDI File, you won't have to create a drum map from scratch—SONAR creates a basic one for you.

Allow Only One Open Project at a Time

If you check this check box, when you open a new project SONAR will close any project that is already open and ask if you want to save any changes.

Allow MIDI Recording without an Armed Track

By default, SONAR requires you to arm a track before recording.

Ask before Sending System Exclusive (When Opening Projects)

If you check this option and then open a project that contains sysx data, SONAR asks you before sending the sysx data.

Always use Sysx Banks for MIDI Files (Instead of Sysx Data)

If you check this option, SONAR puts any sysx data contained in imported MIDI files into sysx banks instead of a stream of sysxdata events (except for auto-send data, which is sent before playback). These banks show up in the Event list as bank events. If you don't check this option, imported sysx data remains as sysx data events if it is up to 255 bytes, and is put into banks if it is 256 or more bytes.

Write Cable Meta Events to MIDI Files (Output Select)

If you select this option, SONAR can change the default output that a following (upcoming) sysx bank is sent to. The output select number is also inserted into the front of each track of a format 1 MIDI file to specify the output number.

Always Echo Current MIDI Track

This option is on by default, and means that incoming MIDI data will always be echoed through the current track, even if the track's **Input Echo** button is in the Off position.

Disable Input Monitoring During Playback

This option is off by default. When enabled, input monitoring will be disabled on all tracks during playback but not during recording.

On Stop, Rewind to Now Marker

When this check box is enabled, the Now Time jumps back to the Now Time Marker whenever playback stops.

Set Now Time With Full Restart

When this option is checked, when you change the Now Time during playback, the Transport comes to a full stop, and then restarts playback. This stops the sound for a brief moment, but makes synchronization (especially with video) more robust.

Stop at Project End

When this option is checked, playback will automatically stop after the last event in the project is reached. When this option is unchecked, playback will continue beyond the end of the project and playback can also be started in an empty project.

Unload Synth On Disconnect (Releases Memory)

When this option is checked you can freeze a soft synth or disconnect the synth in the Synth Rack view and free up the memory that the synth was using. With some synths this can be a lot of memory, especially with synths that use samples. Of course, if you remove the synth from your computer's memory, reconnecting or unfreezing the synth will take the same amount of time that it did when you originally loaded the synth.

Base Octave for Pitches

There is no industry standard for numbering octaves. By default, SONAR calls MIDI note 0 (the lowest possible note) C0. The Yamaha FB-01, for example, shows MIDI note 0 as C-2 (C negative 2). To match SONAR to that standard, set Base Octave to –2.

Audition Audio Commands for "N" Seconds

When you apply an edit or effect to an audio clip, SONAR lets you audition that edit for "N" seconds: the value you fill into this field.

Enable X-Ray

Enable this check box to turn on the X-Ray Windows feature, which allows you to see through plug-in windows and certain view windows to work in the window behind the current window. You use the X-Ray Windows feature by pressing a hotkey while the mouse is over an X-Rayable window.

In addition to choosing hotkeys (with the **Options > Key Bindings** command), you can set these X-Ray Windows options:

- **Opacity.** Choose how transparent you want the X-Rayed window to become when it is X-Rayed.
- **Fade Out Time (Milliseconds).** Choose how fast you want the X-Rayed window to reach its maximum transparency.
- **Fade In Time (Milliseconds).** Choose how fast you want the X-Rayed window to restore its normal state.

Global Options dialog—Autosave and Versioning

Using the **Options > Global** command opens the **Global Options** dialog box. Clicking the **Auto-save and Versioning** tab gives you access to the following options:

Auto-save Every "N" Minutes or "N" Changes

Choose how many minutes or edits between automatic saves.

Enable Versioning of Project (.cwp) Files

Checking this check box causes SONAR to save successive versions of a project with the date the project was saved in the file name. The most recent version has no date in the name.

- **Number of versions to keep.** If you enable the versioning option, you can use this field to choose how many versions to keep. When the maximum number of files is reached, the oldest file is deleted.

Global Options dialog—Timecode

Using the **Options > Global** command opens the **Global Options** dialog box. Clicking the **Timecode** tab gives you access to options you might want to set for all your projects.

Fill in or check the following fields:

When SMPTE/MTC timecode is detected

This option tells SONAR what to do when it detects SMPTE/MTC timecode. Choose from the following:

- **Ask first, then switch to clock source and start.** This option prompts SONAR to alert you when it detects a SMPTE/MTC signal, asks if you want to sync to the incoming signal, and if you respond that you do, switches the clock source and starts to receive the signal.
- **Always switch the clock source and start.** SONAR automatically switches to the clock source of the incoming signal and begins to receive the signal.
- **Do not switch clock source, but start if in SMPTE/MTC mode.** This option automatically syncs to the incoming signal if SONAR is in SMPTE/MTC mode.
- **Never switch clock source, never start.** SONAR does nothing when incoming SMPTE/

MTC timecode is detected.

Note: *The final option, Never switch clock source, never start, should never be used if you are attempting to sync to an external clock source.*

When clock source is set to SMPTE/MTC or MIDI Sync, pressing play in SONAR will:

This option tells SONAR what to do when you press play in SMPTE/MTC or MIDI Sync mode:

- **Switch current clock source and start playback.** Switch the clock to **Audio** (from **SMPTE** or **Sync**), and start playback. This cancels SMPTE (or Sync) mode.
- **Maintain current clock source and wait for timecode.** Do not switch the clock (Stay in SMPTE or Sync mode), but wait for SMPTE or Sync. The playback button remains depressed.

For more information, see:

Synchronization Overview

Global Options dialog—MIDI

Using the **Options > Global** command opens the **Global Options** dialog box. Clicking the **MIDI** tab gives you access to options you might want to set for all your projects.

The **MIDI** tab has the following sections:

Record

Use the fields in this section to choose what MIDI events you want to record. Choose any or all of these options:

- Notes
- Key Aftertouch
- Controller events
- Patch Changes
- Channel Aftertouch
- Pitch Wheel
- System Exclusive data
  - **Buffers.** Choose how many MIDI buffers you want SONAR to use. The default value of 64 works well most of the time. If you experience frequent MIDI overflow from using MIDI plug-ins or lots of Sysx data, try a larger number, such as 128.
  - **Echo System Exclusive.** Choose this if you want to echo Sysx data to the MIDI channels shown in the **Options > Project** dialog box on the MIDI Input tab.

Playback

Prepare Using N Millisecond Buffers. This option lets you specify how far in advance SONAR prepares MIDI data during playback. The default is 500 milliseconds.

If playback stops prematurely, you may try *larger* values (although you should also check the buffer options in **Options > Audio,** Advanced tab).

If you are using MIDI effects, you may want to try *smaller* values—for example, 100 milliseconds. Doing so means that, if you change a property for a MIDI effect, there will be less delay before you hear the new value take effect.

For more information, see:

MIDI track parameters

Recording music from a MIDI instrument

Global Options dialog—Folders

Using the **Options > Global** command opens the **Global Options** dialog box. Clicking the **Folders** tab gives you access to options you might want to set for all your projects.

This tab lets you specify folders for all your different kinds of SONAR files. The default locations for all of these file types usually work well. However, if you find that this folder gets cluttered, changing the locations of the file types listed on this tab won't hurt anything, as long as you remember where you put things.

Note: *The only folder location you have to be careful with (and it isn't listed on the Folders tab) is the **Audio Data** folder, which SONAR creates in the C:\Cakewalk Projects folder when you install it. SONAR stores all audio data that is associated with project files in this folder. If you move this folder, SONAR can not find the audio data for projects you have already recorded. To tell SONAR where you moved the folder, fill in the location in the **Global Audio Folder** field on the **Audio Data** tab of the **Global Options** dialog.*

You can change the folder for a file type by typing a new path name in the particular file type's window on the **Folders** tab, or by clicking the **Browse** button that's located at the end of the file type's window and navigating to the folder that you want to store that file type in. You can set different locations for the following filetypes:

Project Files (.cwp, .mid, .cwb)

.cwp and .cwb files are your standard SONAR project files. The default directory for your project files is Cakewalk Projects, located in the root directory. .mid files are Standard MIDI Files and can be put anywhere you like.

Track Templates

These files store your most commonly used track settings, including track type (MIDI or audio), effects and their settings, hardware input, bus send settings, and a variety of other track-related parameters. The default directory is the Track Templates folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\Application Data\Cakewalk\SONAR 8.5
<Producer or Studio>\
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

Track Icons

These files store standard or customized icons. The default directory is the Track Icons folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\Application Data\Cakewalk\SONAR 8.5
<Producer or Studio>\
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

Templates (.cwt)

These files store your favorite setups for window arrangement and instrument combinations. The default directory for template files is the Sample Content folder located in.

Windows XP:

```
C:\Documents and Settings\<user name>\My Documents\Cakewalk\SONAR 8.5
<Producer or Studio>
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

Project templates have the file extension .cwt.

CAL Files

These are small programs written in Cakewalk Application Language, that perform specialized MIDI editing. The default directory for CAL files is the Sample Content folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\My Documents\Cakewalk\SONAR 8.5
<Producer or Studio>
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

CAL files have the file extension .cal.

Window Layouts

You can save or apply (load) various arrangements of views that you create by using the **Views > Layouts** command. Naming and saving a layout creates a file called (file name)CakewalkWindowLayout, where you supply a file name. The file has the extension .CAK, but the extension is only visible if you look at the file's Properties. The default directory is the Sample Content folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\My Documents\Cakewalk\SONAR 8.5
<Producer or Studio>
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

Wave Files

These files are the standard Windows audio files that you can import into and export out of SONAR. They have the file extension .wav. The default directory for wave files is the Sample Content folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\My Documents\Cakewalk\SONAR 8.5
<Producer or Studio>
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

Video Files

You can import .AVI, ,MPG, and QuickTime video files into SONAR. The default directory for video files is the Sample Content folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\My Documents\Cakewalk\SONAR 8.5
<Producer or Studio>
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

Sysx Files (.SYX)

When you create and save a .SYX file. The default directory for sysx files is the Sample Content folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\My Documents\Cakewalk\SONAR 8.5
<Producer or Studio>
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

Play List (.SET)

When you create and save a .SET file. The default directory for play list files is the Sample Content folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\My Documents\Cakewalk\SONAR 8.5
<Producer or Studio>
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

Groove Quantize (.GRV)

When you create and save a .GRV file. The default directory for groove quantize files is the Sample Content folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\My Documents\Cakewalk\SONAR 8.5
<Producer or Studio>
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

StudioWare

The default directory for StudioWare files is the Sample Content folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\My Documents\Cakewalk\SONAR 8.5
<Producer or Studio>
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

The file name for a a StudioWare file is (file name) CakewalkStudioWare. The file name has the extension .CAK, but the extension is only visible if you look at the file's Properties.

Pattern Brushes

Used by the Pattern Brush tool in the Piano Roll view, patterns can be painted into the drum map grid and can include rhythm, pitch and velocity data. The default directory for pattern files is the Pattern Brush Patterns folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\Application Data\Cakewalk\SONAR 8.5
<Producer or Studio>\
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

For more information about the Pattern Brush, see The Pattern Brush Tool.

Drum Maps

You can create drum maps to redirect any number of MIDI drum tracks to internal (software) and external (hardware) synthesizers or samplers. The default directory for drum map files is the Drum Maps folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\Application Data\Cakewalk\SONAR 8.5
<Producer or Studio>\
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

For more information about drum maps, see Drum Maps and the Drum Grid Pane.

Plug-in Layouts

You can create menu layouts for your plug-ins by using the Plug-in Manager (**Tools > SONAR Plug-in Manager** command). The default directory for plug-in menu layouts is the Plug-in Menu Layouts folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\Application Data\Cakewalk\SONAR 8.5
<Producer or Studio>\
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

Step Sequences

When you create and save a .SSP file. You can save and load step sequencer patterns in the Step Sequencer.

The default directory for step sequencer patterns is the Step Sequencer Patterns folder located in:

Windows XP:

```
C:\Documents and Settings\<user name>\Application Data\Cakewalk\SONAR 8.5
<Producer or Studio>\
```

Windows Vista:

```
C:\ProgramData\Cakewalk\SONAR 8.5 <Producer or Studio>
```

For more information about step sequences, see Step Sequencer View.

Global Options dialog—Editing

Using the **Options > Global** command and clicking the **Editing** tab gives you access to editing options you might want to set for all your projects.

This tab lets you specify two things:

- How you want drag and drop to work (see drag and drop options below)
- Whether you want SONAR to automatically add a crossfade between two audio clips that overlap (see general options below)

Drag and Drop options:

Choose from the following drag and drop options:

Copy Entire Clips as Linked Clips. When you copy an entire clip, choosing this option causes the new clip and the clip that you copied it from to be Linked clips.

What to do with existing material. The fields in this section deal with the situation that occurs when you try to drag some data to a place in a track that already has some data.

- **Blend Old and New.** Choosing this option tells SONAR to mix the new data with the old, with the following option:
- **Replace Old with New.** Choosing this option tells SONAR to delete the old data, with the following option:
  - **Delete Whole Measures.** Choosing this option tells SONAR to delete the old data up to the next measure line, regardless of whether the new data fills the space up to the next measure.
- **Slide Over Old to Make Room.** Choosing this option tells SONAR to slide the old data either forward or backward in the track to make room for the new data. with the following option:
  - **Align to Measures.** Choosing this option tells SONAR to slide the old data up to the next measure line, regardless of whether the new data fills the space up to the next measure.

Ask This Every Time

Choosing this option causes the **Drag and Drop Options** dialog box to appear every time you drag some data.

Clips options

Choose from these clip editing options:

Crossfade Audio clips upon overlap. Choosing this option tells SONAR to automatically smooth out any volume differences between overlapping audio clips, nondestructively. If you choose this option to drag clips, and then disable it to drag some other clips, the clips with the crossfades retain their crossfades.

Select all clips in clip groups. Choosing this option causes all clips in a group to be selected when you select any clip in the group.

Selection after single split. This list lets you specify what is selected after a clip is split into two parts:

- **Left portion (default).** Only the left portion is selected.
- **Right portion.** Only the right portion is selected.
- **Both portions.** Both the left and right portions are selected.
- **None.** Neither portion is selected.

When splitting clips in groups, create new groups. Choosing this option tells SONAR to create a new clip group when splitting clips in an existing clip group.

See Also:

Moving and Copying Clips

Fades and Crossfades

Global Options dialog—Nudge

There are three sets of Nudge settings. All are the same. The following is a description of the settings.

- **Musical Time.** Select a note length setting.
- **Absolute Time.** Select one of the following absolute time options and a number in the first field:

Absolute time setting	Description
Seconds	Whole seconds.
Milliseconds	Thousands of a second.
Frames	Number of frames. There are 30 frames per second.
Samples	A very small amount of time. For CD-quality audio there are 44,100 samples per second, so a value of 1 here would not move a clip by a perceptible amount.
Ticks	The number of ticks per quarter note varies depending on the setting in the **Project Options** dialog's clock tab. The default setting is 960.

Table 229.

- **Follow Snap Settings.** Moves the clip or note by the current snap setting.

For more information, see Nudge.

Global Options dialog—Audio Data

Using the **Options > Global** command and clicking the **Audio Data** tab gives you access to the following options.

Global Audio Folder

The Global Audio Folder is where audio files are stored for all projects when per-project audio is not turned on. It is also used to store audio for older, non-per-project audio projects, as well as a temporary folder for unpacked bundle files and to store audio for as yet unnamed projects.

Picture Folder

This folder contains the waveform images for all audio files in all your projects.

All Projects—Always copy imported audio files

When checked this option forces SONAR to always copy all imported audio files to your audio data directory. If you want to keep all your audio files in one location, always keep this option checked.

All Projects—Always Import Broadcast Waves at Their Timestamp

Forces SONAR to ignore the Now Time when importing Broadcast Wave files. When this option is checked, Broadcast Waves begin at their SMPTE timestamp in your project.

All Projects—Export Broadcast Waves By Default

Check this option if you want the **Broadcast Waves** option to appear by default in the **Export Audio** dialog.

All Project—Apply SMPTE Offset to Broadcast Wave Timestamps

Check this option if you want to add the **SMPTE Offset** value (listed on the **Clock** tab of the **Project Options** dialog) to the timestamps of the Wave files that you export from SONAR.

All Project—Allow importing of WAV File Cue Markers

Check this option if you want SONAR to import cue markers that may exist in wave files.

Many field recorders, such as the Edirol R-4, can add cue markers to the wave files that they record. If you import these wave files into SONAR, the markers appear as standard SONAR markers on the Time Ruler.

Marker names are based on the imported file name, and are numbered sequentially, with a limit of 16 characters <file name…> 1, <file name…> 2, etc.

File Bit Depths

- **Record Bit Depth.** Use this field to choose the bit depth that recorded audio data will use. You can change this at any time.
- **Render Bit Depth.** Use this field to choose the bit depth that audio processing (freezing, bouncing, applying effects) will use. The default value of 32 allows virtually lossless processing.
- **Import Bit Depth.** Use this field to choose the bit depth that imported audio will use. The default choice of Original keeps the imported audio at its current bit depth.

Per-Project Audio

- **Use Per-Project Audio Folders.** This option is on by default, and allows you to use a different audio data folder for each project.

- **On Startup Load Normal Template.** This option lets you leave the **Use Per-Project Audio Folders** option checked, but doesn't ask you to choose an audio folder every time you open a new project. While you record audio into the new project, the audio data is stored in the global audio folder until you save the file, at which point you can choose to create a PPA folder, or retain the audio in the Global audio folder.

Global Options dialog—VST Plug-ins

Using the **Options > Global** command and clicking the **VST Plug-ins** tab gives you access to the following options.

VST Scan Folders

This window lists the folders that are scanned for VST plug-ins. "Scanning" a VST plug-in means adapting the plug-in's file format so that the plug-in works in SONAR.

To add folders, remove folders, or set defaults for the listed folders, use the following buttons:

- **Add.** This button opens the **Browse for Folder** dialog, which allows you to select a new folder to be scanned.
- **Remove.** To remove a folder from the to-be-scanned list, first select the folder, and then click the **Remove** button.
- **Folder defaults.** Click this button to open a dialog of folder options. These settings will set options for all the VST plug-ins in all the folders listed in the **VST Scan Folders** list. For more information, see To Set Options for All Plug-ins in a Folder.

VST Scan Options

This group of commands controls the following options:

- **Scan for VST Plug-ins On Startup.** If this option is checked, the folders listed in the VST Scan Folders window are searched for new plug-ins whenever you start SONAR. Any previously unscanned plug-ins are then scanned.
- **Re-scan Failed Plug-ins.** Checking this option causes any plug-in(s) that didn't scan correctly to be rescanned during the next scan.
- **Re-scan existing plug-ins.** Checking this option causes plug-in(s) that did scan correctly to be rescanned during the next scan. This is a way to implement any changes you've made to the Folder defaults settings.

VST Scan

The commands in this section control the following options:

- **Scan VST Folders.** Click this button to immediately scan the folders listed in the **VST Scan Folder(s)** list.
- **Reset All VST Plug-ins.** Click this button to remove all scanning records and settings from all your VST plug-ins. Use this button if you want to completely start over.

BitBridge Server Configuration

Note: *BitBridge server configuration is only available in SONAR Producer.*

Cakewalk's BitBridge technology allows you to use 32-bit VST effects and instruments when using the x64 version of SONAR.

32-bit VST effects and instruments are loaded into "servers", and each server can address up to 4GB of RAM. BitBridge supports up to 32 independent plug-in servers, and each server can address up to 4GB of RAM, allowing access to a massive 128GB of RAM (the max supported by Vista Ultimate X64). This allows SONAR x64 to address all available RAM in your computer.

By default, SONAR manages memory automatically, and will allocate and allow access to all available RAM dynamically as plug-in's are used. This is done by dynamically creating new BitBridge servers only when necessary, up to a maximum of the available RAM.

Server loading is either automatic or customizable, giving you full control over which server to load plug-ins into. To enable automatic server loading, select **Automatic (Based on available RAM)**. To manually manage BitBridge servers, select the server that you want plug-ins to be loaded into.

After a specific server is selected, all plug-ins subsequently loaded will be loaded into that specific server, bypassing SONAR's automatic memory management. This also applies when you load a project that contains VST plug-ins.

Tip: *To more optimally use your available memory, assign memory hungry VST's to their own private BitBridge server. The actual memory consumed by a server instance is shown in the server list, allowing you choose which server you may want to load into.*

Custom server assignments are saved with the project file.

Note: *Server management is common for all loaded projects. If you have multiple projects open simultaneously, you can potentially overflow the 4GB capacity of a server if the projects reference the same server. Under this condition, a plug-in may fail to load. If this occurs, close the current project before opening another project.*

Go dialog

The **Go > Time** command opens the **Go** dialog box, which allows you to jump to a new Now Time. Additionally, the **Go** dialog opens when you right-click a transient marker on a track with AudioSnap enabled and choose **Move to** or **Stretch to**.

The **Go** dialog box has only the following field:

To Time

In this field, fill in the time you want to move to according to the table below. You can click the spin controls (**Plus**-**Minus** buttons) to move forward or backward one tick at a time. When you click **OK**, the Now time becomes the time in the **To Time** field.

When you enter a time in MBT format, the beat and tick value are optional. You can use a colon, period, space, or vertical bar to separate the parts of the Now time:

You enter	The Now time is set to
2	2:00:000
2 1	2:01:000
4 2 0	4:02:000
9:1	9:01:000
5.1.30	5:01:030

Table 230.

If you click in the time ruler while the snap grid is enabled, the Now time snaps to the nearest point in the grid. By setting the grid size to a whole note or quarter note you can easily set the Now time to a measure or beat boundary.

You can also use the buttons and the scroll bar in the **Transport** toolbar to adjust the time.

See also:

The Now time and how to use it

Groove Quantize dialog

The **Process > Groove Quantize** command opens the **Groove Quantize** dialog box. Groove Quantizing is a way to edit a track so that its rhythmic feeling and, optionally, controller data are similar to some other piece of music. The other piece of music forms a groove pattern that you store in a groove file, which has an extension of .GRV.

The **Groove Quantize** dialog box has the following fields:

Presets

Use this field to save or apply a group of settings, which include all the fields in the **Groove Quantize** dialog box except **Groove File** and **Groove Pattern**. Clicking the disk icon saves the current group of settings under the name you type into the presets window. Choosing a setting from the window's drop-down list applies it to the dialog box. Clicking the **X** icon deletes the current preset from the list.

Groove File

Use this field to choose what groove file you want to choose a groove pattern from. Groove files have the extension .GRV.

Groove Pattern

Use this field to choose the pattern you want to apply to the selected data.

Resolution

Set the note resolution. The smaller the note value, the more precise the quantization. See Resolution.

Window

This field determines what SONAR does to notes that are far from the quantization points. See Window. The **Window** fields include the following:

- **Sensitivity.** This value determines how far from the quantization grid SONAR looks to find notes to quantize. A value of 100 percent quantizes every note. See Window.
- **If Outside Window.** This field offers the following choices:
  - **Do not change.** Choosing this option means that SONAR leaves notes alone that lie outside

the window.

- **Quantize to Resolution.** Choosing this option means that SONAR quantizes out-of-window notes according to the resolution value instead of the groove pattern.
- **Move to Nearest.** Choosing this option means that SONAR moves out-of-window notes to the nearest groove event.
- **Scale Time.** Choosing this option means that SONAR moves out-of-window notes so that they are equally spaced.

AudioSnap Beats

Check this box if you want AudioSnap transients to be quantized.

Only Notes, Lyrics and Audio

Check this box to prevent MIDI controller, aftertouch, and xRPN data from changing.

Strength

The values in the Strength section determine how closely SONAR changes the selected notes to match the groove's values.

The Strength section has these fields:

- **Time.** Drag the slider in this field to set how closely SONAR moves the start time of the selected notes to the groove's start times.
- **Duration.** Drag the slider in this field to set how closely SONAR moves the durations of the selected notes to the groove's durations.
- **Velocity.** Drag the slider in this field to set how closely SONAR moves the velocities of the selected notes to the groove's velocities.

Define button

Click this button to define a new groove pattern. See Defining a Groove.

Auto XFade Audio Clips (DD10; new S8.5)

When quantizing audio, empty space can occur between clips. Select the **Auto XFade Audio Clips** check box if you want to automatically fill in the gaps and create an automatic crossfade between selected audio clips. Filling the gaps is accomplished automatically by "rolling out" the first clip's right edge and the second clip's left edge to create a crossfade.

The following options can be specified:

- **XFade.** This value determines the duration of the crossfade.
- **Max Gap.** This value specifies the widest gap that will be filled with an automatic crossfade.

See also:

To Use the Groove Quantize Command

Groove Quantize Tips

Group Attributes dialog

When you right-click a control in the Track view or the Console view that belongs to a Quick Group, and choose **Save** from the pop-up menu, the **Group Attributes** dialog appears. The **Group Attributes** dialog has the following fields:

Group Name

You can enter a name for the group in this field.

Choose Color button

Clicking this button opens the **Color** dialog, which allows you to choose or customize the group color.

Group Manager dialog

When you right-click a control in the Track view or the Console view and choose **Group Manager** from the pop-up menu, the **Group Manager** dialog appears. The name of the group that the control you right-clicked belongs to appears in the **Group** field.

This dialog lets you specify the relations of controls in a group, and edit the name and color of the group that is listed in the **Group** field.

The dialog has the following fields:

Group

The name of the group that the control you right-clicked belongs to appears in the **Group** field, but you can choose another group from the drop-down menu, and edit its properties in the other fields.

Create New Group button

This button is just to the right of the **Group** field, and opens the **Group Attributes** dialog. You can enter the name of the new group you want to create, and edit its properties in the rest of the **Group Manager** dialog.

Delete Group button

Just to the right of the **Create New Group** button is the **Delete Group** button . Clicking this button deletes the group that appears in the **Group** field.

Name column

This column is not active unless the group is a custom group. The **Name** column lists all the controls in the group of the control you right-clicked.

Start Value column

This column is not active unless the group is a custom group. The Start Value column lists the beginning values of all the controls in the selected group.

End Value column

This column is not active unless the group is a custom group. The End Value column lists the ending values of all the controls in the selected group.

Preserve Mix Between Gain Members

When this check box is enabled, any gain controls that are grouped will maintain the dB differential between them when they are moved. Otherwise, only the visual differential between them is maintained.

Start Value number field

This field is not active unless the group is a custom group. Edit the **Start Value** of the control that is highlighted in the **Name** column by typing a new number into the **Start Value** number field.

End Value number field

This field is not active unless the group is a custom group. Edit the **End Value** of the control that is highlighted in the Name column by typing a new number into the **End Value** number field.

Swap button

Click the **Swap** button to exchange the **Start Value** with the **End Value** for the control that is highlighted in the **Name** column.

Absolute button

Click this radio button to cause the grouped controls to move in the same direction at the same speed. See Absolute.

Relative button

Click this radio button to cause the grouped controls to move in the same direction but not at the same speed. See Relative.

Custom button

Click this radio button to custom-design the way the grouped controls move. See Custom.

Group Color

This field displays the color of the group that's displayed in the **Group** field.

Attributes button

This button allows you to edit the name and color of any permanent group that's displayed in the **Group** field.

See also:

Using Control Groups

Hairpin Properties dialog

In the Staff view, right-click on a hairpin (crescendo or decrescendo) to open the **Hairpin Properties** dialog box.

Use these fields to edit the hairpin that you right-clicked:

- **Time.** Type the location you want the hairpin to move to.
- **< Crescendo.** Click this option to change the hairpin to a crescendo.
- **> Diminuendo.** Click this option to change the hairpin to a decrescendo.
- **Duration.** Type the length you want the hairpin to last.

See also:

Adding Hairpin Symbols

Import Audio dialog

The **File > Import Audio** command opens the **Import Audio** dialog. Use this command to import any of the following kinds of audio into your project:

- Wave (extension .wav)
- Sony Wave64 (extension .w64)
- Apple AIFF (extensions .aif and .aiff)
- Apple Core Audio File (extension .caf)
- MPEG (extensions .mpeg, .mpg, .mp2, and .mp3)
- Windows Media (extensions .asf, .wm, .wma, .wmv)
- Next/Sun (extensions .au, .snd)
- FLAC (extension .flac)
- Sound Designer II (extension .sd2)
- ReCycle ((extensions .rcy, .rex, .rx2)
- All Files

The sampling rate for a project is set based on your default sampling rate. If the sampling rate from the wave file does not match the sampling rate in your project, then it will be converted to the current project's sampling rate.

The **Import Audio** dialog has the following controls:

- **Look In field.** Use this field to navigate to the folder that contains the audio file you want to import.
- **File name window.** Just below the **Look In** field, this window displays the contents of the folder that's listed in the **Look In** field. In this window, you can click the name of the file you want to import to select it. You can select more than one file by holding down the CTRL key while you click.
- **File Name field.** This field displays the name of the audio file that you have selected to import.
- **Files of Type field.** Use this field to choose what kind of file you want to display in the **File name** window.
- **Bit Depth.** This field lets you choose what bit depth you want the imported audio to be converted to. If you don't want any conversion, choose the **Original** option, which is the default. This option imports audio at whatever bit depth the imported audio is currently using.
- **Copy Audio to Project Folder check box.** If you check this option, SONAR makes a new copy of the imported audio file in the project's folder.
- **Import as Mono Tracks check box.** If you check this option, SONAR imports stereo audio files to two separate tracks, instead of one stereo track.
- **Preview Bus.** This list lets you specify the desired output bus when previewing a file with the **Play** button.
- **Play button.** Click this button to play audio files that are selected.
- **Format tag, Attributes, File Length.** When you select a file to import in the **Import Audio** dialog, these fields display the kind of audio file you have selected, the sample rate, bit depth, mono/stereo status, number of samples, and length in seconds of the selected file. If you select multiple files, the displayed data describes the last file that you select.

For more information, see:

To Import an Audio File

Import Audio CD Tracks dialog

The **File > Import > Audio CD** command opens the **Import Audio CD Tracks** dialog. Use this command to import an audio CD track (extension .cda) into your project.

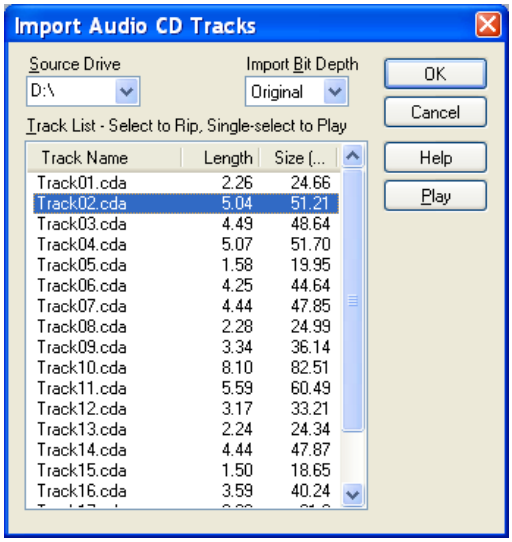
The **Import Audio CD Tracks** dialog has the following controls:

- **Track List.** The main area of the window is the track list. Each track represents an audio track located on the CD. The tracks are automatically named and numbered in order. Any number of CD Tracks can be selected for importing.
- **Source Drive.** The **Source Drive** specifies the CD device containing the tracks to import. The program attempts to locate all CD devices available. Click the arrow next to the drive letter to refresh the **Source Drive**. This process will verify if an Audio CD has been inserted into the drive. Once the Audio CD has been verified, the available track list will appear in the window after a few

moments.

- **Import Bit Depth.** Audio Tracks on a CD always have a bit depth of 16, but you can choose to import the tracks at a higher bit depth if desired.
- **Play.** When a single track is selected, it can be auditioned by pressing the **Play** button. Once playback begins the button is renamed to **Stop**, so that the audition can be manually terminated.
- **OK.** Imports the selected tracks. For each track selected, an Audio track is created in the project.
- **Cancel.** Closes the dialog without performing any action.

Figure 264. *The **Import Audio CD Tracks** dialog*



For more information, see:

To Import a Track from an Audio CD

Import Color Set dialog

The **Import Color Set** dialog appears when you click the **Import** button in the **Configure Colors** dialog.

This dialog has the following fields:

Look in

Select the directory in which SONAR stores the file that you want to open.

file and folder window

This large window under the **Look in** field lists the files and folders that are inside the current folder.

File name

Type or select the filename you want to open.

Files of type

Select the type of file you want to open.

Import Instrument Definitions dialog

When you use the **Options > Instruments** command, the **Assign Instruments** dialog box appears, which contains the **Define** button. Clicking this button opens the **Define Instruments and Names** dialog box, which contains the **Import** button. Clicking the **Import** button opens the **Import Instruments Definitions** dialog box, which lets you choose instrument definitions from the manufacturer of your instrument, and which has the following fields.:

Look in

Use this field to navigate to the folder that contains the instrument definitions you want to import,

File name

You can type the name of the file that you want to import, or click the file name in the window that's just above the **File name** field. Instrument Definition files have the extension .ins.

Files of type

The only choice in this field is Instrument Files (*. ins).

See also:

Importing Instrument Definitions

Assigning Instruments

Creating Instrument Definitions

Import MIDI dialog

The **File > Import > MIDI** command opens the **Import MIDI** dialog. Use this dialog to import MIDI files or Project5 patterns.

The **Import MIDI** dialog has the following fields:

Look In

Use this field to navigate to the folder that contains the MIDI file or Project5 pattern that you want to import.

File Name

This field lists the name of the file you've selected to import.

Files of Type

Use this field to choose whether you want to display MIDI files or Project5 patterns.

File Info

For a selected MIDI file, this field lists the type of MIDI file, the number of tracks, and any MIDI Groove clip characteristics that the file contains, such as **Follow Project Pitch**, **Number of Beats**, etc. For Project5 patterns, this field does not display information.

Play

The **Play** button allows you to audition the selected MIDI file.

Import Video File dialog

SONAR's **Import Video File** dialog lets you include an AVI, MPEG, or QuickTime video in your project. This video is shown in real time as your project plays.

The Video view displays the current time (as in the Big Time view) and the video itself. The display in the Video view is synchronized with the Now time, giving you convenient random access to the video stream. This makes it easy to align music and digitized sound to the video.

If the Video view is the active window, you can now use keyboard shortcuts to advance by a frame or a frame increment. The +/-, and left/right arrow keys move forward/backwards by a single frame. If the control key is pressed, then the frame increment value is used (the default is 5 frames) Alternatively you can use the [and] keys to seek by the frame increment. See Changing the Frame Increment.

Commands in the Video view's pop-up menu let you set the time display format, the size and stretch options for the video display, the video start and trim times, and other options. Your project's video and digital audio data can be saved together in a new AVI file with **File > Export Video** command. For more information, see Preparing Audio for Distribution.

Note: *The project's video file is saved in the project by reference only; the actual video data remains in the original file.*

Use these options in the **Video File** dialog box:

Option	What it means
Look in	Use this field to find the folder that contains the video file you want to insert.
File name	Use this field to find the video file you want to insert. Clicking the name of the file in the window above this field causes it to appear in the **File name** field.
Files of Type	Use this field to select what type of video files to display. **Note:** If your system has a basic Windows installation with DirectShow installed, you may not be able to insert QuickTime video files. You may need to install the latest video Codecs from Microsoft's web site in order to import different video formats. The problem can be solved by going to Microsoft's web site (www.microsoft.com) and downloading and installing the latest version of Media Player.
Show File Info	If you check this option, SONAR displays the video file's format tag, audio sample rate, and length in both audio samples and time.
Import Audio Stream	If you check this option, SONAR imports the video file's audio file along with the video. Select a blank track before you do this.
Import Mono Tracks	If you check this option, SONAR imports the video file's audio file into two separate tracks, instead of one stereo track.
Open	After you decide what options you want, clicking the **Open** button imports the video and, optionally, the accompanying audio into your project.

Table 231.

For more information, see:

Video playback, import, and export

To load a video file into a project

To delete the video from the project

To enable or disable video playback

To set the Time display format

Initialization File Settings dialog

The **Options > Initialization File** command opens the **Initialization File Settings** dialog box, which allows you to store information about your preferences and configuration. You can edit these three initialization files, which are stored in the SONAR program folder:

- `Cakewalk.ini`
- `TTSseq.ini`

- `Aud.ini`

To view and edit the `Cakewalk.ini` file, choose **Options > Initialization File**.

To edit the other two files, or the `Cakewalk.ini` file, use the Windows Notepad.

There are several other .ini files in the SONAR folder, but you should not attempt to edit or modify these files in any way. Changes to these other files could cause SONAR to stop operating properly.

Before making any changes to any of the .ini files, you should make a backup copy in case you make a mistake. After you have made your changes, save the file and close Notepad. SONAR reads the settings in these files only when it first starts up. Therefore, if you change any settings while SONAR is running, you should exit and restart SONAR in order for the changes to take effect.

The **Initialization File Settings** dialog box has the following fields:

Variable list

The large window in the **Initialization File Settings** dialog box lists variables that are already assigned to values. Next to the variables, after the equal sign, are the values that each variable is currently assigned to.

Option

Type the variable into this field that you want to set a value for, for example, `DrawPlayingAudio`. Spelling is critical, but case doesn't matter.

Value

Type the number or value that you want to assign to the variable that is in the **Option** field.

Set button

Click this button to finish assigning the number in the **Value** field to the variable in the **Option** field.

Delete button

Click this button to delete the variable assignment that's highlighted in the Variable list.

See also:

Initialization Files

Initialization File Format

Variables in the [MIDI Input Devices] Section

Variables in the [MIDI Output Devices] Section

Variables in AUD.ini

Cakewalk.ini

TTSSEQ.INI

AUD.INI

Input Quantize dialog

Using the **Tracks > Input Quantize > Quantize Settings** command opens the **Input Quantize** dialog.

This command quantizes recorded input automatically during MIDI recording.

This dialog has the following fields:

Preset menu

Save or select settings that you use often in the drop-down menu. To save a new group of settings, type a name into the menu, and click the **Save** button. To delete a group, select it and click the **Delete** button.

Resolution

Set the note resolution in either standard note duration or tick value. The resolution determines the size note or time value that you want your MIDI data to conform to.

Change

- **MIDI Event Start Times.** Select this option if you want the start times of the MIDI events in the selected data to be quantized.
- **Note Durations.** Select this option if you want the length of notes to be edited to fit into the size you chose in the **Resolution** field.
- **Only Quantize Notes.** If you select this option, SONAR will not modify other events, such as controllers.

Options:

- **Strength.** This value determines how closely SONAR moves the selected notes to the resolution value, or “grid.” See Strength.
- **Swing.** Use this value to make groups of even eighth notes (or whatever note you want to enter in the **Resolution** field) “swing,” instead of playing with exact eighth note rhythm. A value of **50** percent, or “50-50,” produces equal durations for both notes—no swing. A larger value makes the first note longer, and vice versa. See Swing.
- **Window.** This value determines whether SONAR quantizes notes that are far from the quantization points, or leaves them alone. A value of 100 percent quantizes every note. See Window.
- **Randomize.** This value randomizes the three previous fields to introduce a more human feel to the rhythm. The value you enter is the maximum amount of difference from the entered values that the randomize feature can add.

For more information, see:

Input quantizing

Insert Pitch Change dialog

Right-clicking in the time ruler and choosing **Insert Pitch Change** from the pop-up menu opens the **Insert Pitch Change** dialog box.

This command changes the pitch of a Groove clip at the Now time at which you insert the command.

For more information, see:

Creating and Editing Groove Clips

Using Pitch Markers in the Track View

Insert Series of Controllers dialog

Select **Insert > Controllers** from the menu to open the **Insert Series of Controllers** dialog box.

This command lets you change controller event values smoothly over a specified time range.

Choose from the following options:

Insert

this field let you choose what kind of data to insert:

- **Pitch Wheel**
- **Controller**
- **RPN**
- **NRPN**
- **Number.** This field is not available if you click the **Pitch Wheel** check box above. If you clicked the **Controller** check box, choose a value from the drop-down list. If you checked **RPN** or **NRPN**, consult the manual of your sound module to see what values it will accept.

Value Range

Enter a **Begin** value and an **End** value for your controller data.

Time Range

Enter **From** and **Thru** values to create a time boundary for your new controller data.

See Also:

Adding and Editing Controllers in the Piano Roll

Insert Series of Tempos dialog

This command lets you change tempo smoothly over a specified time range by inserting a series of tempo changes.

Tempo Range

- Begin–enter the tempo you want to start the tempo range at.
- End– enter the tempo you want to end the tempo range at.
- Step–enter a value in beats and clock ticks for how often you want SONAR to insert a tempo change into your tempo range.

Time Range

- From–enter the time location in your project where you want the tempo range to start.
- Thru– enter the time location in your project where you want the tempo range to end.

See Also:

To Insert a Series of Controllers

Using the Tempo Commands

Controllers, RPNs, NRPNs, and Automation Data

Insert Soft Synth Options dialog

This dialog appears when you use the **Insert > Soft Synths > (name of the synth you want to insert)** command, the **Insert > ReWire Device > (name of the ReWire device you want to insert)** command, or click the **Insert** button in the Synth Rack view and choose a synth from the pop-up menu.

This dialog inserts the soft synth whose name you clicked into your project. Inserting it means that the synth's name is added to the synth and audio tracks' **Input** menus and the MIDI tracks' **Output** and **Channel** menus. Besides inserting the synth, the dialog has some options:

Create These Tracks:

- **Instrument Track.** If you select this option, the synth's MIDI input and main audio output appear in a single track strip.
- **MIDI Source.** If you select this option, a new MIDI track appears that lists the particular soft synth you chose in the MIDI track's **Output** field. You still need to choose values in the MIDI track's **Patch** and possibly **Channel** menus.
- **Synth Track Folder.** If you select this option, all the synth ouput tracks and the MIDI Source track appear inside a new track folder.
- **First Synth Audio Output.** If you select this option, a new synth track appears that uses the synth's first audio output as an audio input.

- **All Synth Audio Outputs: Stereo.** If you select this option, one new stereo synth track appears for each stereo audio output that the synth you chose has. Each of the new tracks uses a different one of the synth's outputs as an audio input.
- **All Synth Audio Outputs: Mono.** If you select this option, two new mono synth tracks (one Left and one Right) appear for each stereo audio output that the synth you chose has. Each pair of new synth tracks uses a different one of the synth's outputs as an audio input.
- **Synth Track Folder.** If you select this option, new synth tracks and associated MIDI tracks appear in a track folder. Each new instance of a synth gets its own folder.

Open These Windows:

- **Synth Property Page.** If you choose this option, the interface (property page) of the synth you're inserting appears when you insert it.
- **Synth Rack view.** If you choose this option, the Synth Rack view appears each time you insert another synth (or another instance of a synth you've already inserted).

Enable MIDI Output

Some synths can create MIDI data from built-in arpeggiators or other components. If you want to record or redirect this new MIDI data, enable this check box.

Display Automation On:

- **{Automation track drop-down menu}.** By default, the automation data for a synth appears on the synth track associated with that synth. Use this menu to choose any other track to display the data on, including tracks that are already displaying other synth's automation data.
- **Recall Assignable Controls.** If you create some knobs in the Synth Rack to control certain parameters on a particular synth, you can display the same knobs every time you insert an instance of that synth by enabling this check box.

Ask This Every Time

If you check this option, this dialog appears every time you use the **Insert > Soft Synths > (name of the synth you want to insert)** command, the **Insert > ReWire Device > (name of the synth you want to insert)** command, or click the **Insert** button in the Synth Rack view and choose a synth from the pop-up menu. If you always insert soft synths in the same way, you can uncheck this option so you don't have to deal with the dialog box each time. To open the dialog when the option is unchecked, click the **Insert Soft Synth Options** button in the **Synth Rack view** toolbar.

For step-by-step instructions, see:

Inserting Soft Synths

Software Instruments

ReWire Instruments

Insert Time/Measures dialog

Select **Insert > Time/Measures** to open the **Insert Time Measures** dialog box.

This dialog lets you insert the amount of time you specify at the point you indicate in the music. You can specify what events to slide over to make room for the new amount of time.

At Time:

The time at which you want to insert time, seconds, ticks or frames.

Insert:

Set the number of one of the following to insert at the At Time:

- Measures
- Seconds
- Ticks
- Frames

Slide:

Select whether you want to slide (move down the track by exactly the amount of time you are adding) any of the following:

- Events in Tracks
- Markers
- Meter/Key Changes
- Tempo Changes

See also:

Inserting Time or Measures into a Project

Insert Tracks dialog

Using the **Insert > Multiple Tracks** command opens the **Insert Tracks** dialog, which allows you to insert multiple audio and/or MIDI tracks, and set some track properties.

This dialog has the following fields:

Audio

- **Track Count.** Set the number of audio tracks you want to insert.
- **Main Destination.** Set the main output that you want the new audio tracks to use.
- **Set as Default Bus.** If you check this box, all new audio tracks that you insert will use the main

output that is listed in the **Main Destination** field.

- **Send.** If you choose an option besides **None** in this field, each new audio track that you insert will contain a Send module whose output is the bus that you choose in this field.

MIDI

- **Track Count.** Set the number of MIDI tracks you want to insert.
- **Port.** Set the output port that you want the new MIDI tracks to use.
- **Channel.** Set the output channel that you want the new MIDI tracks to use.

Interpolate and Event Filter dialog

The **Process > Interpolate** command is a search-and-replace command that uses **two dialog boxes**. The command itself opens the **Event Filter-Search dialog box**. In this dialog box, you fill in the kinds of events you want SONAR to find and select. When you **click OK**, the **Event Filter-Replace dialog box** appears. In this dialog box, you fill in the kind of events you want to replace the selected events with.

To see some examples of how to fill in the dialog boxes, see Process > Interpolate.

For an explanation of all the fields in the **Event Filter** dialog box, see Event Filter Select Some/Search/Replace dialog.

Key Bindings dialog

Key bindings let you associate SONAR commands with keys on your MIDI or computer keyboard. This makes it easy for you to access specific features more quickly and efficiently.

The **Options > Key Bindings** command opens the **Key Bindings** dialog box, which lets you specify which keys and key combinations to use for specific SONAR commands.

The **Key Bindings** dialog box has the following fields:

Type of Keys

Use these options to choose what kind of keys will trigger selected SONAR commands:

- **Computer.** Links computer keyboard commands to specific SONAR commands.
- **MIDI.** Links MIDI keyboard commands to specific SONAR commands. The **Enabled** check box must be checked for MIDI keys to function.

MIDI 'Shift' Options

You can designate a MIDI Key or Controller (usually a pedal) to act as a key binding shift key. That way you can require that the key binding shift key be depressed before any command is triggered, so you only lose one note or pedal from its regular function.

Use these options to choose what acts as the key binding shift key:

- **Key.** Clicking this option makes a key on your MIDI keyboard act as a key binding shift key. Choose which key by clicking the **+** or **-** buttons in the window that's just to the right of the **Key** button.
- **Controller.** Clicking this option makes a controller on your MIDI keyboard act as a key binding shift key. Choose which controller (usually the sustain pedal) by choosing one from the drop-down list that's just to the right of the **Controller** button.

Bindings

The **Bindings** field has three lists, a button, and a line of text in it:

- **Key.** Use this window to highlight a key that you want to bind to a command in the **Function** list. If a key or combination is already bound to a global command by default, the name of the key appears in **bold** text, and the command it is bound to appears at the bottom of the dialog under **Global Key Assignment**. Binding a key or combination to a command and clicking **OK** overwrites any default binding for that key or combination.
- **Function.** Use this window to choose a command to bind to a highlighted key in the **Key** list.
- **Bind Context.** Use this window to choose in what context you want the key binding to work.
- **Locate Key.** Clicking this button allows you to quickly scroll the **Key** list to the key or keys that you press on your computer keyboard.
- **Global Key Assignment.** When you highlight an item in the **Key** list, this text line that's below the **Key** list showss any command that the item is currently bound to.

Save Changes for Next Session

Check this check box to save any changes.

Bind button

Click this button to bind a highlighted key to a highlighted function.

Unbind

Click this button to unbind a highlighted key from a highlighted function.

Zap Window

Click this button to remove all key bindings from whatever view is currently listed in the **Bind Context** list.

Zap All

Click this button to remove all key bindings.

Import

Click this button to import a different set of key bindings that you've created or that are identical to some other sequencer application's.

Export

Click this button to export your currently-loaded set of key bindings so that you can reload them if you want.

See Also:

Key Bindings

Kind of Event dialog

In the Event List view, double-clicking the name of any event that's listed in the **Kind** column opens the **Kind of Event** dialog box.

After you double-click the name of an event, you can change that event into another kind of event by choosing the new kind of event in the **Kind of Event** dialog box.

See also:

Event List View

Length dialog

The **Process > Length** command, which opens the **Length** dialog box, can be used to stretch or shrink MIDI and/or audio clips, and/or to move their start times. **Process > Length** lets you stretch or shrink the selection by a fixed percentage and makes the adjustment by altering the individual events. A value of 200 percent, for example, stretches the selection to twice its original length, while a value of 50 percent shrinks the selection to half its original length.

This command offers the option to stretch audio clips along with the MIDI information. Sometimes you don't want to adjust the speed of your audio. Audio can be stretched or condensed up to a factor of 4 (e.g., it can be shrunk to as little as 25 percent of its original length, or expanded to as much as 400 percent of its original length).

You can also use the **Process > Length** command to alter only the start times or the durations of notes. For example, changing the durations of notes to 50 percent of their original length can create a staccato effect.

The **Length** dialog box has the following fields:

Change

Use the fields in this section to tell SONAR what to change, including:

- **Start Times.** Choose this option if you want the start times of the selected events to shift by a percentage of their distance from the beginning of the selection. For example, if a note starts on beat 3 of a selection and you enter a value of 50 percent, SONAR shifts the start of the note one

beat to the left, or half of 2 beats.

- **Durations.** Choose this option if you want the durations of the selected events to shrink by a percentage.

By “N” Percent

Fill in the percentage number that you want the selected events to change by, which can be positive or negative.

Stretch Audio

Choose this option if you want duration of any selected audio to change.

Type (disabled unless Stretch Audio is checked)

This is a SONAR Producer feature only. Choose options based on the source material: single voice or instrument versus a group of instruments (ensemble or polyphonic), and how long you want to wait for processing to finish: better quality can take a long time if you’re processing several tracks.

Formant Scaling (disabled unless Stretch Audio is checked)

This is a SONAR Producer feature only. Possible values range from -2.000 to 2.000 octaves. Formants give a voice its characteristic sound. If you find that changing the length of your audio changes the timbre too much, you can raise or lower the formant to try and maintain the characteristics of the sound.

See also:

Stretching and Shrinking Events

Load Pattern dialog

To open the **Load Pattern** dialog, do *one* of the following:

- Right-click in the **Step Sequencer** toolbar and select **Load Pattern** from the pop-up menu.
- Open the Step Sequencer and press press CTRL+ALT+L.

Use the **Load Pattern** dialog box to load an existing step sequencer pattern into a project.

Look in

Select the directory in which SONAR stores the pattern that you want to load.

File name

Type or select the filename of the pattern that you want to load.

Files of type

The **Load Pattern** dialog can only load the Step Sequencer Patterns file type, which has the extension .ssp.

Loop/Auto Shuttle dialog

The **Transport > Loop and Auto Shuttle** command opens the **Loop/Auto Shuttle** dialog box. This dialog box lets you specify start and stop times for looping and whether you want the loop to start over again.

The **Loop/Auto Shuttle** dialog box has the following fields:

Loop Start

Enter a time where you want the loop to start.

Loop End

Enter a time where you want the loop to end.

Stop at the End Time and Rewind to Start

If you check this option, whenever you stop playback or the Now Time reaches the Loop End time, SONAR rewinds immediately to start of the loop (this option is off by default).

Loop Continuously

When playback reaches the end of the loop and rewinds to the start, playback continues automatically.

See also:

Looping

Lyric Properties dialog

In the Staff view, when you right-click on a word or syllable in the lyrics, the **Lyric Properties** dialog box opens. Use this dialog box to change a syllable's timing or text.

See also:

Working with Lyrics

Map Properties dialog

The **Map Properties** dialog lets you change all the settings for an individual mapped note in your drum map.

You can edit the following settings in the **Map Properties** dialog:

Name

A descriptive, user-assigned name for the current drum sound.

In Note

The recorded pitch as it appears in the Event List view. The range is from C0 to G10 or 0 to 127. Raise or lower values one half-step at a time using the +/- keys or by an octave at a time by using the open and close bracket keys ([and]).

Out Note

The specific note to which the In Note is mapped. The range is from C0 to G10 or 0 to 127. Raise or lower values one half-step at a time using the +/- keys or by an octave at a time by using the open and close braked keys ([and]).

Vel+

Sets a velocity offset to a mapped drum note. Values range from -127 through 127. Use the +/- keys to increase or decrease the value.

Vel%

Multiplies the velocity of the note by the percentage you enter. Values range from 10 to 200.

Map Manager button

Opens the **Map Manager** dialog.

Out Port

The output port to which the Out Note is sent. You can assign a note to any port selected in the **MIDI Devices** dialog. Also, any soft synths in your project show up as an option. You can use the +/- keys to scroll up or down in the **Output Port** list.

Out Chan

Sets the channel in which the mapped drum note plays. You can choose to follow the track's channel setting or set the note to a specific channel (1 through 16).

Bank

The bank number on which the mapped note is transmitted.

Patch

Sets the Patch name that the mapped drum note is transmitted to.

Marker dialog

Use the **Insert > Marker** command to open the **Marker** dialog box.

This dialog lets you add a Marker where you specify in the music.

Name:

Enter the name you want to give the marker.

Lock to SMPTE time

Check this if you want to use SMPTE time code.

Time:

Enter the time at which you want to place the marker.

Groove Clip Pitch

If you want the marker to change the project pitch, select the pitch you want from the **Groove Clip Pitch** drop-down menu.

See also:

Creating and Using Markers

Markers dialog

This dialog box lets you choose any marker. Closing the box and the associated **Go** dialog box moves the Now time to the specified marker.

See also:

Creating and Using Markers

Measure Beat/Meter

You can insert meter changes anywhere in the timeline. The **Measure Beat/Meter** dialog box allows you to select the point on the Time Ruler where the meter change will occur. Using the spinners or manual entry, select the point at which you want to insert the meter change. Select the meter you want to change to by checking the **Insert Meter** check box, and entering the time signature you want.

See:

To sync the project tempo to freely played MIDI (DD10; new S8.5)

Menu Editor dialog

The **Options > Menu Editor** command opens the **Menu Editor** dialog box, which lets you modify the layout of the application's menus.

The **Menu Editor** dialog box has the following fields:

Menu Layout:

Select the layout you wish to load or edit from the drop-down menu. To save a layout under a new name, type the name into this field, and click the **Save** button (the floppy disc icon). To delete a previously saved layout, display the name of that layout in this menu, and click the **Delete** button .

Menu:

Select the menu you wish to edit from the drop-down menu.

Menu Items:

This field lists all the items (commands, submenus and separator bars) within the menu you selected in the **Menu** field. This is the area where you can click-drag to reorder menu items, select items to hide or show, create submenus, and insert separator bars. Right-click menu items to see options in the context menu.

Visibility section

- **Show** button. Click this button to show selected menu item(s) currently hidden from view.
- **Hide** button. Click this button to hide selected menu item(s) currently visible.

Submenu section

- **Create New** button. Click this button to create a new submenu that contains any menu items currently highlighted.
- **Remove** button. Click this button to remove a submenu.

For more information, see Customizable menus.

Meter/Key Signature dialog

Select **Insert > Meter/Key Change** to open the **Meter/Key Signature** dialog box.

This dialog box lets you set the meter and key signature of a project or any part of a project.

At Measure:

Select the measure you from where you want the changes to take effect.

Beats per Measure:

Select the number of beats per measure.

Beat Value:

Select the value of each beat (i.e. 1 = whole note, 2 = half note, etc.)

Key Signature:

Select the key signature.

For step by step instructions, see Setting the Meter and Key signatures.

Microsoft Media Format Encode Options dialog

You can create settings and a description for your Windows Media Advanced Streaming Format file in the **Microsoft Audio Encode Options** dialog box.

Note: *To create a surround encoded file you must export surround encoded buses.*

Title:

Enter the title of the file.

Author:

Enter the name of the author responsible for creating the file.

Rating:

This field only relates to exporting video, which you can't do from this dialog box.

Copyright:

Enter any copyright information for the file.

Description:

Enter a note about the file.

Codec

Select a codec from the drop-down list.

Format

Select a format from the drop-down list. A higer the kbps setting the higher the quality of the file.

For more information, see:

Routing and Mixing Digital Audio

MIDI Devices dialog

The **Options > MIDI Devices** command opens the **MIDI Devices** dialog, which lets you choose the MIDI inputs and outputs you want to use. The selection in the **Output** menu for a track determines which piece of hardware will be used to produce the sound stored in your project. The list of enabled input devices in the **MIDI Devices** dialog determines which input MIDI devices can successfully send MIDI data into your Cakewalk application.

You can make up your own friendly names for the MIDI input and output devices listed in this dialog. The friendly name for a MIDI device is the name you will see in MIDI track **Input** and **Output** menus, if you enable the **Use Friendly Names To Represent MIDI Devices** check box at the bottom of this dialog. To make up a friendly name, double-click the name of a device in the **Friendly Name** column, type a new name, and press ENTER.

The **MIDI Devices** dialog has the following fields:

Inputs

Select devices from the list (you may have only one). SONAR accepts input from these devices for recording MIDI data.

Outputs

Select devices from the list. If your computer or MIDI interface has several MIDI outputs, you choose the ones you want to use and put them in a particular order. From then on, MIDI output 1 refers to the first selected MIDI output, MIDI output 2 to the second selected MIDI output, and so on. The output number is based solely on the order in which the selected outputs appear in the **MIDI Devices** dialog. As a result, the output numbers used in SONAR may not match the output numbers that appear on your external multiport MIDI interface.

Move Checked Devices to Top button

Click this button to move a checked device farther up in the list, directly behind any other checked devices. If you want a particular device to become MIDI output 1, deselect all other devices, select the device you want to be number 1, and click the **Move Checked Devices to Top** button.

Use Friendly Names to Represent MIDI Devices

Enable this check box if you want the **Input** and **Output** menus of MIDI tracks to display the friendly name of a MIDI device, instead of its original name.

Warn About No MIDI Devices

Enable this check box if you want your Cakewalk application to warn you if no MIDI devices are enabled.

See Also:

To choose MIDI devices

Setting up output devices

MIDI Envelope dialog

When you use the **Envelopes > Create Track Envelope > MIDI** command from the Clips pane right-click menu, the **MIDI Envelope** dialog appears.

The **MIDI Envelope** dialog has the following fields:

- **Type.** Use this field to choose what kind of MIDI event you want to control with your envelope.
- **Value.** Use this field to choose the name of the controller you want to edit.
- **Channel.** Use this field to choose the MIDI channel that you want the envelope to send data on.

For more information, see:

Creating and Editing MIDI Envelopes

MIDI Event Type dialog

When you select **New Value Type** from the **Edit MIDI Event Type** menu in the Track pane or Piano Roll view, the **MIDI Event Type** dialog appears.

The **MIDI Event Type** dialog has the following fields:

- **Type.** Use this field to choose what kind of MIDI event you want to create.
- **Value.** Use this field to choose the name of the controller you want to create.
- **Channel.** Use this field to choose the MIDI channel that you want the event to send data on.

For more information, see:

Adding Controllers

MIDI Input Presets dialog

The **MIDI Input Presets** dialog appears when you use click the drop-down arrow on a track's MIDI **Input** field and select **Manage Presets** from the drop-down menu. You can also open the dialog by using the **Tracks > Property > Inputs** command, selecting a MIDI track in the **Track Inputs** dialog, and clicking the **MIDI Inputs** button at the bottom of the dialog.

Use the **MIDI Input Presets** dialog to create and edit MIDI Input Presets, which are collections of specific MIDI input channels and/or MIDI input ports that you want to assign to one or more tracks.

The **MIDI Input Presets** dialog has the following fields:

Preset Window

The first window in the dialog lists the currently selected preset for the active track. When you want to create a new preset, type a name for it in this field when you've finished choosing channels and ports, and click the **Save** button (disk icon).

Input Port

The list of available MIDI input ports is listed vertically in this field.

1-16 Check boxes

These check boxes allow you to choose what MIDI channels you want this particular track to respond to on the port listed in the **Input Port** field.

All Omni

This button turns all of the **1-16** check boxes on or off with one click.

Omni

These buttons turn the **1-16** check boxes for each of the **Input Ports** on or off with one click.

Save/Delete Buttons

The two buttons to the right of the **Preset** box are the disk icon, which saves the current settings under the name in the **Presets** box, and the **X** button, which deletes the current preset.

Migrate Cakewalk Preferences dialog

This dialog box lets you transfer a variety of configuration preferences from earlier Cakewalk installations.

The first time you run SONAR, it asks if you want it to search for an older version of Cakewalk and transfer (or "migrate") the preferences you established in that version to Cakewalk. SONAR searches all hard disks in your system for older versions, and if you have more than one older version of Cakewalk installed, SONAR presents a list of them, in the Retain Cakewalk Preferences dialog dialog box.

Missing Plug-ins dialog

This dialog appears if you open a project that references plug-ins that are not installed on your machine. **If you save the project after you have opened it with missing plug-ins, all references to missing plug-ins are lost**. To retain the missing plug-ins in your project, exit SONAR without saving, reinstall the missing plug-ins and then re-open the project.

MP3 Export Options dialog

The following is a description of the options in the **MP3 Export Options** dialog:

Bit Rate

Choose a bit rate from the drop-down list. A higher bit rate creates larger, higher quality files. The Bit Rate allows you to select the trade-off between the size and the sound quality of the compressed file. Compressing to higher bit rates will provide better sound quality, but will also create larger files.

Bit rate is specified in bits per second. As a rule of thumb, bit rates of 120,000 bits per second or higher offer near CD quality sound. Lower bit rates can be used, with a corresponding decrease in quality. If you are preparing your project for distribution on the web, lower bit rates will create smaller files, and therefore faster downloading time.

The maximum bit rate that you can select depends on the sampling rate of the project. The encoder supports bit rates up to 320000 bit per second, providing extremely high quality compression. Selection of 320000 bits per second or lower requires that your project was created using at least a 32 kHz sampling rate. If your project was created using a lower sampling rate, your selection of bit rates will also be limited.

Stereo Mode

Select one of the following from the drop-down list:

- **Joint Stereo.** In Joint Stereo mode, the encoder optimizes the stereo encoding by comparing the two stereo channels. If similar information is found in the left and right channels, the encoder uses the similar information to minimize the data it stores in the MP3 file. While this encoding technique may result in better compression, it may result in a loss of stereo quality. An additional option when using Joint Stereo compression is the selection of **Intensity Stereo**. Selection of **Intensity Stereo** instructs the encoder to further optimize the encoding by minimizing the data encoded for higher frequency sounds. This can also improve the compression of the MP3 file, however in some cases the optimization of high frequency sounds may result in a loss of sound quality.
- **Mono.** Create a Mono file
- **Stereo.** By selecting Stereo mode, the encoder will create a Stereo MP3 file from a stereo project by treating the left and right channels as completely independent signals. Unlike Joint Stereo encoding, stereo encoding will not try to take advantage of similar information in left and right channels. As a result, Stereo Mode will completely preserve stereo separation without trying to reduce the data.
- **Mid/Side Stereo.** Preserves most of the stereo effect of a file but at lower bandwidth. Not too useful at bit rates above 128 kbs.

Enable High Pass Filter/Low Pass Filter

These filters decrease your file size by eliminating frequencies that people don't usually hear anyway

Variable Bit Rate Encoding

Instead of producing a constant bit rate throughout the file, the **Variable Bit Rate** option optimizes the bit rate in different parts of the file to use a higher bit rate where it will make a difference, and a lower one where it won't. This option generally produces a better quality file than constant bit rate encoding, but doesn't produce the predictable file size you might need for downloadable files.

Quality Slider

MP3 encoding uses several techniques for analyzing sound and creating MP3 files. The slider provides the user with the ability to specify how much time the encoder should spend analyzing the file.

When the slider is positioned to the far left, the encoder will spend more time analyzing and compressing the file. This will result in the highest quality MP3 file, but it will take longest amount of time to compress it.

To reduce the time required to encode a project, you can position the slider further to the right. This will compress files quickly by reducing the time spent analyzing the project. The trade-off for compressing quickly, or optimizing for speed, is that the resulting MP3 file may have a lower sound quality.

Encode ID3 Info

Check this box to include ID3 information with your MP3 file. The following fields are where you enter ID3 information that is stored in your MP3 file and displayed in most applications that play MP3 files.

- **Track.** The track number.
- **Title.** The Song title.
- **Artist.** The performer.
- **Album.** The album or collection of songs that the song comes from.
- **Year.** The year the song was made.
- **Genre.** Select from a list of genres.
- **Comment.** Track notes.

New Global Layout dialog

The **Views > Layouts** command opens the **Window Layouts** dialog box, which contains the **Add** button. Clicking the **Add** button opens the **New Global Layout** dialog box, which allows you to name and save the current layout.

See also:

Layouts

New Project File dialog

Open the **New Project File** dialog by selecting **File > New** from the menu.

In the **New Project File** dialog you choose the name of your project, where the project's data is stored and which template you want to use to create the file.

Name

Enter a file name for your project. This option is only available if you have **Per-Project Audio Data** option selected in the **Global Option** dialog.

Location

Select a folder in which your project file is saved. This option is only available if you have **Per-Project Audio Data** option selected in the **Global Option** dialog.

Audio Path

Select a folder in which your project's audio data is stored. This option is only available if you have **Per-Project Audio Data** option selected in the **Global Option** dialog.

Template

Select the template you want to use for your new project. Select a template from the list and click **OK** to create a new project.

See also:

Templates

No MIDI Inputs—SONAR dialog

The **No MIDI Inputs - SONAR** dialog box appears the first time you run SONAR, or when **Options > MIDI Devices MIDI Devices** dialog box has nothing selected on the Inputs side, or when another program is using your system's MIDI outputs. This dialog box lets you choose, or decide not to choose, an input.

For more information, see To choose MIDI devices

No MIDI Outputs—SONAR dialog

The **No MIDI Outputs - SONAR** dialog box appears the first time you run SONAR, or when **Options-MIDI Devices MIDI Devices** dialog box has nothing selected on the Outputs side, or when

another program is using your system's MIDI outputs. This dialog box lets you choose, or decide not to choose, an output.

For more information, see To choose MIDI devices

Normalize dialog

The **Normalize** dialog appears when you use the **Process > Audio > Normalize** command. This dialog has the following controls:

- **Presets window.** Use this window and the **Save** and **Delete** buttons that are next to it to save and manage any normalization presets that you decide to keep.
- **Normalize Level slider.** Drag this slider up or down to control the volume of a selection so that the highest sample level reaches the level of the slider.
- **Percentage field.** This field is linked to the **Normalize Level** slider. This field displays the percentage of possible normalization, from 0 to 100%.
- **dB field.** Like the **Percentage** field, this field is linked to the **Normalize Level** slider. Typing values into this field moves the slider, just as moving the slider changes the values in this field. The dB values range from -INF (silent) to 0 dB (loudest level).

Note: *When you normalize stereo data, normalization is computed on the loudest sample value found in either channel and the same gain is applied to both.*

Note Names dialog dialog

The **Note Names** dialog box appears when you right-click the piano keyboard that's located on the left side of the Piano Roll view. This dialog box lets you specify whether to use the settings assigned in the **Assign Instruments** dialog box or different settings you specify, or drum mode.

Clicking the **Configure** button opens the **Assign Instruments** dialog box.

See also:

Assigning Instruments

Assigning Note Names

Note Properties dialog

In the Staff view or Piano Roll view, when you right-click on a note, the **Note Properties** dialog box appears.

This dialog box lets you edit the note's time, pitch, velocity, and other MIDI properties.

See also:

Selecting Notes

Online Registration dialog

The **Online Registration** dialog appears when you start SONAR. You have three options in this dialog:

- **Register Now.** This option opens your default Internet browser on Cakewalk's registration page.
- **Please Remind Me Later.** This options closes the dialog. The dialog appears again, periodically, to prompt you to register.
- **Don't Ask Me Again.** This option closes the dialog permanently.

Open dialog

The **File > Open** command opens the **Open** dialog box. Use the **Open** dialog box to open an existing project.

Look in

Select the directory in which SONAR stores the file that you want to open.

File name

Type or select the filename you want to open.

Files of type

Select the type of file you want to open.

Go to Folder

Go to one of the predefined SONAR folders. See Global Options dialog—Folders.

See also:

File type

Open Groove File dialog

The **Open Groove File** dialog box appears when you click the **Open** button that's at the right end of the **Groove File** field in the **Groove Quantize** dialog box.

The **Open Groove File** dialog has the following fields:

- **Look In.** This field lists the name of the folder whose contents are displayed in the window below it. Use this field to navigate to a folder that contains the groove file you need.
- **File Name.** This field lists the name of the currently selected file from the folder that's listed in the **Look In** field.
- **Groove File Directory.** The **Set Default** button allows you to choose a default directory for storing groove files. The **Go To Default** button closes the **Open Groove File** dialog box—when you reopen it, it opens to the default directory.

See also:

To Use the Groove Quantize Command

Groove Quantize Tips

Changing the Timing of a Recording

Paste dialog

The **Edit > Paste** command opens the **Paste** dialog box, which lets you put the contents of the clipboard into any appropriate place in your project. To put data on the clipboard, see Cut dialog, Copy dialog.

The **Paste** dialog box has the following fields:

Starting at Time

Fill in the Now time where you want the beginning of the pasted data to go.

Destination

Select either a track or bus where you want the selection pasted.

Repetitions

Fill in how many copies of the pasted data you want to paste into the track end to end.

Starting at Track

Fill in the number of the track where you want SONAR to begin pasting the data.

Paste to One Track

This option is greyed out unless you copy data from more than one track at a time. Checking this check box causes SONAR to paste multiple tracks' data into a single track.

Linked Repetitions

Checking the **Link Repetitions** check box causes all the new clips to be linked clips with the clip you copied.

Link to Original Clip(s)

Checking the Link to Original Clip(s) check box creates a linked clip.

Advanced button

Clicking this button expands the **Paste** dialog box to include the following fields:

Align to Measures

This option is greyed out unless you choose at least two repetitions in the **Repetitions** field. Choosing this option tells SONAR to slide the old data up to the next measure line, regardless of whether the new data fills the space up to the next measure.

Filling in the **Interval** value field with a certain number of measures causes SONAR to paste each repetition of the new data at the interval in this field. Usually, you choose an interval at least as long as the object you copied.

What to do with existing material

The fields in this section deal with the situation that occurs when you try to paste some data to a place in a track that already has some data.

- **Blend Old and New.** Choosing this option tells SONAR to mix the new data with the old, with the following options:
- **Replace Old with New.** Choosing this option tells SONAR to delete the old data.
- **Slide Over Old to Make Room.** Choosing this option tells SONAR to slide the old data either forward or backward in the track to make room for the new data, with the following option:

What to Paste

The fields in this section tell SONAR what elements of the copied data to paste into the track, including:

- **Events/Clips.** Check this option if you want SONAR to paste MIDI events or audio data from the copied data, with these two options:
  - **Paste as New Clips.** Check this option if you want the new data to become separate, discrete. clips.
  - **Paste into Existing Clips.** Check this option if you want to include the new data inside any clips that already exist in the area you want to paste into.
- **Clip Automation.** If you have clip envelopes in the selection you are pasting, you can check this option to paste it to its new location.

- **Track/Bus Automation.** If you have track or bus envelopes in the selection you are pasting, you can check this option to paste it to its new location.
- **Tempo Changes.** If you check this check box, SONAR pastes all tempo changes from the copied data.
- **Meter/Key Changes.** If you check this check box, SONAR pastes all meter and key changes from the copied data.
- **Markers.** If you check this check box, SONAR pastes all markers from the copied data.

See also:

Moving and Copying Clips

Importing Material from Another SONAR Project

Importing MIDI Files

Patch Browser dialog

Right-clicking a MIDI track and choosing **Track Properties** from the pop-up menu opens the **Track Properties** dialog box. Inside the **Track Properties** dialog box is the **Patch Browser** button, which opens the **Patch Browser** dialog box. The **Patch Browser** button is also available from the **Insert > Bank/Patch Change** dialog box.

The **Patch Browser** dialog box has the following fields:

Show Patches Containing the Text

Use this field to search for patches by filling in pieces of the patch name. You can select previous search patterns from the drop-down list. Pressing the DELETE key redisplays the whole list, but doesn't actually delete the search text.

Name column

This column lists all the patch names of all the Instruments you have assigned to MIDI outputs. Clicking the heading of the **Name** column sorts the list in alphabetical order.

Bank column

This column lists the bank of the patch that's next to it in the Name column.

Patch column

This column lists the patch number of each patch in the Name column. **Sorting the lists**—You can sort your patch names by **name**, **bank**, or **patch number** simply by clicking the appropriate column heading in the **Patch Browser** dialog box.

See Also:

To choose patches with the Patch browser

Choosing the instrument sound (bank and patch)

Pattern Velocity dialog

Clicking the **Pattern Brush** drop-down arrow and choosing **Velocity** from the drop-down menu opens the **Pattern Velocity** dialog. This dialog allows you to set the velocity for notes in the patterns you paint with the Pattern Brush. The **Pattern Velocity** dialog has only the following field:

Velocity

Fill in the velocity that you want notes in the patterns you paint with the Pattern Brush to use. Use numbers between 0 and 127.

Pedal Properties dialog

In the Staff view, when you right-click on a pedal mark, the **Pedal Properties** dialog box appears. Use these fields to edit the sustain pedal mark that you clicked:

Time

Use this field to change the location of your pedal mark.

Channel

Use this field to set the MIDI channel of your pedal mark.

Value

Enter 0 to turn off the pedal (no sustain), or 127 to turn on the pedal (sustain).

See also:

Adding Pedal Marks

Percent Done dialog

SONAR has done the indicated percent of the task you requested. Be patient.

Percussion Notation Key dialog

The **Staff View Layout** dialog box contains the **Percussion Settings** button, which opens the **Percussion Notation Key** dialog box. The **Percussion Settings** button is not available unless the track that is highlighted in the **Staff View** dialog box uses a percussion clef.

Use the following fields to configure your percussion settings:

Preset

Use the **Preset** field to apply, save, or delete a set of percussion settings.

MIDI Note

Use this field to select the MIDI pitches in your track that you want to appear as different pitches (to make the notes fit onto the staff neatly). You can set MIDI notes that would normally appear with several or lots of ledger lines to appear somewhere in the staff.

Display As

Use this field to select the notes that you want to appear on the staff when particular MIDI pitches play.

Default

This tiny window displays the *default note*—the note that all unbound MIDI notes display as.

Recommended for window

When you click a note in the **MIDI Note** field, the **Recommended for window** displays some standard display pitches for that MIDI note.

Notehead Type

When you click a note in the **MIDI Note** field, you can select a type of notehead for it, For example, cymbals usually use an X for a notehead. The **Notehead Circled** field allows you to add a circle around any MIDI note's notehead.

Articulation Symbol

This field allows you to add an articulation symbol to every instance of the selected pitch. For instance, hi-hat patterns often have a + over the closed hi-hat note and a circle over the open note.

Bind button

Click this button to connect a selected MIDI note to a selected note in the **Display As** field.

Unbind button

Click this button to disconnect a selected MIDI note from a selected note in the **Display As** field.

Default note button

Click this button to apply and save any changes you make to the default note, including display pitch, notehead type, and articulation symbol.

See also:

Setting Up a Percussion Staff or Line

Pick Track(s) dialog

Clicking the **Pick Tracks** button in the Piano Roll, Event List, Staff, or Lyrics views opens the **Pick Tracks** dialog box, which allows you to choose which tracks' data you want to display in any of the above views. **To choose tracks** to display, simply highlight the names of the ones you want to display. You can select nonadjacent track names by CTRL-clicking, and you can select adjacent track names by SHIFT-clicking or dragging.

Print dialog

The **Print** dialog specifies the parameters of your print job, including the printer destination, the number of copies and properties.

The following is a description of the **Print** dialog:

Printer

This is the active printer and printer connection. Choose the **Setup** option to change the printer and printer connection.

Print Range

Specify the pages you want to print:

All

Prints the entire document.

Pages

Prints the range of pages you specify in the From and To boxes.

Copies

Specify the number of copies you want to print for the above page range.

Collate

Prints copies in page number order, instead of separated multiple copies of each page.

Properties button

Opens a dialog box that lets you specify whatever your printer allows.

Print Preview dialog

The **Print Preview** dialog lets you see what the Staff view, Event List view, or Lyrics view will look like when printed.

Print

The **Print** button in the **Print Preview** dialog opens your system's **Print** dialog box. For more information, see Print dialog.

Configure

For the Staff view, the **Configure** button in the **Print Preview** dialog box lets you choose from a number of standard staff sizes. You can see which fits your needs best.

Next Page

The **Next Page** button displays the next page of the print preview.

Prev Page

The **Prev Page** button displays the previous page of the print preview.

Two Page/One Page

The **Two Page** button displays two pages at a time in the print preview. When you display two pages, the **One Page** button appears. The **One Page** button

Zoom In

The **Zoom In** button zooms the page display in the **Print Preview** dialog box. If two pages are displayed, zooming may reduce the preview to just one page.

Zoom Out

The **Zoom Out** button zooms out the page display in the **Print Preview** dialog box.

Close

The **Close** button closes the **Print Preview** dialog box.

Print Setup dialog

The **Print Setup** dialog specifies the parameters of your print job, including the printer destination, the number of copies and properties.

The following is a description of the Print Setup dialog:

Printer

This is the active printer and printer connection. Choose the **Setup** option to change the printer and printer connection.

Print Range

Specify the pages you want to print:

All

Prints the entire document.

Pages

Prints the range of pages you specify in the **From** and **To** boxes.

Copies

Specify the number of copies you want to print for the above page range.

Collate

Prints copies in page number order, instead of separated multiple copies of each page.

Properties button

Opens a dialog box that lets you specify whatever your printer allows.

Project Files dialog

Open the **Project Files** dialog by selecting **Project Audio Files** from the **File** menu.

The **Project Files** dialog provides the following information:

Project File Name

File name and location of the project file.

Project Audio Folder

The directory in which the project's audio files are stored. This is the same as the next field, unless you're using per-project audio folders.

Global Audio Folder

The default directory in which project audio files are stored.

Total Project Size

The combined size of the project's audio data.

Min/Max Bit Depth

The lowest and highest bit depths of the audio files in the project.

File Name

File name(s) of the individual wave file(s) your project file references.

Path

The directory in which each file is stored.

Bit Depth

The bit depth of each wave file.

File Size

The size of each wave file.

Status

The following status entries are possible in the **Status** column of the **Project Files** dialog:

- **Global.** The file is stored in the Global Audio Data directory. The Global Audio Data directory can be changed in the **Audio Data** tab of the **Global Options** dialog.
- **Local.** The file is stored in the local wave data directory, a per-project data directory which is a subdirectory in the directory where the project file is stored.
- **External.** The file is stored in a directory other than the Global Audio Data directory or in a Local audio data directory.
- **Missing.** The file is not to be found.

Sorting Files

You can quickly sort files by clicking on the column headers, for instance, to see all **Missing** audio files, click on the **Status** column header and the missing files appear at the top of the column.

For more information, see:

Locating missing audio

Project Options dialog—Clock tab

The **Options > Projects** command opens the **Project Options** dialog. The **Clock** tab controls synchronization and the number of subdivisions of the beat (parts per quarter note). The **Clock** tab has the following sections:

Source

This section lets you choose what device SONAR uses as a timing source, and has the following options:

- **Internal.** Choose this option to use the clock on the computer's motherboard.
- **MIDI Sync.** Choose this option to sync SONAR to an external MIDI device.
- **SMPTE/MTC.** Choose this option to sync SONAR to an external device that generates either SMPTE time code or MIDI time code.
- **Audio.** Choose this option to use the clock on the computer's sound card.

Ticks per quarter-note

This section lets you choose the number of subdivisions of the beat (parts per quarter note), from fifteen choices.

Timecode format

This section lets you choose a SMPTE frame rate from among six choices.

SMPTE/MTC Offset

This section allows you to start SONAR playing after it starts receiving time code by an amount you choose in this field of the dialog box. Choose an amount in hours/minutes/seconds/frames format.

For more information, see:

Synchronization Overview

MIDI Synchronization.

Setting the MIDI timing resolution

Synchronizing Your Gear

Project Options dialog—Metronome tab

The **Options > Projects** command opens the **Project Options** dialog. The **Metronome** tab lets you set the following metronome options:

General

- **Playback.** Choosing this option cause the metronome to sound during playback.
- **Recording.** Choosing this option cause the metronome to sound during recording.
- **Use Audio Metronome.** Choosing this option causes the metronome to use audio.
- **Use MIDI Note.** Choosing this option causes the metronome to sound by playing a MIDI note.
- **Count In.** Specifies the number of count-in measures or beats.
  - **Measures.** Choosing this option sets the **Count-In** units to measures.
  - **Beats.** Choosing this option sets the **Count-In** units to beats.

Audio Metronome

First beat. Select an audio sound for the first beat.

Other beats. Select an audio sound for other beats.

dB. Set the dB level for the corresponding beat.

Output. Set the output you want to use for the audio metronome.

MIDI Note

If you checked **Use MIDI Note** in the above section, then choose options for these three parameters:

- **Port.** Choose the port that the MIDI note plays through.
- **Channel.** Choose the MIDI channel your metronome plays on.
- **Duration.** Choose how many Ticks you want the metronome sound to last.

First Beat

Choose a Key (a note) and a Velocity for the first metronome attack in the measure.

Other Beats

Choose a Key (a note) and a Velocity for the other metronome attacks in the measure.

For more information, see:

To change your Metronome settings

The **Options > Projects** command opens the **Project Options** dialog box, which has four tabs. The **MIDI Input** tab lets you control which MIDI instrument sounds when you play your master keyboard or controller. This is called *Play Through*, or *MIDI Echo*—the echo (or routing) of MIDI data from your MIDI inputs back out to your MIDI sound modules.

SONAR's default behavior is to send incoming MIDI notes to the output of the track that has the focus—the current track. You can change this behavior by choosing from the following options:

Project Options dialog—MIDI Out tab

The **Options > Projects** command opens the **Project Options** dialog. The **MIDI Out** tab lets you configure MIDI Machine Control, and two global controller options.

Choose from the following options:

MIDI Machine Control (MMC)

This section allows you to control MMC devices from SONAR, and has the following options;

- **Transmit MMC.** Choosing this option causes SONAR to send standard MMC commands such as start, stop, rewind, etc., to any MMC devices that are connected to your computer.
  - **Timecode Master's Unit ID.** If you have several MMC devices connected to your computer, for example three ADAT machines, one of them will be the timing master, and SONAR and the other MMC devices will slave to its timing. Fill in the ID number of the master MMC device, so that SONAR's MMC commands go to the right device.

Other Options:

- **Zero Controllers When Play Stops.** If you choose this option, SONAR sets the controller values of the pitch wheel, the sustain pedal, and the modulation wheel on all 16 MIDI channels to

zero. It also sends a “zero all continuous controllers” MIDI message which turns off other continuous controllers on newer synthesizers. If you experience frequent stuck notes when playback stops, try checking this option.

- **Patch/Controller Searchback Before Play Starts.** If you choose this option, SONAR finds and sends the most recent patch changes, wheel events, and pedal events before starting playback. This way, all settings are correct even if you start playback at an arbitrary point in the project.

See also:

MIDI Machine Control (MMC).

Project Options dialog—Sync tab

The **Options > Projects** command opens the **Project Options** dialog box. The **Sync** tab lets you configure MIDI Sync, and SMPTE/MTC (MIDI Time Code).

Choose from the following options:

Send MIDI Sync

When SONAR is the timing master in a master/slave synchronized setup, use this section to set MIDI Sync options:

- **Transmit MIDI Start/Continue/Stop/Clock.** Choosing this option causes SONAR to tell the slave when to start, when to continue, when to stop, and what timing data to go by (SONAR’s).
- **Use Start, Never Continue (greyed-out unless you check the previous option).** Choosing this option causes SONAR to only transmit MIDI Start messages every time it restarts, even in the middle of a song. If you have a drum machine slaved to SONAR, and the drum machine is playing looped patterns, you probably want it to start at the beginning of its loop whenever SONAR restarts, even if SONAR restarts from the middle of a song.
- **Transmit MIDI Song Position Pointer (SPP).** Choosing this option causes SONAR to send an SPP message before starting or continuing playback. If you are using a drum machine as described above, you might want to disable this option.
  - **Locate Delay for SPP Recipient.** Some older MIDI devices take a small amount of time to respond to SPP messages. This option causes SONAR to delay briefly after sending an SPP message, in order to give the slave device time to respond. The delay is in 1/18ths of a second. Enter 1 for a 1/18th second delay, 2 for 2/18ths of a second, or 18 for a full second delay.
- **MIDI Sync Output Ports.** Choose the outputs that your slave devices are connected to.

Send MIDI Time Code

When SONAR is the timing master in a master/slave synchronized setup, use these options to send and configure MIDI Time Code (MTC):

- **Transmit MTC.** Check this box if you want SONAR to transmit MTC. You can also turn this option on or off at the **Sync** toolbar.

- **Frame Rate.** Use this drop-down menu to choose the frame rate for your project (see Frame Rates, if necessary).
- **MTC Output Ports.** Check off the output ports that you want SONAR to send MTC out of.

See also:

MIDI Synchronization.

Synchronizing Your Gear

Project Options dialog—Surround tab

The **Surround** tab in the **Project Options** dialog is where you set your surround options.

Presets

You can save your current settings as a preset. This allows you to easily move between different surround configurations.

Output Assignments field

Set a hardware output for each channel.

Surround Format drop-down

Select a surround format from the drop-down:

- 2.1
- LCR
- LRC+LFE
- LRS
- LRS+LFE
- Matrix UHJ
- QUAD
- 4.1 (SMPTE/ITU)
- Quad+LFE
- PanAmbio 4.1
- LCRS
- Surround (SMPTE/ITU)
- Surround Media
- LCRS+LFE
- 5.1 (Standard 3/2)

- 5.1 (Film/Alternative)
- 5.1 (Music/Alternative)
- 5.1 (SMPTE/ITU)
- 6.0 (Hexagon)
- 6.0 (Film/Alternative)
- 6.0 (Music/Alternative)
- 6.1 (Film/Alternative)
- 6.1 (Music/Alternative)
- 6.1 (SMPTE/ITU)
- 7.0 (Heptagon)
- 7.0 (Film/Alternative)
- 7.0 (Music/Alternative)
- 7.1 (Film/Alternative)
- 7.1 (Music/Alternative)
- 7.1 (SMPTE/ITU)
- 8.0 (Octagon)
- 8.0 (Film/Alternative)
- 8.0 (Music/Alternative)
- 8.1 (Film/Alternative)
- 8.1 (Music/Alternative)
- 8.1 (SMPTE/ITU)

5.1 (SMPTE/ITU) should be the default template.

Low-pass Cutoff

All signals below the cutoff frequency are directed from the main channels to the LFE channel output.

Monitor with Bass Management

When enabled, a combox lets you specify one of the following cutoff frequencies:

- 80 (Dolby consumer/DVD) (default)
- 116 (DTS)
- 120 (Dolby pro/film)
- 180

Downmixing

- **Center Level.** Center channel content is distributed equally into left and right channels of a 2-channel downmix with one of a choice of three levels. Each level is how much of center is mixed

into both left and right. The alternatives are:

- **-3 dB.** This is the right amount to distribute into two acoustic sources to reach the same sound power level, thus keeping the far-field level (in the reverberant listening field, as is typical at home) equal. This is the amount by which a standard sin-cos panner redistributes a center panned image into left and right, for instance.
- **-4.5 dB.** Since -3 dB and -6 dB represent the extreme limits (of power addition on the one hand, or of phase-dependent vector addition on the other), an intermediate, compromise value was seen as valuable, since the correct answer has to be -4.5 dB +/- 1.5 dB.
- **-6 dB.** This covers the case where listening is dominated by direct sound. Thus, the two source signals add up by 6dB rather than by 3 dB, because they add as vectors, as voltages do, rather than as power does.

- **Surround Level.** Surround Downmix Level is the amount of Left Surround to mix into Left, and Right Surround to Right, when mixing down from any surround-equipped format to 2 channel. The available options are:
  - **-3 dB.** The amount by which mono surround information, from many movie mixes before discrete 5.1 was available, mixes down to maintain the same level as the original.
  - **-6 dB.** An amount that makes the mixdown of surround content not so prominent, based on the fact that most surround content is not as important as a lot of front content. This helps to avoid competition with dialog, for instance, by heavy surround tracks in a mixdown situation.
  - **-INF.** Necessary for cases where the surround levels are so high that they compete with the front channels too much in mixdown situations.
- **LFE Level.** Choose -INF or -12 dB.

PRV Tool Configuration dialog

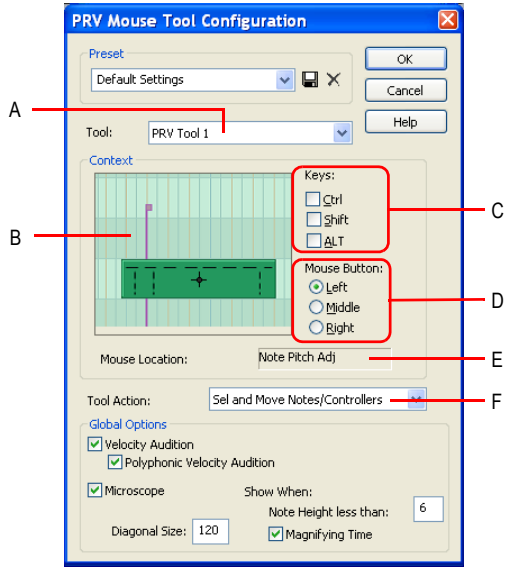
When you use the **Options > PRV Tool Configuration** command, the **PRV Tool Configuration dialog** box appears.

You use the **PRV Tool Configuration** dialog to configure the Piano Roll tools. In order to assign a specific action to a Piano Roll tool, you must specify the following:

- **Piano Rool tool.** Specify **PRV Tool 1** ( ), **PRV Tool 2** ( ) or **PRV Tool 3** ( ).
- **Mouse button.** Specify the left, middle or right mouse button.
- **Keyboard modifier key(s) (optional).** Specify the CTRL, SHIFT or ALT key, or any combination of the three.
- **Mouse location (context).** Specify one of the seven clickable mouse locations (see “Mouse Location” on page 1384).
- **Tool action.** Specify one of the many available mouse actions (see “Tool Action” on page 1385).

The objective is to map each of the contexts (mouse locations) to a tool action.

Figure 265. *The **PRV Mouse Tool Configuration** dialog*



***A.** Tool **B.** Context **C.** Keys **D.** Mouse Button **E.** Mouse Location **F.** Tool Action*

See:

Tool

Mouse Button

Keys

Mouse Location

Tool Action

To configure a Mouse Action

Default PRV tool assignments

Tool

The Tool combobox lists the three Piano Roll tools:

- **PRV Tool 1.** This tool corresponds to the Select tool ( ) in the **Piano Roll** toolbar.
- **PRV Tool 2.** This tool corresponds to the Draw tool ( ) in the **Piano Roll** toolbar.
- **PRV Tool 3.** This tool corresponds to the Erase tool ( ) in the **Piano Roll** toolbar.

See:

To Edit Notes with the Draw Tool

To Edit Notes with the Select Tool

To Use the Erase Tool

Mouse Button

SONAR allows you to assign the following mouse buttons:

- Left
- Middle (if available)
- Right

Keys

In addition to a mouse button, you can optionally configure a mouse action to also use any combination of the following keys:

- CTRL
- SHIFT
- ALT

Note: *Because Windows has a long-established standard of using CTRL-drag for copy operations, there is a potential collision when using the CTRL key to program actions that involve moving events. Therefore, the CTRL key requires some special attention:*

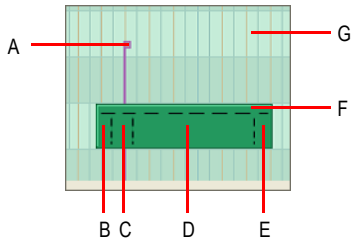
If the CTRL key is part of a context for a *move* action, copying will be disabled if the CTRL key is pressed.

Mouse Location

Each Piano Roll tool can perform various actions depending on where you click. The following is a list of the seven clickable mouse locations with regard to events:

- **Nowhere.** Click anywhere outside a Note event or Controller event.
- **Note Slip Start (left edge).** Click the left edge of a Note event.
- **Note Time Adjust.** Click near left edge of a Note event, slightly to the right of the **Note Slip Start** zone.
- **Note Pitch Adjust.** Click the center part of a Note event.
- **Note Slip End (right edge).** Click the right edge of a Note event.
- **Note Velocity Adjust.** Click the top part of a Note event.
- **Controller.** Click the handle (top part) of a Controller event.

A diagram displays the possible mouse locations in regards to Note events and Controller events:



A. *Controller* ***B.*** *Note Slip Start* ***C.*** *Note Time Adjust* ***D.*** *Note Pitch Adjust* ***E.*** *Note Slip End* ***F.*** *Note Velocity Adjust* ***G.*** *Nowhere*

The Note event in the previous diagram has dotted lines that outline the various hit zones on Note events as possible context locations. It also shows a single value (controller) event as another context location. Clicking outside the Note event and value event is referred to as the **Nowhere** context location.

Tool Action

Below is a list of all possible Piano Roll mouse tool actions. Depending on the mouse location (context), only a subset of these actions may be available:

Note: *As described in the "Mouse Move" column in the following table, a tool action may behave differently depending on where it is used in the Piano Roll view. The Piano Roll view has three different environments:*

- ***Note-only grid.*** *This refers to the Notes pane when the Controllers pane is shown (see "Notes Pane" on page 436).*
- ***Value-only grid****. This refers to the Controllers pane (see "Controller Pane" on page 436).*
- ***Mixed grid****. This refers to the Notes pane when both Note events and Controller events are displayed together (the Controllers pane is hidden).*

Action	Mouse Down	Mouse Move	Mouse Up
No Action	n/a	n/a	n/a
Insert/Move Note/ Controller	Add Note/Controller to edit buffer	Move inserted Note/ Controller horizontally and vertically	Commit edit buffer.

Table 232.

Action	Mouse Down	Mouse Move	Mouse Up
Paint Notes/Controllers See Note/controller painting (freehand)	Add Note/Controller to edit buffer	Insert additional events at mouse position. For notes, use snap as interval between and duration of notes. For Controllers, use the snap as interval between.	Commit edit buffer.
Paint Notes/Controllers Linear See Note/controller painting (linear)	Add Note/Controller to edit buffer	Insert additional events at mouse position in a straight line from where the mouse was originally clicked.	Commit edit buffer.
Paint Controllers/ Velocities See Controller/velocity painting (freehand)	Add Controller to edit buffer	In note grid, paint existing velocities as the mouse passes through notes. In value grid, do same as Paint Notes/Controllers	Commit edit buffer.
Paint Controllers/ Velocities Linear See Controller/velocity painting (linear)	Add Controller to edit buffer	In the note grid, paint existing velocities linearly from the original mouse click point. In the value grid, do the same as Paint Notes/Controllers Linear.	Commit edit buffer.
Lasso Selection	Begin lasso drag	Continue lasso rectangle	Select all events within lasso rectangle. Obey CTRL/SHIFT as standard modifiers.
Erase Sweep See Erase tool behavior	Mark any hit event as deleted	Mark notes that are hit in both pitch and time for deletion. Mark Controllers that are crossed in time for deletion	Commit edit buffer.
Move Notes/Controllers	n/a	Move selected notes/ Controllers freely horizontally (in time) and vertically	Commit edit buffer
Move Notes/Controllers (Vert)	n/a	Move selected notes/ Controllers vertically only	Commit edit buffer
Move Notes/Controllers (Time)	n/a	Move selected notes/ Controllers in time only (horizontally)	Commit edit buffer

Table 232.

Action	Mouse Down	Mouse Move	Mouse Up
Sel and Move Notes/ Controllers	Select any hit event. Obey SHIFT/CTRL as standard modifiers	Move selected notes/ Controllers freely horizontally (in time) and vertically	Commit edit buffer
Sel and Move Notes/ Controllers (Vert)	Select any hit event. Obey SHIFT/CTRL as standard modifiers	Move selected notes/ Controllers ivertically only	Commit edit buffer
Sel and Move Notes/ Controllers (Time)	Select any hit event. Obey SHIFT/CTRL as standard modifiers	Move selected notes/ Controllers in time only (horizontally)	Commit edit buffer
Note Slip Start Adjust	n/a	Adjust the start time and duration of selected notes. Obey snap settings	Commit edit buffer
Note Slip End Adjust	n/a	Adjust the duration of selected notes. Obey snap settings	Commit edit buffer
Note Velocity Adjust	n/a	Adjust the velocity of selected notes	Commit edit buffer
Note Split See Note split	Split hit note in to two notes at mouse time. Obey snap settings	n/a	Commit edit buffer.
Note Glue See Note glue	Add any hit note to the edit buffer	Add any notes hit to the edit buffer if same pitch as the clicked note	Make one long note out of the notes in the edit buffer. Commit the edit buffer.
Drag Quantize See Drag-quantize	Add Note/Controller to edit buffer	Move the mouse upward to move the selected events toward the quantize target times. Move the mouse downward to move the selected events away from the quantize target times.	Commit edit buffer.
Event Mute See MIDI event mute	Add Note/Controller to edit buffer	Mute any hit event.	Commit edit buffer
Context Menu	n/a	n/a	Show context menu

Table 232.

See:

To configure a Mouse Action

Quantize dialog

When you use the **Process > Quantize** command, the **Quantize** dialog box appears. Quantize has two different forms.

- **Process > Quantize.** This is the standard quantizing command that adjusts the start time and duration of selected notes so that they line up with a fixed size grid.
- **Process > Groove Quantize.** This command extracts a grid or “groove” from an existing piece of music (the "groove pattern"), and then applies it to another piece of music to produce a similar rhythmic feel.

Use the following fields in the **Quantize** dialog box to control standard quantizing:

Preset menu

Save or select settings that you use often in the drop-down menu. To save a new group of settings, type a name into the menu, and click the **Save** button. To delete a group, select it and click the **Delete** button.

Resolution

Set the note resolution. The smaller the note value, the more precise the quantization. See Resolution.

Change

- **MIDI Event Start Times.** Select this option if you want the start times of the MIDI events in the selected data to move.
- **Note Durations.** Select this option if you want the length of notes to be edited to fit into the size you chose in the **Resolution** field.
- **AudioSnap Beats.** Select this option if you want AudioSnap transients to move.
- **Audio Clip Start Times.** Select this option if you want the beginnings of audio clips to move.
- **Only Notes, Lyrics, and Audio.** If you select this option, SONAR will not modify other events, like controllers.

Options:

- **Strength.** This value determines how closely SONAR moves the selected notes to the resolution value, or “grid.” See Strength.
- **Swing.** Use this value to make groups of even eighth notes (or whatever note you want to enter in the **Resolution** field) “swing,” instead of playing with exact eighth note rhythm. A value of **50** percent, or “50-50,” produces equal durations for both notes—no swing. A larger value makes the first note longer, and vice versa. See Swing.

- **Window.** This value determines whether SONAR quantizes notes that are far from the quantization points, or leaves them alone. A value of 100 percent quantizes every note. See Window.
- **Offset.** This value moves the quantization grid forward or backward in the track, away from the beat boundaries. See Offset.
- **Auto XFade Audio Clips.** This option becomes available if you enable the **Audio Clip Start Times** check box. If you enable this option, and the process of quantizing audio clips results in overlapping clips or gaps between clips, a crossfade is automatically added to the overlapping or empty area. You specify the length of the crossfade in **XFade** field. The **Max Gap** value specifies the widest gap that will be filled with an automatic crossfade.

Audition button

Click this button to hear your edit before you actually apply it to the selected data.

For step by step instructions:

To Use the Quantize Command

Defining a Groove

To Save a Groove Pattern

To Copy an Existing Groove

To Delete a Groove

Groove Quantize Tips

See also:

Changing the Timing of a Recording

Drag-quantize

Fast Zoom Options

The Fast Zoom feature allows you to use your mouse wheel to control Zoom functions.

Zoom Factor

Set the intensity of the zoom. Horizontal and vertical zoom intensity can be adjusted independent of one another using the spinners or by manual entry.

Zoom In

Select whether the Zoom in action is centered at the cursor or the Now Time in horizontal Zoom, and select whether the Zoom in action is centered at the cursor or the Active Track in vertical Zoom.

Zoom Out

Select whether the Zoom out action is centered at the cursor or the Now Time in horizontal Zoom, and select whether the Zoom out action is centered at the cursor or the Active Track in vertical Zoom.

Simultaneous Horizontal and Vertican Zoom

Check the check box to make horizontal and vertical zoom simultaneous.

See also:

"To Zoom Using the Mouse Wheel (Fast Zoom)" on page 301

Reassign Envelopes dialog

When you use the **Envelope Editing** menu's **Assign Envelope** command on an automatable effect's envelope, the **Reassign Envelopes** dialog box appears.

Click the parameter in the list of parameters that you want to reassign the envelope to, and click **OK**. SONAR changes the envelope to control the parameter you clicked.

See:

To Reassign an Envelope

Automating Individual Effects Parameters

Creating and Editing Audio Envelopes

Creating and Editing MIDI Envelopes

Receive System Exclusive dialog

In the Sysx view, clicking the **Receive Bank** button opens the **Receive System Exclusive** dialog box. Use this dialog box to tell a synthesizer to start sending system exclusive data—clicking the **OK** button in this dialog box opens the **Sysx Receive** dialog box and starts the transmission of Sysx data.

This dialog box displays how many bytes have been received. When the number stops increasing, click **Done**.

See also:

Using the System Exclusive View

Record Options dialog

The **Transport > Record Options** command opens the **Record Options** dialog box. This command specifies how SONAR records clips into tracks already holding other clips. If you use loop recording, the command also lets you specify whether to record takes in sequential tracks or stacked in a single track.

Note: *SONAR saves the recording options you choose with each project, so you can save a different recording mode with each of your projects.*

The **Record Options** dialog box has the following fields;

Recording Mode

Choose one of the following options:

- **Sound on Sound (Blend).** Choose this option to add sound to any pre-existing sound in the track.
- **Overwrite (Replace).** Choose this option to overwrite any pre-existing sound in the part of the track you are recording into.
- **Auto Punch.** Choose this option to punch record, and then set the following options:
  - **Punch In Time.** Enter the time where you want the new recording activity to begin.
  - **Punch Out Time.** Enter the time where you want the new recording activity to end.
- **Mute Previous Takes.** Uncheck this option in Sound on Sound (Blend) mode if you want to hear previous takes during Auto Punch.

Note: *The Mute Previous Takes check box has no effect during loop recording.*

Loop Recording

Choose one of the following loop recording options:

- **Store Takes in a Single Track.** Choosing this option causes SONAR to merge every new take with the previous takes, unless you choose Overwrite mode, which mutes each take except the newest one.
- **Store Takes in Separate Tracks.** Choosing this option causes SONAR to place each new take in the next available track. This method can quickly overwhelm your computer if you are recording audio data.

Layers

- **Create New Layer On Overlap.** If you have the **Track Layers** button on a track enabled, and you record one clip so that it overlaps another clip, the clips appear in different track layers when this option is enabled.

Clip Groups

- **Group Clips Across Tracks.** Choosing this option causes SONAR to place all new clips in a group after recording is complete. When loop recording, each pass of the loop gets placed in its own group. For more information, see Clip selection groups.

See Also:

Punch Recording

To choose a recording mode

Loop Recording

Regenerate Tablature dialog

In the **Staff view** toolbar, click the drop-down arrow on the **Staff View Layout** button to display the tablature drop-down list. Click **Regenerate-TAB** to open the **Regenerate Tablature** dialog box.

The Regenerate TAB command works on selected regions in a track to modify the fingering according to the method you choose. The TAB display by default uses the 'floating' algorithm which analyzes all events in a track and attempts to optimize tablature with reference to open position. By choosing the "fixed" algorithm instead, you can designate a specific finger span and lowest fret which causes the TAB of a selected region to be displayed within this range. This usually creates a more compact fingering system.

The **Regenerate Tablature** dialog box has the following fields:

Track

This window displays the names of all selected tracks. Highlight the one you want to regenerate TAB for.

Method

Choose what TAB style you want SONAR to use, from these options:

- **Fixed.** This style specifies where on the neck these notes should be played. When Fixed is selected the Finger span and **Lowest fret** fields are used together to define the "box" where the notes are displayed. The **Finger span** parameter determines how many consecutive frets will be used to display the note. For example, if Finger span is set to 4, then SONAR will attempt to place all the notes within those 4 frets. The Lowest Fret then determines where on the fretboard will the notes be displayed within the Finger span. The red box in the fretboard display above the parameters changes to reflect the settings in these two parameters.
- **Floating.** This style analyzes all events in a track and attempts to optimize tablature with reference to open position
- **MIDI Channel.** This style uses the event's MIDI channel to determine which string the note should be displayed on. When MIDI Channel is selected, the user chooses which series of MIDI Channels SONAR receives on. This is useful for MIDI Guitarists who record parts in MONO

mode, where each string transmits on a different MIDI channel. (Values: 1 - 11). Selecting “1” will cause it to use MIDI channels 1 - 6, selecting 2, 2 - 7, and so on.

Finger Span

The value in this field determines the finger or fret span the new TAB covers. Usually, you set this value to 4.

Lowest Fret

The value in this field determines the lowest fret the TAB can use for the selected notes.

1st Channel

The value in this field determines the first MIDI channel of six consecutive channels that SONAR assigns notes to, depending on which strings you play the notes on.

Number of Frets

This value is determined in the **Staff View Layout** dialog box, and governs how many frets SONAR’s Fretboard can display.

Skip Channel 10 (G50)

This check box is greyed out unless you choose MIDI Channel in the **Method** field. If you use a MIDI converter like the G50, Channel 10 is reserved for percussion instruments, so if you use a MIDI guitar to transmit on six consecutive MIDI channels, check this check box to avoid using Channel 10 for your guitar.

See Also:

Regenerate TAB

Tablature

The Staff View

Tablature Settings

Remote Control dialog

When you right-click a control in the Console or Track views and choose **Remote Control** from the pop-up menu, the **Remote Control** dialog box appears. This dialog box lets you use a MIDI device as a remote control for knobs, buttons, and sliders in SONAR, and has the following fields:

Channel Messages

The buttons in this section control command that are specific to individual MIDI channels. The options are:

- **Note On.** With this button enabled, the selected control’s value alternates between its minimum and maximum values every time you play the note that’s listed in the **Note On** field. If the selected

control is a button, it toggles between on and off position.

- **Note On/Off.** With this button enabled, the selected control's value is maximized when the note that's listed in this field is depressed, and minimized when the note is released. If the selected control is a button, it toggles between on and off position.
- **Controller.** With this button enabled and a Controller number entered in the **Number** field, SONAR "listens" for a controller message that your MIDI controller is sending, and the selected control moves up or down as the controller message's value gets larger or smaller. For example, if your MIDI controller can send MIDI volume data from one of its faders or controls, and you set a fader in SONAR to respond to Controller #7, the selected fader in SONAR will move up or down as the value of Controller #7 that your MIDI controller sends rises or falls.
- **Wheel.** With this button enabled, the selected control moves as the pitch wheel on your MIDI controller moves.
- **RPN.** If your MIDI controller can send RPN data, enabling this button causes the selected control to move as the RPN data that your MIDI controller changes.
- **NRPN.** If your MIDI controller can send NRPN data, enabling this button causes the selected control to move as the NRPN data that your MIDI controller changes.
- **MIDI Channel.** Use this field to tell SONAR which MIDI channel the controller data comes in on.

Learn button

If you don't know what controller number a slider or knob on your MIDI controller sends, just click the **Learn** button and then move the knob in question. SONAR reads the incoming MIDI data and automatically configures the **Remote Control** settings so that the controller you moved now controls the SONAR control that you are configuring.

Sysx

You can use this option to control SONAR's Console from an external controller that sends sysx, such as the Tascam 428, or any device that sends sysx data. You can set the selected control in SONAR to respond to sysx data by using these fields:

- **Single Byte.** Checking this option tells SONAR that the significant data (the variable, or parameter value) in the incoming sysx message is in the form of a single byte.
- **High byte first.** Checking this option tells SONAR that the significant data in the incoming sysx message is in the form of two bytes, with the high byte first.
- **Low byte first.** Checking this option tells SONAR that the significant data in the incoming sysx message is in the form of two bytes, with the low byte first.
- **Starts with.** Fill in the string that your device sends in sysx messages that precedes the significant data.
- **Ends with.** Fill in the string that your device sends in sysx messages that follows the significant data.

Note: *If you set up remote control for a grouped control, the remote control works all controls in the group.*

For step by step instructions:

To Set Up Remote Control for a Knob, Button, or Fader

See also:

Using Control Groups

Remove DC Offset dialog

The **Process > Remove DC Offset** command opens the **Remove DC Options** dialog, which allows you to remove audio artifacts cause by electrical mismatches between recording hardware and input instruments or devices. This dialog has the following fields:

- **DC Offset Threshold (dB).** You can set a minimum dB threshold. If the analyzed DC offset is below this value, no removal takes place.
- **Analyze Left Channel (dB) and Right Channel (dB).** This field displays the DC offset separately for the left and right channels. Press the **Audition** button to update the display.
- **Compute DC Offset from first 5 seconds only.** To speed processing, select the Compute DC offset from first 5 seconds only check box. Only the first five seconds of a sound file will be analyzed when measuring the DC offset. The only time that five seconds is not sufficient is if a long fade-in or mute has been applied at the beginning of the file.

Remove Silence dialog

When you use the **Process > Audio > Remove Silence** command, or click the **Gate Settings** button in the **Freeze Options** dialog, the **Remove Silence** dialog box appears. This command creates absolute silence during silent passages, eliminating extraneous noise.

The **Remove Silence** dialog box has the following fields:

Preset field (only appears with Process Audio command)

Use this field to choose and enter presets. Click the **Save** button to save any group of new settings after you enter a name in the **Preset** field. Click the **Delete** button to delete any selected group from the **Preset** field.

Open Level (db)

The value in this field is how loud the sound must get (the loudness threshold) before SONAR stops silencing the sound. The gate “officially” opens when loudness rises above this level, although it can open earlier because of the **Attack Time** (see below).

Close Level (db)

The value in this field is how soft the sound must get (the softness threshold) before SONAR starts silencing the sound. The gate "officially" closes when loudness falls below this level, although it can stay open later because of the Release Time (see below).

Attack Time (ms)

The value in this field is the interval of time after the volume reaches the **Open Level** for the gate to fully open. Opening the gate gradually produces a fade-in effect instead of an instant on-off sound.

Hold Time (ms)

The value in this field is the minimum time for the gate to stay open. **Hold Time** is useful when you've set high open and close levels—for example, when your source signal is very loud. Noise gates set this way tend to react to repeated percussive passages (such as drum rolls) by repeatedly opening and closing; this can sound unpleasant. By setting a hold time, you can ensure that the gate stays open long enough during percussive passages.

Look Ahead (ms)

The value in this field causes the gate to open slightly before the sound reaches the **Open Level** so you don't lose the sound's attack.

Release Time (ms)

The value in this field is the interval of time after the volume reaches the **Close Level** before the gate actually closes. This lets the tail end of sounds pass through without being clipped.

Split Clips

Check the **Split Clips** box to delete the silent sections of audio.

Audition button (only appears with Process Audio command)

Click this button to hear the results of your effect on the first three seconds of the selected audio.

For more information, see:

Removing Silence

Rename Existing Layout dialog

The **Views > Layouts** command opens the **Window Layouts** dialog box, which contains the **Rename** button. Clicking the **Rename** button opens the **Rename Existing Layout** dialog box, which allows you to rename whatever layout is highlighted in the Global window.

Rename Toolbar dialog

Choosing the **Rename** command when you right-click a toolbar opens the **Rename Toolbar** dialog box, which allows you to rename whatever toolbar you right-clicked.

The dialog has the following fields:

- **Original Name.** This field lists the toolbar's current name.
- **New Name.** Type a new name for the toolbar in this field, then click **OK**.

See also:

Customizable toolbars

Retain Cakewalk Preferences dialog

If you choose to retain or *migrate* your preferences from a previous version of Cakewalk, the SONAR installer finds the existing `Cakewalk.ini` files on your system. The list of `Cakewalk.ini` files appears in the **Retain Cakewalk Preferences** dialog box. You may choose one from this list. The preferences and settings stored in the older version's `Cakewalk.ini` and `TTSseq.ini` files are then transferred to the identically named configuration files for Cakewalk. Cakewalk migrates certain preferences to the Windows Registry rather than to the `Cakewalk.ini` file.

When you migrate your preferences, SONAR will:

1. Locate the Data directory (WaveData folder) used by your previous Cakewalk installations and direct SONAR to use that folder for its audio storage and retrieval as well.

Note: *Migrating Preferences will leave the Data directory in its current location - it does not move your audio recordings to a new location. It simply points SONAR to the audio you have saved during previous recording sessions. This means that your previously recorded songs that contain audio tracks should continue to open and playback as expected. It will also write new audio data to this same location. You are free to manually change your Data directory at a later time in SONAR's Options, Audio, Advanced tab. Advanced users may want to manually adjust this Data directory location.*

2. Automatically import any custom Instrument Definitions you used in your previous Cakewalk version.
3. Automatically import other custom settings you have made in various Cakewalk menus and INI files.

Revert dialog

The **File > Revert** command opens the **Revert** dialog box, which lets you open an earlier version of the current project. Click the version of the file that you want to open. If you then save the earlier version, it becomes than latest version. To use the Revert feature, file versioning must be enabled in the **Global Options** dialog on the **Autosave and Versioning** tab.

Safe Mode dialog

Opening a file in safe mode opens the safe mode dialog, which asks you, one plug-in at a time, which of the file's plug-ins to open each. If you think one of the plug-ins is preventing the file from opening, choose not to load that plug-in. You can also try loading only one plug-in, closing the file, and then loading 2 plug-ins the next time you open the file, etc., until you isolate the bad plug-in.

See also

I Can't Open My Project

File Recovery mode

Save As dialog

The **File > Save As** command opens the **Save As** dialog box, which lets you save a project with the name, directory, and format you specify. The **Save As** dialog can also be used to save Groove clips as Riff Wave files from the Loop Construction view. Use the following fields to control your options:

Save in

Select the directory in which you want to store the file.

File name

Type or select the filename you want to open.

Save as type

Select the type of file you want to save your project as. If you are saving a project, you have the following options:

- **Normal.** Saving as type Normal saves your MIDI data, all project settings, and references to your audio data, with the extension .cwp. SONAR saves no audio data in a .cwp file, only references to where the data is on the hard disk. Saving your project as a bundle file (see below) saves all your project data in one place, including a new copy of your audio data; this method uses a lot more disk space than saving as a .cwp file.
- **Template.** Template file with the extension .cwt. Use Template files to save commonly used project settings for quickly setting up a new project.
- **Cakewalk Bundle.** Bundle file with the extension .cwb. Bundle files contain everything that a Normal file type contains with the addition of all your project's audio. Bundle files are great for backing up projects, and are also useful for moving SONAR projects from one computer to another.
- **MIDI Format 0.** Save in this format to create a Standard MIDI File that has all channels merged into one track.

- **MIDI Format 1.** Save in this format to create a Standard MIDI File that keeps each channel on a separate track.
- **Riff MIDI Format 0.** Save in this format if you need a Riff MIDI File of Format 0.
- **Riff MIDI Format 1.** Save in this format if you need a Riff MIDI File of Format 1.

Riff Wave files. If you are saving in the Loop Construction view, you can save the wave file as a Groove Clip/Wave file or a regular Wave file, depending on whether you enabled looping on the clip that you're saving. Groove Clip/Wave files are ACID-compatible files which can be used in SONAR or any application that supports ACIDized files.

Go to Folder (Project saves only)

The Go to folder drop-down lets you quickly go to the default save location for different types of projects.

Copy all audio with project (Project saves only)

When selected, this check box creates a copy of every audio file your project references, regardless of where they are located, and stores them in a folder called Audio Data. The Audio Data folder is created in the folder where you save your project. For example, if you save your project to the following folder:

C:\My Project

Your project's audio is saved in the following folder:

C:\My Project\Audio Data

If you want to give the Audio Data folder a different name, you can do so using the **Audio path** option. See below.

Create one file per clip (Project saves only)

This option is only available if the **Copy all audio with project** option is selected. When selected, the **Create one file per clip** option forces SONAR to create a new wave file for each unique clip. To conserve disk space, SONAR does not duplicate audio referenced by multiple copies of a clip, unless you have checked the **Export Broadcast Waves By Default** option in the **Audio Data** tab of the **Global Options** dialog.

Audio path (Project saves only)

If you want to customize the name of the folder in which you store your audio files, specify it in this field. You can use the **Browse** button to specify where the folder is saved.

See also:

Saving Your Work

Save Pattern dialog

To open the **Save Pattern** dialog, do *one* of the following:

- Right-click in the **Step Sequencer** toolbar and select **Save Pattern** from the pop-up menu.
- Open the Step Sequencer and press press CTRL+ALT+S.

The **Save Pattern** dialog lets you save a step sequencer pattern as a separate file. Use the following fields to control your options:

Save in

Select the directory in which you want to store the file.

File name

Type or select the filename you want to open.

Save as type

A step sequencer pattern is always saved as a Step Sequencer Patterns file type, which has the extension .ssp.

Scale Defaults dialog

The **Tracks > Snap to Scale > Scales > Scale Manager** command opens the **Scale Manager** dialog box, which has a **Defaults** button, which opens the **Scale Defaults** dialog.

This dialog has the following fields:

- **Restore Current Scale (if factory).** This option restores a single, selected file to its factory settings.
- **Restore Any Missing Scales.** If you have deleted a factory-supplied scale and want to replace it with the original version, choose this option.
- **Restore All Factory Scales.** If you want to restore all factory-supplied scales to factory settings, click this option.

Scale Manager dialog

The **Tracks > Snap to Scale > Scales > Scale Manager** command opens the **Scale Manager** dialog box, which lets you create and edit scales to use with the Snap to Scale feature.

This dialog has the following fields and controls:

- **Scale Family.** This field lists all of the families of scales that in which an individual scale might be stored.

- **Scale.** This field lists the scales that are stored in the selected Scale Family.
- **Keyboard display.** This keyboard display shows the notes that are in the selected scale by displaying a blue dot over each note in the selected scale. You can include or exclude a note clicking keys in the keyboard display.
- **Scale Degrees.** This field lists the different scale degrees that are in the selected scale.
- **Scale Degree buttons.** These buttons below the **Scale Degree** field show what scale degrees are in the selected scale. Each depressed button shows that the button's namesake is in the selected field.
- **Defaults.** This button opens a dialog that offers to restore factory-supplied scales to their default values.
- **New button.** Click this button to create a new scale. When you click this button, the Scale Manager displays a default name (New Scale "n") for the new scale, and automatically selects C as the root note of the scale.

Note: *All scales in the Scale Manager dialog use C as the root note.*

- **Delete button.** Click this button to delete any scale that is highlighted in the **Scale** field.

Scale Velocity dialog

The **Process > Scale Velocity** command opens the **Scale Velocity** dialog box, which lets you edit MIDI clips to create crescendos (volume swells) and decrescendos on those instruments that respond to MIDI velocity. Most MIDI instruments map changes in velocity to changes in note loudness. Many synthesizer patches alter the timbre of the sound as well, so that higher velocities produce brighter, as well as louder, sounds.

This command lets you set a starting and ending velocity for the entire time range of the selection. SONAR scales the velocity of each event to create a smooth linear change in velocity. As an option, you can enter a starting and ending percentage; SONAR modifies existing velocity values by the designated percentage.

You can also edit note velocities in the Notes pane of the Piano Roll view, which lets you draw shapes other than straight line changes. For more information, see Adding and Editing Controllers in the Piano Roll.

The **Scale Velocity** dialog box has the following fields:

Begin

Enter a velocity value between 0 and 127 for the first event of the selection, unless you want to use percentages. If you use percentages, enter a number between 0 and the approximate percentage that would create a velocity of 127, when multiplied by the existing velocity of the first event. SONAR rounds off any values you create above 127 to 127.

End

Enter a velocity value between 0 and 127 for the last event of the selection, unless you want to use percentages. If you use percentages, enter a number between 0 and the approximate percentage that would create a velocity of 127, when multiplied by the existing velocity of the last event. SONAR rounds off any values you create above 127 to 127.

Percentages

Check this check box if you want to modify existing velocities by a percentage.

See also:

To Scale Velocities.

Search for Missing Audio dialog

Open the **Search for Missing Audio** dialog by clicking the **Search** button in the **Find Missing Audio** dialog.

The **Search for Missing Audio** dialog searches your entire computer for a file that has the same name as the missing file in your project. If the file is found, select it and click **OK**. If multiple copies of the same file name are found, you may select only one. If no files are found, manually search your Recycle Bin. If you find the missing file in the Recycle Bin, right-click on it and select **Restore** to return the file to your project's audio data directory.

Select By Time dialog

The **Edit > Select > By Time** command opens the **Select by Time** dialog box.

Choose the starting and ending times for the time selection you want to make by entering numbers into the following fields:

- **From.** Enter the number of the measure, beat, and tick of the location where you want the selection to start.

Note: *You can enter a whole number with no punctuation if your selection boundary is the beginning of a measure. You can separate measure, beat, and tick numbers with spaces, periods, or colons.*

- **Thru.** Enter the number of the measure, beat, and tick of the location where you want the selection to end.

The From and Thru times you select appear in the **Select** toolbar in the **From** and **Thru** fields. If you select a whole measure, the Thru time is the start of the next measure, which actually makes it a "to" time and not a "through" time.

For more information, see:

To Select Partial Clips Using Time Ranges and Tracks

Set Default Velocities for Steps dialog

Open the **Set Default Velocities for Steps** dialog by right-clicking to the right of any row in the Step Sequencer and selecting **Set Default Velocities for Steps** from the pop-up menu.

From the **Set Default Velocities for Steps** dialog you select the default velocity value that is assigned to new notes that are enabled in the Step Sequencer. The setting is global, which means it applies to all step sequencer clips and projects.

Select Fretboard Track dialog

Open the **Pick Fretboard Track** dialog box by right-clicking in the Fretboard pane and selecting **Select Track** from the **Fretboard** pop-up menu.

From the **Pick Fretboard Track** dialog box you select the track you want to see displayed in the fretboard pane if multiple tracks are displayed in the Staff pane.

To select a track, click the track in the **Pick Fretboard Track** dialog and click **OK**.

See Also:

The Fretboard

Set Timecode at Now Time

The **Transport > Set Timecode at Now** command opens the **Set Timecode at Now Time** dialog box, which allows you to move the SMPTE time 00:00:00:00 to the current Now time. If you enter a value in the dialog, the SMPTE value that you enter is set to the current Now time.

Slide dialog

The **Process > Slide** command opens the **Slide** dialog box, which allows you to move track data forward or backward in the track.

The **Slide** dialog box has the following fields:

Slide

Choose what kinds of track data you want to move:

- **Events in Tracks.** Events include notes and controller data but not markers.

- **Markers.** If you select any locked markers, SONAR asks whether you want to slide them too.

By

Enter a number in the **By** field to control how many units (see below) your selected data moves. Negative numbers move the data to earlier positions in the track, but data can not move earlier than beat 1 of the first measure. Choose from the following units:

- **Measures.** If you choose Measures, the selected data moves by a number of whole measures.
- **Ticks.** If you choose Ticks, the selected data moves by a number of ticks, which are portions of a beat.
- **Seconds.** If you choose Seconds, the selected data moves by a number of whole seconds.
- **Frames.** If you choose Frames, the selected data moves by a number of frames, which are the smallest units of SMPTE time.

See also:

Shifting Events in Time

Snap Scale Settings dialog

The **Snap Scale Settings** dialog appears when you use the **Tracks > Snap to Scale > Scales > Snap Settings** command. Use this dialog to choose how you want SONAR to handle non-scale notes in the Piano Roll view when Snap to Scale is enabled.

The dialog has the following fields:

- **Adjust to Next, Higher Note.** If you choose this option, SONAR moves any non-scale note that you move to the next higher note in the selected scale.
- **Adjust to Previous, Lower Note.** If you choose this option, SONAR moves any non-scale note that you move to the previous, lower note in the selected scale.
- **Adjust to Nearest Note.** If you choose this option, SONAR moves any non-scale note that you move to the note that is closest in pitch in the selected scale.

Snap to Grid dialog

To open the **Snap to Grid** dialog box, click the drop-down arrow that is just to the right of the **Snap To Grid** button.

This dialog box lets you specify the resolution(s) of the snap to grid feature that you want events to “snap to.”

The resolution(s) determines how precisely event selections, movements, and changes to the Now Time can be. For example, when the Snap to Grid resolution is set to Musical Time with a duration of

Whole, a mouse click in the Time Ruler automatically “snaps” the Now Time to the nearest whole measure.

The following actions can be affected by the **Snap to Grid** dialog:

- Selecting the Now Time
- Making a time selection in the Time Ruler
- Dragging and dropping a clip
- Selecting partial clips
- Slip-editing

The snap grid in each view is independent. For example, you can enable the snap grid in the Track view without enabling it in the Piano Roll view, or Staff view. You can also enable the grid in several different views, with different grid intervals in each one. In the Track view, the **Snap to Grid** dialog has separate tabs for the Clips pane and the Inline Piano Roll view.

You can select **multiple resolution units**. For example, you can enable the Musical Time check box and select a unit of musical time, and at the same time enable the Absolute Time check box, and select a unit of absolute time. When you have multiple check boxes enabled, events snap to the first resolution unit that they find.

In the Track view, this dialog is *non-modal*, meaning that you can keep it open while you edit.

Clips Tab or PRV Mode Tab

These two tabs only appear if you open the **Snap to Grid** dialog in the Track view. Use the appropriate tab to set Snap to Grid options for either the Clips pane or the Inline Piano Roll view, respectively. The two tabs are independent of each other.

Musical Time

The **Musical Time** option sets the **Snap to Grid** dialog to a note duration. If the Mode is set to Move To, all commands that use the Snap to Grid resolution snap to the nearest selected duration.

In addition to choosing a standard note duration for the snap interval, you can also enter a number of clock ticks. For example, at the default timebase of 960 ticks per quarter note, a sixteenth note snap interval represents 240 ticks. If you change the timebase, the grid interval is updated automatically. In the preceding example, if you update the timebase to 480 PPQ, the snap interval becomes 120.

If the Mode is set to Move By, you move all events in time by the selected duration.

This option also applies to the Now Time and time selections in the Time Ruler.

Absolute Time

The **Absolute Time** option sets the Snap to Grid to an exact number of frames, seconds or samples. Use the second field to choose the units, and the first field to choose the number of units.

Landmarks

In this section, you can choose the following kinds of data to snap to:

- **Events.** An event is any MIDI or audio data.
- **Clips.** This option sets the Snap to Grid to clip boundaries.

- **Markers**
- **Audio Transients**

This option also applies to the Now Time and time selections in the Time Ruler.

Snap to Audio Zero Crossings

This option automatically snaps edited audio clips to the nearest zero crossing of the waveform, the point at which there is no volume, to minimize the glitches that can happen when waveforms are spliced together.

Mode:

The two modes apply to the Musical Time and Absolute Time options.

The following is a description of the two Snap to Grid modes:

- **Move To.** Snaps data **to** the nearest resolution unit.
- **Move By.** Moves data **by** a unit of resolution.

Magnetic Strength

Use these buttons to choose the strength of Magnetic snap. Magnetic snap means that when you're dragging the boundary of an object, you can move the boundary freely until the boundary gets within a certain number of ticks from the snap target. The closer the object gets to the snap target, the more strongly the object is pulled to the target. Note that if you are zoomed out a certain amount, the time boundary around the snap target will appear to be quite small, and you might think that the Snap Grid is not functioning. If this is the case, zoom in closer to enhance your editing experience. If you're dragging a whole clip, magnetic snap is not in effect.

Defining and Using the Snap Grid

SONAR Quick Start dialog

The SONAR **Quick Start** dialog box appears when you launch SONAR (unless you disable this option, see below). It allows you to open any of a long list of templates, and open recent projects and introductory help topics. You can open this dialog box whenever you want by using the **Help > Quick Start** command.

The SONAR **Quick Start** dialog box has the following fields:

Open a Project button

Clicking this button is the same as using the **File > Open** command. The **Open** dialog box appears, displaying the contents of your SONAR project folder. Select the project you want to open, and click **OK**.

Open a Recent Project button and drop-down menu

Click the arrow at the end of the drop-down menu to display a list of projects you opened recently. Choose the one you want to open, and click the button (it has a folder icon on it) to open it.

Create a New Project button

Clicking this button opens the **New Project File** dialog box, which displays a list of templates for new projects. Select the one you want to open, and click **OK**.

Online Videos and more

Click this link to view our tutorial videos online. An active Internet connection is needed in order to access this content.

Getting Started button

Clicking this button opens the Getting started help topic, which contains links that open tutorials and introductory help topics.

Show this at Startup check box

If you uncheck this check box, the SONAR **Quick Start** dialog box appears only when you use the **Help > Quick Start** command.

For more information, see:

Creating a new project File

Sort Tracks dialog

The **Tracks > Sort** command opens the **Sort Tracks** dialog box. This command lets you arrange tracks in order according to any of several criteria. You can sort in ascending or descending order.

There are several ways you can change the order of tracks in the Track view:

- Drag a track to a new position in the Track view (see below).
- Insert new, blank tracks between existing tracks (see below).
- Use the **Tracks > Sort** command to rearrange the tracks in order based on the track name, status, or other setting.

The **Sort Tracks** dialog box has the following fields:

Sort by

This field lets you choose what characteristic of the tracks you want to use to sort them by. Choose from these options:

- **Name.** Choosing this option causes SONAR to sort the tracks in alphabetical order, either A to Z, or Z to A, depending on whether you choose **Ascending** or **Descending** in the **Order** field.
- **Muted.** Choosing this option causes SONAR to put the muted tracks either first or last, depending on whether you choose **Ascending** or **Descending** in the **Order** field.
- **Archived.** Choosing this option causes SONAR to put the archived tracks either first or last, depending on whether you choose **Ascending** or **Descending** in the **Order** field.
- **Selected.** Choosing this option causes SONAR to put the selected tracks either first or last,

depending on whether you choose **Ascending** or **Descending** in the **Order** field.

- **Size.** Choosing this option causes SONAR to put the biggest tracks (tracks that contain the most events) either first or last, depending on whether you choose **Ascending** or **Descending** in the **Order** field.
- **Output.** Choosing this option causes SONAR sort the tracks by output.
- **Channel.** Choosing this option causes SONAR to sort the tracks by their MIDI channels, in either **Ascending** or **Descending** order.

Order

This field determines whether SONAR sorts the tracks by putting the tracks with higher numbered characteristics at the top or bottom of the Track window.

See:

To Sort the Tracks

See also:

To Drag a Track to a New Position

To Insert a Single Track

SoundFont Banks dialog

The **Options > SoundFonts** command opens the **SoundFont Banks** dialog box, which you use to load banks of SoundFonts patches into a SONAR project. SoundFonts are banks of sounds produced by Creative Labs that you can load into SONAR or other SoundFont-compatible sequencers, and control by using MIDI program change commands. To use SoundFonts in SONAR, you must have three things:

1. A Creative Labs SoundFont-compatible soundcard installed, such as the AWE 32 or 64, or SB Live
2. The SoundFont Manager software and sounds
3. Your SoundFont-compatible soundcard chosen as an Output in SONAR's **MIDI Devices** dialog box (**Options > MIDI Devices**)

   OR

- You can use SoundFonts without a SoundFont-compatible soundcard if you install the LiveSynth Pro software synthesizer that comes with SONAR.

When SONAR opens a .cwp or .mid file, it looks in the same folder for a .sf2 file with the same base name (the base name is the same as the project name. but without the extension on the end). If one exists, SONAR loads that .sf2 file into the project, and the sounds in that .sf2 file become available in that project as MIDI patches. Saving the project as a .cwp file (but not as a .mid file) also saves the attachments you make between the project and .sf2 files.

You can also manually attach a .sf2 file to a project by clicking the **Attach** button in the **SoundFont Banks** dialog box, and browsing to the .sf2 file you want to attach to the project. Manual attachment overrides base name attachment.

Note that bank 0 is reserved for the Standard GM bank and cannot be assigned.

The **SoundFonts Banks** dialog box has these fields

Banks window

This window lists all the SoundFont banks that are currently loaded into this project.

Attach button

Clicking this button opens the **SoundFont File** dialog box. Use this dialog box to browse to a .sf2 file that you want to attach to this project.

Warning: *After you attach a .sf2 file to a project, do not move that file without detaching it from the project first.*

Detach button

Use this button to detach a highlighted .sf2 file from a project.

Locations button

Use this button to tell SONAR where to look for a base name .sf2 file, if there isn't one in the project folder. This dialog box lets you type in one or more directories (multiple directories separated by semicolons).

SoundFont Locations

Enter a pathname or pathnames (separated by semicolons) in **SoundFont Locations** dialog.

Split Clips dialog

When you right-click one or more selected clips and choose **Split** from the pop-up menu, the **Split Clips** dialog box appears. Use this command to split one or more clips into smaller clips.

The **Split Clips** dialog box has the following fields:

Split At Time

Choosing this option splits the clip(s) at the location you fill in. By default, this filed lists the Now time, but you can choose any time you want.

Time Format. If you choose Split At Time, you can also select a time format for the **Split At Time** field from the four choices.

Split At Selection

Choosing this option splits the clip(s) at the boundaries of the selected area. If you're splitting a MIDI clip, the split will not split any notes, so the split may not happen exactly where your selection boundary is.

Split Repeatedly/Starting at Measure/And Again Every "N" Measures

Choosing this option creates split boundaries in the selected clip(s) starting at the location you choose in the **Starting at Measure** field, and again at every interval of measures that you choose in the **And Again Every "N" Measures** field.

Split at Each Marker Time

Choosing this option creates split boundaries in the selected clip(s) at each marker time.

Split When Silent For At Least "N" Measures

Choosing this option separates the selected clip(s) and removes empty space whenever the clips contain empty space that lasts a certain number of measures, the number of which you specify in the **"N"** field.

Use Nondestructive Cropping When Splitting MIDI Clips

If you check this option, SONAR hides any MIDI data (such as note durations) that overlap the clip boundary, without deleting any data. If you slip edit the new clip to expand the original boundary, SONAR uncovers the original data. If you don't check this option, SONAR deletes overlapping data when you split clips.

Note that the Undo and Redo commands work with all of these editing commands.

See also:

Splitting and Combining Clips

For step by step instructions:

To Split Clips into Smaller Clips

To Combine Clips

Staff View Layout dialog

The **Staff View Layout** dialog box appears when you click the **Staff View Layout** button in the **Staff view** toolbar or choose **Layout** from either the Staff pane or Fretboard right-click menus.

Use these fields in the **Staff View Layout** dialog box to control staff layout options:

Track

This field lists the tracks that the Staff view currently displays. Highlight the name of the track that you want to set display options for.

Display

The **Display** fields in the **Staff Layout View** dialog box enable you to choose a variety of display options for the Staff view:

- Whether you want rests to be beamed together with the notes that occur on the same beat (**Beam Rests** check box).
- Whether the staff view will display sustain pedal events (**Show Pedal Events** check box).
- Whether you want chord grids displayed above chord symbols (**Show Chord Grids** check box).
- What fonts you want for any text, track names, or numbers in the Staff view (**Set Font** pop-up menu).

Staff properties (clef, split point)

In the Staff properties section of the **Staff View Layout** dialog box, you can select the type of clef you want to display in the Staff view. If you select **Treble/Bass** the **Split** option becomes active, allowing you to set the boundary note between the treble and bass clefs

Tablature settings

The **Staff View Layout** dialog box creates tablature settings for a whole track at a time. To modify tablature for selected parts of a track, select part of a track and use the **Regenerate TAB** command.

In the **Staff View Layout** dialog box you can choose a preset style of tablature by choosing from the **Preset** pop-up menu, or you can define your own style by clicking the **Define** button in the **Staff View Layout** dialog box to open the **Tablature Settings** dialog box.

See also:

Staff View Layout dialog

The Staff View

Basic Musical Editing

Chords and Marks

Tablature Settings

Staff View Print Configure dialog

When you use the **File > Print Preview** command, the Print Preview window appears. In the Print Preview window is the **Configure** button. Click the **Configure** button to open the **Staff View Print Configure** dialog box, which has the **Rastral Size** field that you control rastral size with.

Rastral size is the vertical distance between the lines of each staff. Each rastral size has a number and is used by publishers for a specific genre of musical composition

To change the rastral size, pick a new rastral size from the drop-down menu and click **OK**.

For more information, see:

Step Record dialog

The **Transport > Step Record** command opens the **Step Record** dialog box. Step recording lets you specify step size and note duration so you can record difficult passages a step at a time. **Step Record always uses the Sound on Sound (blend) record mode**, regardless of the current record mode.

The **Step Record** dialog has an extra set of controls called Advanced mode that only appear when you click the **Adv.** button. The **Step Record** dialog has the following fields:

Step Size

- Click a note head to choose a step size for the next note or rest you want to enter.
- Click the dotted or double-dotted buttons to add a dot or double-dot to any step size.
- Click **N** to create a custom step size.
- Click the **Tuplet** check box, and enter values in the two adjacent number fields to create a tuplet step size

Duration

The duration value controls how much of a note's step size the note actually lasts.

- Click **Follow Step Size** to keep the duration values the same as the step size.
- If you don't check **Follow Step Size**, fill in a value in the **% of note value** field to set duration.
- If you don't check **Follow Step Size**, you can randomize the duration by the value you enter in the **Randomize By field** (Advanced mode only).

Destination Track

Choose the track that you want to add the note data to.

Note Properties (Advanced Mode Only)

If you don't check the Use Input check box for a particular note property, you can specify any or all of a note's **pitch**, **velocity**, and **channel** characteristics.

Navigation

- **Auto Advance.** If this option is checked, the insertion point moves ahead automatically when you release a note.
- **Link to Now Time (Advanced mode only).** If this option is checked, the insertion point duplicates the Now Time.
- **Delete on Back Step.** If this option is checked, a note or notes are deleted when you click the **Step Backward** button.
- **Offset (Advanced mode only).** You can enter a value in this field to enter notes at a constant

distance away from the insertion point. You can enter a positive (after the insertion point) or negative value (before the insertion point).

Insertion Point Field

This field lists the current insertion point in MBT format.

Scroll Bar

The scroll bar provides a visual representation of the insertion point's location. Drag the scroll bar to move the insertion point forward or backward.

Step/Beat/Measure Back/Forward Buttons

Click these buttons to move the insertion point one step, beat, or measure respectively back or forward. The **Beat** and **Measure** buttons appear in Advanced mode only.

Adv./Basic Button

Click the **Adv.** button to display the advanced options. Click the **Basic** button to display only the basic options.

Activate Step Record

Click this button to turn step recording on or off.

Pattern

See Step Pattern Recording.

See Also:

To Use Basic Step Recording

Step Recording

Step Size dialog

When you use the **Transport > Step Record** command, the **Step Record** dialog box appears, which contains two **Other** buttons. Clicking the one on the **Step Size** side of the dialog box opens the **Step Size** dialog box. In the **Step Size** field, enter the size of the note you want to enter in Ticks.

See also:

Step Recording

SurroundBridge Plug-in Linker

The SoundBridge Plugin Linker allows you to use stereo plug-ins in a surround bus that has more than two channels. The Plugin Linker creates multiple instances of the plug-in.

Unlink Controls

You can unlink a parameter in an instance of a plug-in by clicking the **Unlink Controls** button so that it turns red, making some adjustments to the parameters that you want to unlink, and then clicking the **Unlink Controls** button again so that it's not red.

Presets

Existing plug-in presets are available in the SoundBridge Plugin Linker. When you select a stereo preset, the settings apply to each instance of the plug-in. If you save a surround preset, it saves the settings in each instance as well as the channel configuration. Surround presets are only compatible with the current configuration.

Plug-in Instance Configuration

The Plug-in Instance Configuration has the following elements:

Plug-in #. The plug-in number (tabs from left to right).

Left Output. The surround output for the left channel of the plug-in instance. If there is only one output for an instance, the Center channel for example, it appears in the Left output column.

Right Output. The surround output for the right channel of the plug-in instance.

Controls Linked to Group. Use this group to unlink an entire instance by unchecking this option for that instance.

Enable. Acts as a bypass for that instance.

Unlinked Parameters

This field lists all the parameters that are unlinked.

For more information about the SoundBridge Plugin Linker, see The SurroundBridge.

Sysx Bank Name

This dialog box lets you specify the name of the bank you want.

Tablature Settings dialog

In the **Staff View Layout** dialog box you can choose a preset style of tablature by choosing from the **Preset** pop-up menu, or you can define your own style by clicking the **Define** button in the **Staff View Layout** dialog box to open the **Tablature Settings** dialog box.

Use the following fields in the **Tablature Settings** dialog box to configure TAB for a selected track:

Preset

Save your settings by typing a name into the **Preset** field at the top of the dialog box and clicking the disk icon next to it. You can remove presets from the list by clicking the **X** button next to the disk icon.

The next time you want to use these settings for a track, choose your Preset in the **Staff View Layout** dialog box from the **Presets** drop-down list.

Tablature

The Tablature tab has these fields:

- **Method.** Choose a tablature method from the **Method** drop-down list. There are three methods to determine how the TAB is displayed:
  - **Floating.** Analyzes all events in a track and attempts to optimize tablature with reference to open position
  - **Fixed.** This specifies where on the neck these notes should be played. When Fixed is selected, the **Finger span** and **Lowest fret** fields are used together to define the “box” where the notes are displayed. The Finger span parameter determines how many consecutive frets will be used to display the note. For example, if Finger span is set to 4, then SONAR will attempt to place all the notes within those 4 frets. The Lowest Fret then determines where on the fretboard will the notes be displayed within the Finger span. The red box in the fretboard display above the parameters changes to reflect the settings in these two parameters.
  - **MIDI Channel.** This uses the event’s MIDI channel to determine which string the note should be displayed on. This is useful for MIDI Guitarists who record parts in MONO mode, where each string transmits on a different MIDI channel. When MIDI Channel is selected, the user chooses which series of MIDI Channels SONAR receives on by typing a number into the **1st Channel** field (use values between 1 - 11). Selecting **1** will cause it to use MIDI channels 1 - 6, selecting 2, 2 - 7, and so on. Checking the **Skip Channel 10 (G50)** check box tells SONAR that your guitar is not transmitting on channel l0, so SONAR has to use other channels to display your data.
  - **Number of Frets.** The number in this field determines how many frets the instrument has that you want to generate a TAB for.
- **String Tuning.** Choose the instrument from the drop-down list and number of strings from the **Number of Strings** field.

  The open string pitches for the instrument you choose automatically appear in the string number fields at the bottom of the dialog box.

  Customize any of the open string pitches by using the **+** or **-** buttons on the **String Number** fields.

Fretboard

The Fretboard tab has these fields:

- **Texture.** Choose a texture from the drop-down list.
- **Orientation.** If you want to reverse the standard string orientation, click **Low String on Top (Mirror)**.

Both the **Staff View Layout** dialog box and the **Tablature Settings** dialog box create tablature settings for a whole track at a time. To modify tablature for selected parts of a track, select part of a track and use the **Regenerate TAB** command.

See Also:

The Fretboard

Quick TAB

Staff Pane Layout

The Staff View

Basic Musical Editing

Chords and Marks

Tablature

Tempo dialog

The **Insert > Tempo Change** command opens the **Tempo** dialog box. In the **Tempo** dialog box you can set a new Tempo at a specified point.

Use the following fields to insert a tempo change:

Tempo. Type a new tempo or use the **Click here to tap tempo button** to tap out a tempo. The **Tempo** field changes as the tapped tempo varies.

Change the Most Recent Tempo. Applies the tempo changes in the **Tempo** field to the most recent tempo.

Insert a New Tempo Starting at Time. This option applies the tempo from the **Tempo** field to a specific starting time

See also:

Using the Tempo Commands

Changing Tempos

Tip of the Day dialog

The **Tip of the Day** dialog box appears when you launch SONAR, unless you disable this option (see below). This dialog box displays a different tip for getting the most out of SONAR each time you launch SONAR.

The **Tip of the Day** dialog box has the following fields;

Tip window

The tip window displays the tip of the day; each time you open SONAR, the tip window displays a different tip.

Next Tip button

Click this button (or press ENTER if the button is highlighted) as many times as you like to display the next tip.

Show Tips on Startup

If you uncheck this check box, the **Tip of the Day** dialog box appears only when you use the **Help > Tip of the Day** command.

Toolbars dialog

The **Views > Toolbars** command lets you select which toolbars are displayed and also the style of display for the toolbars.

To display a toolbar, click the check box next to its name.

If a toolbar ends up completely off the screen, you can move it back to the screen by enabling the **Allow Wrap** check box, and then clicking the **Restore Down** button in the application's upper right corner.

Track Bank dialog

The **Tracks > Property > Bank** command opens the **Track Bank** dialog box, which allows you to choose a bank of MIDI patches for the highlighted track. The **Track Bank** dialog box has only the following field:

Bank

Fill in the number of the bank that you want SONAR to assign to the highlighted track.

See also:

Choosing the instrument sound (bank and patch)

Track Channel dialog

The **Tracks > Property > Channel** command opens the **Track Channel** dialog box. This command lets you specify a MIDI channel for the highlighted track. The **Track Channel** dialog box has only the following field:

Channel

Fill in the number of the MIDI channel you want the highlighted track to play back on.

See also:

Assigning a MIDI channel (Chn)

Track Inputs dialog

The **Tracks > Property > Inputs** command opens the **Track Inputs** dialog box. This command lets you specify inputs for all of your project's tracks for recording and MIDI echoing purposes. Use these fields in the dialog box to choose inputs for your tracks:

Track Column

Use the **Track** column to choose which track or tracks you want to choose an input for. Click the name of a track to select it or CTRL-click to select several at once. The **Input** control lists the currently assigned inputs for each track.

Source Column

This column lists the currently selected input sources for each track. You can change inputs by selecting one or more tracks (don't mix audio and MIDI tracks), and clicking either the **Audio Inputs** menu or the **MIDI Inputs** button to select inputs.

Audio Inputs drop-down menu

You can choose an input for one or more audio tracks by selecting them from the **Track** column, and then selecting the input you want from the **Audio Inputs** drop-down menu.

MIDI Inputs button

You can choose an input for one or more MIDI tracks by selecting them from the **Track** column, and then selecting the input you want by clicking the **MIDI Inputs** button.

When you finish choosing inputs for all your tracks, click **OK** to close the dialog box and change the inputs you specified.

See also:

Choosing an input

Changing track settings

Track Key+ dialog

The **Tracks > Property > Key+** command opens the **Track Key+** dialog box, which allows you to set the transposition value for the highlighted track. The **Track Key+** dialog box has only the following field:

Amount

Fill in the number of half-steps that you want SONAR to transpose the track. Positive numbers transpose the track up; negative numbers do the opposite.

See also:

Adjusting the Key/transposing a track (Key+)

Track Manager dialog

Clicking the **Track Manager** button or pressing M in the Track view or Console view opens the **Track Manager** dialog box. Use this dialog box to hide or display the various track modules and buses in the view that you opened it from.

The **Track Manager** dialog box has the following fields and buttons:

- **Display window.** This window lists all the track and bus modules. A checkmark next to a module means it is visible.
- **Toggle buttons.** These buttons select all of the type of module that is listed on the button. You can check or uncheck all selected modules by clicking one of the selected modules.

See also:

To Choose the Tracks that are Displayed Using the Track Manager

Track Name dialog

The **Tracks > Property > Name** command opens the **Track Name** dialog box, which you use to give a highlighted track a name.

The **Track Name** dialog box has only the following field:

Name

Type the name that you want to give to the highlighted track, and click **OK**.

Track Outputs dialog

The **Tracks > Property > Outputs** command opens the **Track Output** dialog box, which you use to assign a highlighted track to a MIDI or audio output.

The **Track Output** dialog box has only the following fields:

MIDI Outputs

Choose the MIDI output that you want this track's data to be sent to. The **MIDI Outputs** field is grayed out if the selected track is an audio track.

Audio Outputs

Choose the audio output that you want this track's data to be sent to. The **Audio Outputs** field is grayed out if the selected track is a MIDI track.

See also:

Setting up output devices

Track Pan dialog

The **Tracks > Property > Pan** command opens the **Track Pan** dialog box.

Use this command to set the pan for the highlighted track(s).

Note: *Panning a stereo track away from the center has the effect of progressively cutting the volume of events in the track whose initial pan position is opposite of the direction the stereo track is being panned.*

The **Track Pan** dialog box has only the following field:

Pan

Enter a number between 0 (hard left) and 127 (hard right).

See also:

Adjusting volume and pan

Track Patch dialog

The **Tracks > Property > Patch** command opens the **Track Patch** dialog box, which allows you to choose a MIDI patch for the highlighted track. The **Track Patch** dialog box has only the following field:

Patch

Fill in the number of the patch that you want SONAR to assign to the highlighted track.

See also:

Choosing the instrument sound (bank and patch)

To choose patches with the Patch browser

Importing Instrument Definitions

Creating Instrument Definitions

Track Properties dialog

Right-clicking a track and choosing **Track Properties** from the pop-up menu opens the **Track Properties** dialog box. The **Track Properties** dialog box has the following fields:

Input

The Input for the track, used in recording

Output

This field lists the output device through which this track is played.

Channel (MIDI tracks only)

This field lists the MIDI channel through which the notes will be played.

Bank (MIDI tracks only)

This field lists the bank that the track's patch belongs to.

Bank Select Method (MIDI tracks only)

This field lists what controller format the bank change method for this track uses.

Patch (MIDI tracks only)

This field lists what patch this track uses.

Patch Browser button (MIDI tracks only)

This button opens the Patch Browser dialog dialog box.

Key +

This field lists the number of half-steps (up or down) that SONAR transposes the track as it plays.

Time +

This field lists the number of Ticks that the track's playback timing is offset from the other tracks.

Foreground Color

Click the **Choose Color** button in this section to change the color of the audio or MIDI data that are represented in this track's clips.

Background Color

Click the **Choose Color** button in this section to change the background color of this track's clips.

Default Track Color

When this check box is enabled, the track uses default background and foreground colors for this track's clips. You can choose which set of default colors the track uses by selecting a different option in the drop-down menu next to the check box.

Description

This field provides a place that you can enter a text description of the track, for future reference.

Instruments button

This button opens the Assign Instruments dialog dialog box.

See also:

Changing track settings

Choosing an input

Track Template Import Options dialog

The **Insert > Insert From Track Template > Import Filter** command opens the **Track Template Import Options** dialog, which allows you to choose what track or bus properties you want to import in your template. The **Track Template Import Options** dialog has the following fields:

Tracks

- **Tracks.** Check this box if you want to import tracks.
- **Track colors.** Check this box if you want to the color arrangement that the imported tracks use.
- **Track folders.** Check this box if you want to import track folders.
  - **Use existing Track Folder if name matches.** Check this box if you want to import tracks into a track folder that has the same name as the track folder in your template.

Buses

- **Buses.** Check this box if you want to import buses.
  - **Use existing Bus if match on Bus Name.** Check this option if you want to import bus properties to buses that have the same names as buses in your template.

General

- **Mute, Solo, and Arm states; Effects; Sends; Synths.** Check this box if you want to import these characteristics.

Track Time+ dialog

The **Tracks > Property > Time+** command opens the **Track Time+** dialog box, which allows you to set the amount that SONAR advances or delays the start time for all events in the highlighted track. The **Track Time+** dialog box has only the following field:

Amount

This field adjusts the start time for an event in two ways. If you click in the field and adjust the value using the **+/-** buttons, the start time for the event is adjusted by ticks. If you enter a start time using your keyboard, it adjusts the start time by measures.

See also:

Adjusting the time alignment of a MIDI track (Time+)

Track Vel+ dialog

The **Tracks > Property > Vel+** command opens the **Track Vel+** dialog box, which allows you to set the amount that SONAR adjusts the velocity for all events in the highlighted track. The **Track Vel+** dialog box has only the following field:

Amount

Fill in the number of velocity units that you want SONAR to add to or subtract from all events in the highlighted track. Use numbers between -127 and 127.

See also:

Adjusting the note velocity (Vel+)

Track Volume dialog

The **Tracks > Property > Volume** command opens the Track Volume dialog box. This command lets you specify the starting volume level for the track, ranging from 0 (silent) to 127 (maximum volume).

The Volume setting controls the initial volume of a track during playback. Every time you start playback, SONAR sets the volume to this initial level.

In some projects you want the volume of a track to change while playback is in progress. You can accomplish this using the Track, Console, Piano Roll, or Event views.

Note: *Not all keyboards and synthesizers respond to volume change messages. Check the manual that came with your keyboard or synthesizer for more information.*

See Also:

Adjusting volume and pan

Transpose dialog

The **Process > Transpose** command opens the **Transpose** dialog box, which allows you to transpose the pitches of MIDI and audio clips up or down by a fixed number of half-steps. It does so by changing the MIDI key numbers of note events and by pitch-shifting audio clips. Simply enter the number of half-steps in the **Amount** field of the **Transpose** dialog box; a negative number to transpose down, a positive number to transpose up. See To Transpose Selected Events.

SONAR can also perform diatonic transposition, which shifts all the notes up and down the major scale of the current signature by the designated number of steps. For instance, if you specify an amount of +1 and the key signature is C-major, a C becomes a D (up a whole step), an E becomes an F (up a half step), and so on. Diatonic transposition assures you that the transposed notes fit with the original key signature.

As an option, you can choose to transpose selected audio clips along with any selected MIDI clips. SONAR uses pitch-shifting to perform the transposition. You can transpose audio only a single octave in either direction (-12 to +12), and you cannot transpose audio when you are using diatonic transposition.

The **Transpose** dialog box contains the following fields:

Amount

The number in this field tells SONAR how many half-steps, up or down (depending on whether you enter a positive or negative number), to transpose the selected data, unless you check the Diatonic Math check box (see below). If you check Diatonic Math, the number in this field tells SONAR how many scale steps to transpose the selected data.

Diatonic Math

If you check this check box. SONAR transposes the selected data up or down, but only within the current key signature.

Transpose Audio

If you check this check box. SONAR transposes any selected audio data up or down, but only by half-steps, not diatonically.

- **Type.** Choose the type of audio data you're transposing (this is a SONAR Producer feature only).
- **Formant scaling.** (this is a SONAR Producer feature only) possible values range from -2.000 to 2.000 octaves. Formants give a voice its characteristic sound. You can use the Formant Scaling value to offset the pitch transposition you're applying. For example, if you're transposing the pitch down, you can raise the formant to try and maintain the characteristics of the sound.

See also:

To Transpose Selected Events

Undo History dialog

The **Edit > History** command opens the **Undo History** dialog box, which displays a history of your editing actions (the command is greyed-out if you made no edits). You can set how many editing actions you want the **Undo History** dialog box to store by changing the number in the **Maximum Undo Steps** field. The default value is **128**.

Use the **Undo History** dialog box to jump to a previous time in the history of the project. Then you can continue from that point, causing all the edits you did after that action to disappear.

The **Undo History** dialog box has the following fields:

History list

The **History** list displays a list of all the editing actions you did to this project, up to the number of actions in the **Maximum Undo Steps** field.

To revert to an earlier version of a project, highlight the entry in the History list that represents the point to which you'd like to return, and click **OK**. SONAR performs the necessary undo or redo actions to take you to that point. Once you make any new edits, SONAR clears the History list of all the edits you made after the edit you jumped back to. Then, as you do further work, the History list grows again. Any edits that happened after the edit you jumped back to remain on the list.

Clear button

You can click the **Clear** button in the **Undo History** dialog box to erase the undo history for the current project and free up some memory. If SONAR is low on memory, it may offer to erase the **History** list.

Maximum Undo Levels

This field lists the number of previous edits that SONAR stores. The default value is 128. You can enter a smaller number to reduce the memory required.

See also:

Undo, Redo, and the Undo History

Unlink Clips dialog

When you right-click a selected group of two or more linked clips and choose **Unlink** from the pop-up menu, the **Unlink Clips** dialog box appears.

This command lets you specify when unlinking selected linked clips whether to form a new, different linked group or to make the clips completely independent.

See also:

Splitting and Combining Clips

Moving and Copying Clips

Unpack Bundle dialog

The **Unpack Bundle** dialog allows you specify the folder where you want to store the unpacked project and the folder where you want to store the project's audio data. This dialog only appears if you have the **Use per-project audio folders** option selected in the **Global Options** dialog.

Project Name

Enter a file name for your project. The default name is the same as the bundle filename but with the .cwp extension.

Location

Select a folder in which your project file is saved.

Audio Path

Select a folder in which your project's audio data is stored.

Store Project Audio in its own Folder

Check this option to use per-project audio. If you uncheck this option, the project audio is stored in the default audio data folder.

Create One File per Clip

Check this option to create a separate wave file for each clip in your project. If you uncheck this option, all audio is stored in two wave files, a mono file with all the project's mono audio, and a stereo file with all the projects stereo audio.

Unpack OMF dialog

The **Unpack OMF** dialog appears when you open an OMF file.

Note: *When you import an OMF that uses embedded media, SONAR can determine the bit depth and sample rate of the embedded media, and it will set those fields as the default values for OMF import. If the OMF is using externally linked media, SONAR will not be able to determine the sample rate of the media and will default to a 44,100 sample rate. In this case it is desirable to know the sample rate of the original material so the import OMF settings can be set to avoid resampling the media, if resampling is not desired.*

Select from the following unpack options:

Sample Rate

This field displays the sample rate that the imported audio uses if you're using embedded media; if you're using externally linked media, this field defaults to **44,100**. You can change the sample rate by choosing one of the sample rates listed in the drop-down menu.

Bit Depth

This field displays the bit depth that the imported audio uses if you're using embedded media; if you're using externally linked media, this field defaults to the **Original** menu option in the drop-down menu, which leaves the bit depth of the imported audio in its original depth. You can change the bit depth during import by choosing one of the listed options.

Initial Tempo

Set the initial tempo of the file.

Store Project Audio in its own Folder

If you want to use a unique folder for this project's audio data, check this option and fill out the **Project Name**, **Location** and **Audio Path** fields. If you deselect this option, the project is saved with the same file name to the default directory using the default audio directory. The file's new extension is .cwp.

Project Name

The Project filename. This field is only active if you have checked the **Store Project Audio in its own Folder** option.

Location

The directory where you want to save the project. This field is only active if you have checked the **Store Project Audio in its own Folder** option.

Audio Path

The audio directory where you want to store the audio for the project. This field is only active if you have checked the **Store Project Audio in its own Folder** option.

Unreadable Files dialog

This dialog may appear when using the **Clean Audio Folder** command. This dialog lists any files on your system which have a Cakewalk file extension (.cwp, .cwt, .wrk, and .tpl), but cannot be read by SONAR. These files may be corrupt or they may not be SONAR files at all, if for instance you have another application on your system which saves files with the same extension.

Important: *If any of your projects appears in this dialog, do not proceed to delete any audio in the **Clean Audio Folder** dialog without first restoring these projects from a backup source such as a Bundle file (.cwb). If SONAR cannot read a project file, any audio associated with it will be listed in the **Clean Audio Folder** dialog.*

Video Export dialog

SONAR can combine an inserted video file with the audio tracks you record in a project to form a new AVI, Windows Media Video, or QuickTime file. You can also save to an external FireWire device. Choosing the **File > Export > Video** command opens the **Video Export** dialog box, which offers the following options:

- **Save in.** Choose the folder you want to store your new video file in.
- **File name.** Fill in a name for your new file.
- **Save As Type.** Choose Video for Windows (AVI), Windows Media Video, or QuickTime. If you have an external FireWire device connected, you can choose AVC Compliant Device, or whatever your device is named. See Exporting a project to a FireWire DV device for more information.
- Video Export Settings:
  - **Encoding Options button.** Clicking this button opens an encoding options dialog for the kind of file you chose in the **Save As Type** field.
  - **Audio Mixdown Options button.** Clicking this button opens the **Audio Mixdown Options** dialog, which allows you to choose mono, stereo, or multichannel export; what sound card driver you're using to export; and all the audio components from your project that you want to include in the exported mix.

Video Properties dialog

Right-clicking a video in the Video view and choosing **Video Properties** from the pop-up menu opens the **Video Properties** dialog box. This dialog box has three tabs—the **Video Settings tab**, the **Info tab**, and the **Render Quality tab**.

Video Settings tab

The Video Settings tab lets you set playback time options, and has the following fields:

- **Clip.** This field lists the name of the currently-loaded video file.
- **Start Time.** If you don't want the video to start playing until some later time in the audio project, fill in the time that you do want the video to start. For example, if you want the beginning of your video to start playing at measure 3 of your audio project, enter **3** in the **Start Time** field.
- **Trim-in Time.** If you don't want your video to start playing right at the beginning of the video file, enter the time in the video file (in SMPTE format) where you want the video to start playing. For example, if your video has 10 seconds of blank video at the front of the file, you can enter **00:00:10:00** into the **Trim-in Time** field, and SONAR skips the first 10 seconds of the video file and starts playing your video file at the 10 second mark in the video.
- **Trim-out Time.** If you have blank or unwanted video at the end of your video file, enter the time (in SMPTE format) where you want to stop playing the video.

Info tab

The Info tab displays various attributes of the inserted video, and also contains the **More** button, which displays a more extensive set of attributes.

Render Quality tab

The Render Quality tab lets you control how your video looks in SONAR. It doesn't affect the video that you eventually export, although you can experiment with different settings to get an idea of how your video looks at different sizes and with different frame rates.

The Render Quality tab has the following controls:

- **Preview check box.** Check this check box to cause the video in SONAR to display at a slightly lower quality: "preview" quality. This can cause slightly smoother playback.
- **Frame Rate (FPS).** Use this field to change the frame rate. Lower frame rates free some of your computer's resources for playing back music and other tasks.
- **Video Size, X and Y.** The **X** field sets the video's width, in pixels; the **Y** field sets height.
- **Restore Defaults.** Click this button to set the three previous fields (including **Preview**) back to their default values.

See also:

Video playback, import, and export

Widget Tab Manager

The **Widget Tab Manager** dialog appears when you right-click a tab in the Track view, and choose **Widget Tab Manager** from the pop-up menu.

Use the following fields to control which track or bus controls appear when you click a tab at the bottom of the Track pane:

Tab Name

Use this field to choose the tab that you want to configure, for all kinds of track and bus strips. You can also create a new tab by choosing the **<new>** option in the drop-down menu, and typing a name for the new tab.

Audio Strip

In this column, check off each control that you want to see on the tab that you chose in the **Tab Name** field for all audio tracks.

MIDI Strip

In this column, check off each control that you want to see on the tab that you chose in the **Tab Name** field for all MIDI tracks.

Bus Strip

In this column, check off each control that you want to see on the tab that you chose in the **Tab Name** field for all buses.

Surround Bus Strip

In this column, check off each control that you want to see on the tab that you chose in the **Tab Name** field for all surround buses.

Delete

Click this button to delete the tab that you chose in the **Tab Name** field.

New

Click this button to create a new tab with all check boxes enabled. You can name the new tab in the **Tab Name** field.

Restore Tab Defaults

Click this button to restore all tabs to factory defaults. This will delete any new tabs you have created.

Select All Widgets

Click this button to select all the check boxes in the **Strip** columns.

Window Layouts dialog

SONAR stores the layout of all of a project's views in the project file when you save the project. By default, SONAR restores the layout of all the views when you open the file.

In addition, you can save the current layout in a separate list--the global layout list. Once you have saved the layout in this list, you can apply it to any open project. The global layout list can contain as many layouts as you want. Layouts in the list can be updated, renamed, and deleted.

The **Views > Layouts** command opens the **Window Layouts** dialog box. Use the following fields to control your layouts:

Global window

This large window lists all your saved layouts.

Close Old Windows Before Loading New Ones

If you check this option, SONAR closes all the views of the current project before applying the layout. If you leave this option unchecked, existing views remain open, and additional views appear according to the settings in the layout.

Per-Song-File—When Opening a File, Load its Layout

In addition to global layouts, SONAR stores each project's layout. If you check the **When Opening a File, Load its Layout** option, SONAR arranges the project's views according to the stored layout when the project file opens. If you don't check this option, only the Track view (and File Info view, if applicable) appear when the project file opens.

Load button

Click this button to apply whatever layout is highlighted in the Global window to the current project.

Add button

Click this button to name and save the current layout.

Delete button

Click this button to delete whatever layout is highlighted in the Global window.

Rename button

Click this button to rename whatever layout is highlighted in the Global window.

Windows Media Format Encode Options dialog

You can create settings and a description for your Windows Media Advanced Streaming Format file in the **Microsoft Audio Encode Options** dialog box.

Note: *To create a surround encoded file you must export surround encoded buses.*

Title:

Enter the title of the file.

Author:

Enter the name of the author responsible for creating the file.

Rating:

This field only relates to exporting video, which you can't do from this dialog box.

Copyright:

Enter any copyright information for the file.

Description:

Enter a note about the file.

Variable Bit Rate

VBR encoding makes the quality of the encoded audio more consistent, but can make the resulting file size less predictable.

Codec

Select a codec from the drop-down list.

Format

Select a format from the drop-down list. The higher the kbps setting, the higher the quality of the file.

For more information, see:

Routing and Mixing Digital Audio

WMV Encoder Options dialog

Clicking the **Encoding Options** button in the **Video Export** dialog after you've selected **Windows Media Video** in the **Save As Type** field opens the **WMV Encoder Options** dialog.

This dialog has the following fields:

- **Profile.** This field has a list of common WMV video file formats. Selecting a profile tells the WMV encoder what quality of file to produce.
- **Profile info.** This field briefly explains the kind of video and audio file that the profile you selected will produce.
- **Title/Author/Rating/Copyright/Description.** Filling in these fields will fill in the information your file will generate when you open the file's **Properties** dialog from Windows Media Player.
- **Multipass.** If you're creating a Variable Bit Rate (VBS) video, the file quality will improve some if you tell the encoder to go through your source material twice (make two passes at it).

Windows Media Video (WMV) profiles

SONAR includes several profiles for exporting WMV files. You can author your own WMV profiles if you wish to use specific settings. To do so, you need to download and install the Windows Media Profile Editor, which is included with the Windows Media Encoder 9 Series.

Download from here:

www.microsoft.com/windows/windowsmedia/download

In **Select Download** choose **Windows Media Encoder**.

In **Select Version** choose **9 Series**.

The setup program will install the Windows Media Profile Editor utility.

If you author your own profiles (.prx files), they must be placed in the `\Documents and Settings\All Users\Application Data\Cakewalk\SONAR 8 Producer Edition\WMV Profiles` directory in order to be available in SONAR.

Note: *If you use SONAR Studio, substitute "Producer" with "Studio".*

Insert Send Assistant dialog

When you right-click an audio track or bus and choose **Insert Send > Insert Send Assistant** from the pop-up menu, the **Insert Send Assistant** dialog appears. This dialog lets you create effect buses and insert sends to new or existing buses.

The **Insert Send Assistant** dialog has the following options:

Send to Existing Bus. This option lets you assign a new send to an existing bus in the current project. Select the desired bus from the drop-down list.

The **Options** section is unavailable when **Send to Existing Bus** is selected.

New Stereo Bus. This option lets you assign a new send to a new bus. When selected, you can use the **Options** section to specify the bus name and other settings (see New stereo/surround bus options).

New Surround Bus. This option lets you assign a new send to a new surround bus. When selected, you can use the **Options** section to specify the surround bus name and other settings (see New stereo/surround bus options).

New stereo/surround bus options

When you select **New Stereo Bus** or **New Surround Bus**, the following settings can be configured in the **Options** section:

Bus Name. Specify the desired name for the new bus. This name will be shown in the Track view and Console view.

Patch Effect. Select the **Patch Effect** check box if you want to create an effect bus. When selected, click **Choose Effect** to choose the desired effect plug-in that will be patched in the new bus.

Choose Effect. This button is only available when **Patch Effect** is selected. Click the button to choose the desired effect plug-in to insert on the new bus. When an effect has been selected, the plug-in name is displayed on the button face.

Post Fader (best for effects). When **Post Fader** is selected, the send signal is taken from *after* the channel volume fader. As a result, the send level going to the bus changes when the channel fader changes. Select **Post Fader** if you want to create an effect bus. Doing so allows you to maintain a consistent balance between the “wet” and “dry” signals as you adjust the channel fader.

Pre Fader. When **Pre Fader** is selected, the send signal is taken from *before* the channel volume fader. As a result, the send level going to the bus does not change when the channel fader changes. **Pre Fader** is preferred when you want to create separate mixes, such as unique headphone mixes for different performers.

Show Effects. This option is only available when **Patch Effect** is selected. When **Show Effects** is selected, the chosen effect plug-in’s user interface (UI) appears when you click **OK** to close the **Insert Send Assistant** dialog.

Bus Output. Specify the desired output for the new bus. The drop-down list shows all available output destinations.

See:

To insert a send to an existing bus

To insert a send to a new stereo bus

To insert a send to a new surround bus

To insert a send to a new effect bus

To insert a send on multiple tracks simultaneously

Missing MIDI Ports dialog

If any assigned MIDI output devices are missing when you load a project, which is likely to happen if you transfer projects between different computers, the **Missing MIDI Ports** dialog appears.

The **Missing MIDI Ports** dialog lets you remap missing output ports to available output ports.

Note: *If you do not remap a missing device, the track’s Output control will display **MISSING: <name of missing device>**. If the missing device becomes available in the future, the track will automatically be assigned to the correct device.*

Silent Buses Detected dialog

When you load a project, SONAR checks to see if the exact same output ports are assigned as when the project was saved. SONAR’s port assignments can change if you load the project on a different hardware configuration or change driver models. If there is any discrepancy between the port assignments that were saved and the ports that are used in the current configuration, the ports are set to “None” and the **Silent Buses Detected** dialog displays all track and bus outputs from the current project that have been assigned to a silent output.

The **Silent Buses Detected** dialog also appears if any track or bus output is assigned to “None” as a result of changing the audio configuration.

Rename Cell dialog

When you right-click a cell in the Matrix view and choose **Rename Cell** from the pop-up menu, the **Rename Cell** dialog appears. This dialog lets you rename the cell.

See:

Matrix view

Adjust Velocity Multiplier dialog

When you right-click an audio track or bus and choose **Adjust Velocity Multiplier** from the pop-up menu, the **Adjust Velocity Multiplier** dialog appears. This dialog lets you set a level of velocity compression or expansion for all notes in a Step Sequencer row.

A **Velocity Multiplier** value below 1.00 is compression. A value above 1.00 is expansion.

See:

Step Sequencer View

Matrix Options dialog

When you click the **Options** button in the Matrix view, **Matrix Options** dialog appears. The following option is available:

- **Empty cells stop active cells when triggered.** This option determines how playing cells are affected when triggering an empty cell in the same row. If **Empty cells stop active cells when triggered** is disabled (default), triggering an empty cell has no effect on other cells. If **Empty cells stop active cells when triggered** is selected, triggering an empty cell in a row will force the row to stop playing. Likewise, triggering a column that contains empty cells will force the corresponding row to stop playing. This option is disabeld by default.

See:

Matrix view

Quantize to AudioSnap Pool dialog

When you click the **Quantize to pool** command on the Transient tool pop-up menu, the **Quantize to AudioSnap Pool** dialog appears. This dialog lets you configure various settings that affect how audio beats are quantized to the Pool. The options are as follows:

- **Max Distance From Pool.** The value in this menu determines which notes are affected by the **Quantize to Pool** command. For example, if you choose **Quarter** in the menu, notes that are farther than a quarter note from a Pool line are not quantized.
- **Quantize Window.** This slider fine tunes the value in the **Max Distance From Pool** menu. A window of **100 percent** includes all markers that lie within the **Max Distance From Pool** value.
- **Quantize Strength.** This slider controls quantize strength, which determines how closely the selected notes move to the Pool markers.

See:

AudioSnap

Quantizing audio

View Reference

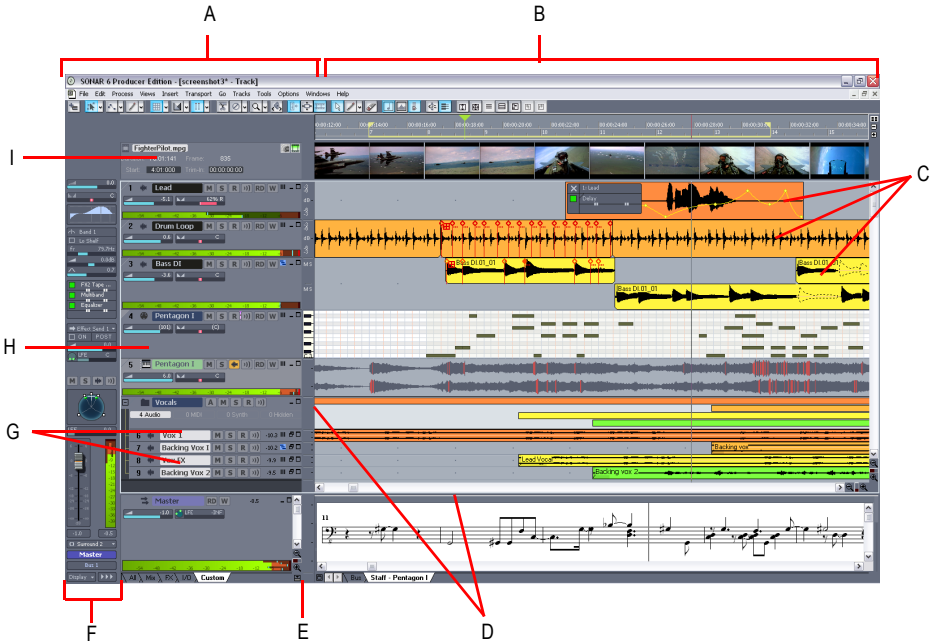
Track View
Console View
Loop Construction view
Media Browser View
Matrix view
Piano Roll View
Step Sequencer View
Event List View
Staff View
Big Time View
Lyrics view
Video View
Tempo View
Meter/Key View
Markers View
SYSX View
Synth Rack View
Navigator View
Play List View

Track View

The **Track view** is always visible. It is the main window that you use to create, display, and work with a project. When you open a project file, the Track view is displayed for the project. Closing the Track view closes the project.

The Track view is divided into several sections: toolbars (at the top), the **Navigator pane**, the **Video Thumbnails pane**, the **Track pane,** the **Clips pane,** and the **Bus pane**. You can change the size of the panes by dragging the vertical or horizontal splitter bars that separate the them.

Figure 266. *The Track view*



A. *The Track Pane* ***B.*** *The Clips Pane* ***C.*** *Clips* ***D.*** *Splitter bars* ***E.*** *Show/hide bus pane* ***F.*** *Track/Bus Inspector* ***G.*** *Minimized tracks* ***H.*** *Expanded track* ***I.*** *The Video Thumbnails Pane*

You can automate most of the controls in the Track view by recording fader movements, drawing envelopes, and creating snapshots.

In addition, all of the current track's controls, plus a few that are only available in the Console view, are contained in the **Track Inspector**, which is an expanded version of the current track's controls located on the far left side of the Track view. You can hide or show the Track Inspector by pressing **i** on your keyboard.

Track View Toolbar

The **Track view** toolbar gives you quick access to Track view display options and allows you to move between the different editing modes. The following table gives a description of each of the **Track view** toolbar controls:

Control	Name	Description
	Insert new track(s) or bus(es)	Click this button to choose from a variety of insertion options. You can insert a single audio or MIDI track, multiple tracks, a track folder, a track template, or a single stereo or surround (SONAR Producer only) bus.
	Select tool	Enables clip selection and editing, including slip editing and editing fades and crossfades. Click the down arrow to display an options menu for either selecting or not selecting track envelopes when you select clips.
	Envelope tool	Disables non-envelope-related selections, making it easier to edit envelopes in the Clips pane. Click the down arrow on the right side of the **Envelope** combo button to see the display options menu for the envelopes.
	Envelope Draw tool	Allows you to draw both freehand and preset shapes on an existing envelope.
	Snap to Grid button	Click to turn on/off the **Snap to Grid** option. Click the down arrow to open a menu of **Snap to Grid** options.
	Automatic Crossfades button	Click to turn on/off automatic crossfades. Click the down arrow to select crossfade options. For more information about automatic crossfades, see “Fades and Crossfades” on page 349.
	Show/Hide Meters button	Click to show or hide all meters in the Track view. Click the down arrow to display a menu with options for showing or hiding specific meter types. Set options for the display of each meter type in the appropriate submenu. For more about these options, see “Changing the Meters’ Display” on page 611.
	Split tool	Enables you to split a clip into separate clips. You can click on a clip once to create a single split, or click and drag over a section of a clip to create two splits. The Split tool follows the current Snap to Grid settings.
	Mute tool	Click the Mute tool to enable individual clip muting and unmuting. Set options for this tool by clicking the small down arrow to the right of the button. For more information, see “Clip Muting and Isolating (Clip Soloing)” on page 329.

Table 233.

Control	Name	Description
	Zoom tool	Use the Zoom tool to zoom in on a clip or clips in the Tracks pane. With the Zoom tool selected, drag around the clip or clips you want to zoom in on.
	Scrub tool	Enables scrubbing in the Clips pane. For more information about scrubbing, see “Scrubbing” on page 560.
	Show/Hide Inspector	Click this button to toggle on or off the display of the Track/Bus Inspector in the Track view. You can also toggle the display of the Track/Bus Inspector by pressing the **i** key on your keyboard.
	Show/Hide Navigator	Click this button to show or hide the Navigator pane in the Track view. The keyboard shortcut for hiding or showing the Navigator pane is D.
	Show/Hide Video	Click this button to toggle on or off the display of the Video Thumbnails track. The Video Thumbnails track can be displayed even if there is no video in your project. You can also show or hide the this track by pressing I on your keyboard.

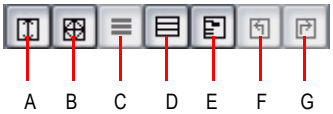
Table 233.

By default, the **Track view** toolbar now includes buttons from the Inline **Piano Roll** toolbar, and buttons for Zoom tool menu commands:

Figure 267. *Inline Piano Roll toolbar*

A. *PRV Select tool* ***B.*** *Draw tool* ***C.*** *Draw tool Auto Erase menu* ***D.*** *Erase tool* ***E.*** *Show/Hide Notes* ***F.*** *Show/Hide Controllers* ***G.*** *Show/hide velocity tails (on drum-mapped tacks)* ***H.*** *Fit Content* ***I.*** *PRV Mode*

Figure 268. *Zoom tool menu buttons*



A. *Fit Tracks to Window* ***B.*** *Fit Project to Window* ***C.*** *Hide Tracks Not In Selection* ***D.*** *Hide Tracks* ***E.*** *Track Manager* ***F.*** *Restores View to Previous State* ***G.*** *RestoreState of the View Prior to Undo*

You can hide or show any of the buttons in the **Track view** toolbar by right-clicking the toolbar and choosing **Customize** from the pop-up menu.

Track Pane

The Track pane lets you see and change the settings for each track. Selected tracks always appear in a different color. The controls for an individual track are grouped together to form that track's *track strip*.

To change the current track, move the highlight using the mouse or the keyboard as follows:

Key	What it does
UP ARROW and DOWN ARROW	Moves the selection to the adjacent track. If a control is selected, the selection moves to the same control in the adjacent track, or the next track of the same type if the control only applies to a specific track type (for example, the Patch control only applies to MIDI tracks)
LEFT ARROW and RIGHT ARROW	Moves to the previous or next control in the Track pane. The RIGHT ARROW key moves the selected control right until reaching the end of a line, and at the end of the line the selection moves to the left-most control of the line below. The LEFT ARROW key moves the selected control to the left until it reaches the beginning of a line, and then moves to the end of the line above.
PAGE DOWN	Displays the next page of tracks
PAGE UP	Displays the previous page of tracks
HOME	Moves the highlight to the first track in the project
END	Moves the highlight to the last track in the project

Table 234.

The Track pane contains meters for recording, playback, and bus levels. You can hide or show any or all of these meters, and choose many different options for the units and format of the data the meters display. See Metering.

Clips Pane

The Clips pane shows the clips in your project on a timeline that helps you visualize how your project is organized. Clips contain markings that indicate their contents. The Clips pane lets you select, move, and copy clips from place to place to change the arrangement of music and sound in your project.

The Track view makes it easy to select tracks, clips, and ranges of time in a project. These are the most common selection methods:

To	Do this
Select tracks	Click on the track number (the right side of the track number; the upper left corner of the track number is for grouping tracks), or drag over several track numbers
Select clips	Click on the clip, or drag a rectangle around several clips
Select time ranges	Drag in the time ruler, or click between two markers

Table 235.

As with most other Windows programs, you can also use the SHIFT-click and CTRL-click combinations when selecting tracks and clips. Holding the SHIFT key while you click adds tracks or clips to the current selection. Holding the CTRL key while you click lets you toggle the selection status of tracks or clips.

See:

Automation

Bus Pane

The Bus pane contains all of your project's buses. You display the Bus pane by clicking the **Show/Hide Buses** button , which is located at the bottom of the Track view.

You use the buses in the Bus pane to patch in effects, control output volume and pan, and group tracks into subgroups.

Each hardware out is represented by a main out. Each main out contains a left channel and a right channel, but only one volume fader. You control the left/right balance of each main out with the balance slider.

See:

Main Outs

To Patch a Track Through a Bus

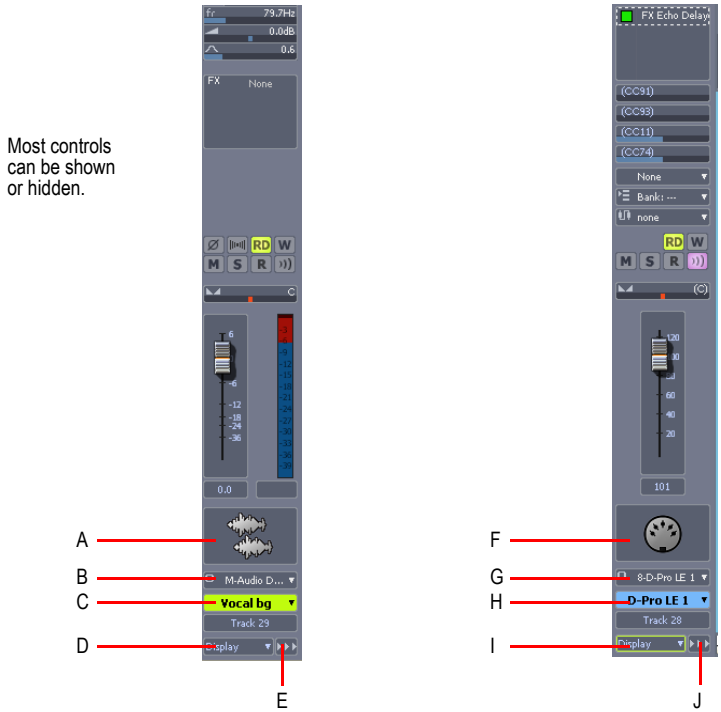
Track/Bus Inspector

The Track/Bus Inspector makes it easy to adjust the current track's (or bus's) controls, because it's a greatly expanded version of the current track's controls that is located on the left side of the Track pane.

In addition to the controls that a track or bus displays in the Track view, the Track/Bus Inspector also contains a built-in 4-band EQ. See the online help topic "Using the Per-track EQ" for more information.

The following graphic shows most of the Track/Bus Inspector's controls (there may not be room to display all of a track's controls on the Track/Bus Inspector, depending on the resolution of your monitor):

Track/Bus Inspector for an Audio Track **Track/Bus Inspector for a MIDI Track**



***A.** Audio icon **B.** Output routing **C.** Track name **D.** Display menu **E.** Module menu **F.** MIDI icon **G.** Output routing **H.** Track name **I.** Display menu **J.** Module menu*

You can hide or show any of the Track/Bus Inspector's controls, and use it to display the controls from any track or bus. The following table shows you how:

To do this	Do this
Hide or show the Track/Bus Inspector	Press **i** on your keyboard.
Display a certain track's or bus's controls in the Track/Bus Inspector	Click the track or bus to make it current, or choose the track or bus in the track/bus drop-down menu that's at the bottom of the Track/Bus Inspector.

Table 236.

To do this	Do this
Hide or show any of the Track/Bus Inspector's controls	Click the **Display** menu or **Module** menu, and choose options. **Note**: you can not display a MIDI track's Time + or Key + controls in the Track/Bus Inspector.
Reassign MIDI controller sliders in a MIDI Track's Fx bin	Right-click the slider you want to reassign and choose **Reassign Control** from the pop-up menu, choose the new parameter, and click **OK**.
Display the parameters of a different automatable effect	Click the name of the effect you want to select.
Assign a control to a group, arm it for automation, take an automation snapshot, or set up remote control	Right-click the control and choose options from the pop-up menu.
Bypass the FX bin	Right-click the FX bin and choose **Bypass Bin** from the pop-up menu.

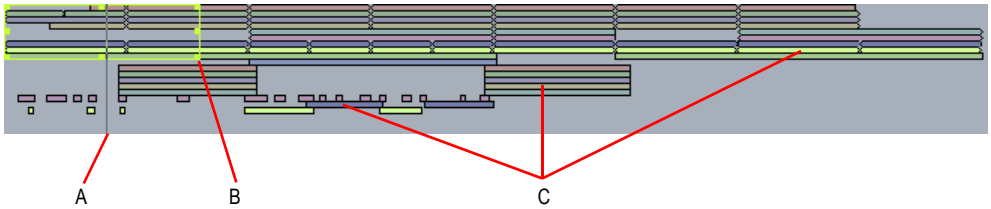
Table 236.

The Navigator Pane

The Navigator pane, located just above the Track pane, displays the whole length of your project so you can always see an overview of your song, and where the Now time is. The Navigator pane displays all of your project's tracks. You can show or hide the Navigator pane by clicking the **Show/hide Navigator pane** button that's in the **Track view** toolbar. You can drag the splitter bar between the Navigator pane and the Track pane to change its height.

The Navigator pane has a green rectangle in it that is an outline of what the Clips pane is currently displaying. If you drag the center of the rectangle around in the pane, it scrolls the Clips pane to the same view. You can drag any of the nodes on the rectangle to zoom the Clips pane in or out. If you click in the Navigator pane, the left border of the rectangle jumps to the spot you clicked, and scrolls the Clips pane to that spot also. If you hold down the CTRL key while you click, the Now time jumps to that spot.

Figure 269. *The Navigator pane*



A. *Now Time* ***B.*** *Drag node to zoom* ***C.*** *Clips*

You can do the following with the Navigator pane:

- Scroll the display of the Clips pane (drag the green rectangle, or click in the Navigator pane)
- Zoom in and out in the Clips pane (drag a node on the green rectangle)
- Change the Now time using the Navigator pane (CTRL-click in the Navigator pane)

SONAR and screen readers for vision impaired users

SONAR has a special Accessibility Mode which can be helpful for vision impaired users when working with screen readers (Window-Eyes, JAWS, etc.). The Accessibility Mode is enabled by adding a key to the Windows Registry (WARNING: only do this if you are comfortable with editing the Windows registry; you may wish to back up the registry first), and allows screen readers to receive various information from SONAR that may otherwise not be displayed on the screen (names, values, etc.).

The key is:

HKEY_CURRENT_USER\Software\Cakewalk Music Software\SONAR Producer\8.0

Note: *If* you are using *SONAR Studio, substitute "Producer" with "Studio".*

The Value is:

AccessibilityMode

It is a DWORD. Value can be 0, 1, 2 or 3:

0 - no accessibility (default)

1 - put the access string in the Track view's caption

2 - put the access string in the CWACCESS window

3 - put the access string in the CWACCESS window and make this window visible

SONAR Empty View

To start working on a new or pre-existing project, choose **File > New** (to start a new project) or **File > Open** (to open a project).

See:

To create a new project file

Piano Roll View

You can open the Piano Roll view by any of three methods:

- Selecting the track you want to edit and using the **Views > Piano Roll c**ommand

- Selecting the track you want to edit and clicking the **Piano Roll view** button in the **Views** toolbar
- Double-clicking a MIDI clip in the Clips pane (you can change this option with the **View Options** command that's listed in the Clips pane pop-up menu, which appears when you right-click in the Clips pane)

The Piano Roll view displays all MIDI notes and events from one or more tracks in either the Drum Grid pane or the Notes pane. The Notes pane is a grid format that looks much like a player piano roll. The Drum Grid pane is also laid out in a grid, but the sound of these drum notes are determined by the settings in the Drum Map pane. In both the Drum Grid pane and the Notes pane, notes are displayed as horizontal bars.

In the Notes pane, pitch runs from bottom to top, with the left vertical margin indicating the pitches as piano keys or note names. Time is displayed running left to right with vertical measure and beat boundaries.

In the Drum Grid pane, the drum sounds are mapped according to the current drum map in the Note Map pane. Like the Notes pane, time is displayed running left to right with vertical measure and beat boundaries.

The Piano Roll view makes it easy to add, edit, and delete MIDI events from a track.

The Piano Roll view consists of the Piano Roll View Toolbar, the Notes Pane, Note Map Pane, Drum Grid Pane, the Controller Pane, and the Track List pane.

For more information, see:

Opening the View

Displaying Notes and Controllers (Piano Roll View Only)

Adding and Editing Notes in the Piano Roll

Adding and Editing Controllers in the Piano Roll

Working with Multiple Tracks in the Piano Roll View

Piano Roll View Keyboard Shortcuts

Piano Roll View Toolbar

The following is a description of each of the tools and controls in the **Piano Roll view** toolbar:

Button	What it does
Select tool	Select notes or controller events
Draw tool Draw tool button in Auto-Erase mode	Enter, edit and move notes and controller events. Use the drop-down menu on the right side to enable Auto-Erase mode. When this mode is enabled, you can erase notes by clicking them or dragging through multiple notes. You can erase controller events by clicking each event.

Table 237.

Button	What it does
Erase button	When this button is enabled, you can erase notes or controller events by clicking them.
Pattern Brush tool	Click and drag to “paint” notes in either the Drum Grid pane or Notes pane. Click the drop-down arrow to show the drop-down menu of pattern options, velocity options, and polyphony options. The notes you enter using the Pattern Brush tool follow the parameters you set in the Pattern Brush drop-down menu, the Snap to Grid resolution, and the Note Duration in the **Piano Roll view** toolbar.
Scrub tool	Plays all displayed tracks as you drag the cursor forward or backward
Whole Note	Set the note duration for new notes to whole notes
Half Note	Set the note duration for new notes to half notes
Quarter Note	Set the note duration for new notes to quarter notes
Eighth Note	Set the note duration for new notes to eighth notes
16th Note	Set the note duration for new notes to Sixteenth notes
32nd Note	Set the note duration for new notes to 32nd notes
Dotted Note	Creates a dotted note of the note duration you have selected.
Triplet	Creates a triplet of the duration you have selected.
Snap to Grid button	When depressed, controls what size blocks of musical time you can select.
Pick Tracks button	The left side of the **Pick Tracks** combo button opens the **Pick Tracks** dialog, and the drop-down arrow on the right side contains the **Show Next Track** and **Show Previous Track** commands
Show/Hide Track Pane	Shows or hides the Track List pane on the right side of the Piano Roll view.
Use Controller Pane	Shows or hides the Controller pane. When you show the Controller pane, controller events appear in the Controller pane. When you hide the Controller pane, controller events appear in the Notes pane.
All Tracks button	Displays the MIDI data for every track currently listed in the Track List pane.
No Tracks button	Shows no data in the Notes pane.

Table 237.

Button	What it does
Invert Tracks	All hidden data is displayed and all displayed data is hidden.
Show Velocity Tails	Hides or shows velocity tails on individual notes in the Drum Editor pane of the Piano Roll view.
Show/Hide Grid	Hides or shows grid lines so you can see how your notes align with various subdivisions of the beat. Click the drop-down arrow to select a subdivision.
Show Durations	Changes the display of notes in the Drum Editor pane of the Piano Roll view to show graphically how long each note is, versus showing each note as an identical arrow shape.
Zoom Tool	Zooms to the area that you drag around.

Table 237.

Note Map Pane

The Note Map pane is where you map notes to specific drum sounds. The Note Map pane has the following columns:

- **Name.** A user-assigned name for the note. The Name can be edited by clicking on it and entering a new name.
- **In Note.** The recorded or original pitch of the note. The format can be either C0 through G10 or 0 through 127. There can be up to 128 entries in this column and each must be unique.
- **Out Note.** The Out Note column specifies the mapped pitch. The format can be either C0 through G10 or 0 through 127. There can be up to 128 entries in this column and each must be unique.
- **Mute.** Mutes the note.
- **Solo.** Solos the note.

Drum Grid Pane

In this pane you can add, edit, and delete drum notes in a track or tracks. You can edit controllers in this pane if you hide the Controller pane. Only MIDI tracks that are assigned to a drum map appear in the Drum Grid pane.

See:

Drum Maps and the Drum Grid Pane

Notes Pane

In this pane you can add, edit, and delete notes for a track or tracks. You can also edit controllers in this pane if you choose to hide the Controller pane.

See also:

Editing Notes with the Draw Tool and the Select Tool

Selecting Notes

Displaying Notes and Controllers in the Inline Piano Roll View

Adding and Editing Controllers in the Piano Roll

Controller pane

This pane displays controller events, which you can edit. You can show or hide this pane by clicking the **Use Controller pane** button that is in the **Piano Roll view** toolbar.

See also:

Adding and Editing Controllers in the Piano Roll

Track List pane

Click the **Show/Hide Track Pane** button to display the Track List pane. The Track List pane is home to a list of all tracks currently displayed in the Piano Roll view. The track numbers and names appear in the Track List pane. Click the button again to hide the Track List pane.

For more information, see The Piano Roll View.

See also:

Working with Multiple Tracks in the Piano Roll View

Step Sequencer View

The Step Sequencer makes it easy to compose patterns using a grid, where each cell (step) represents a note. You create patterns by clicking the cells in the grid to turn notes on or off, or by using step recording.

Many step sequencers use a Piano Roll grid-style interface. SONAR already has a very powerful Piano Roll view with similar MIDI editing functionality, so the purpose of the Step Sequencer is to provide a very different method for working with patterns.

The Step Sequencer is ideally suited for drum programming.

See:

Step sequencer interface

Working with rows

Working with steps

Working with Controller events

Working with patterns

Working with Step Sequencer clips

Keyboard shortcuts

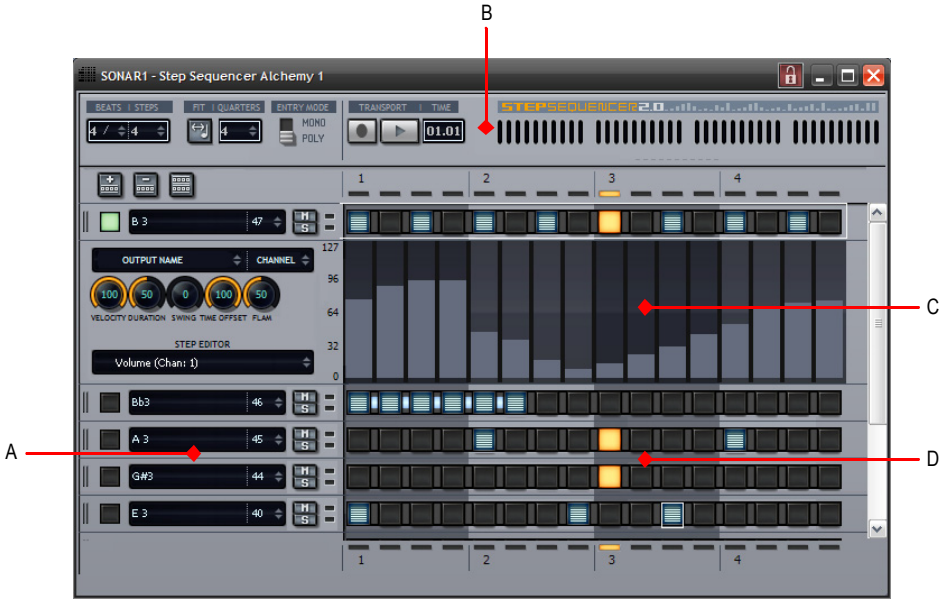
Using the Step sequencer with drum maps

Step sequencer interface

The Step Sequencer interface consists of four sections:

- **Toolbar.** The toolbar contains transport controls and lets you specify the pattern length and behavior when inputting new notes. For details, see Toolbar.
- **Rows.** Each row represents a unique pitch, and has its own independent group of controls. You can insert, delete and reorder rows. For details, see Rows and Working with rows.
- **Notes pane.** The Notes pane is where you turn notes on and off to create a pattern. For details, see Notes pane and Working with steps.
- **Controllers pane.** The Controllers pane is where you can create modulation events, such as Controller, Pitch Wheel, Channel Aftertouch, RPN and NRPN. For details, see Controllers pane and Working with Controller events.

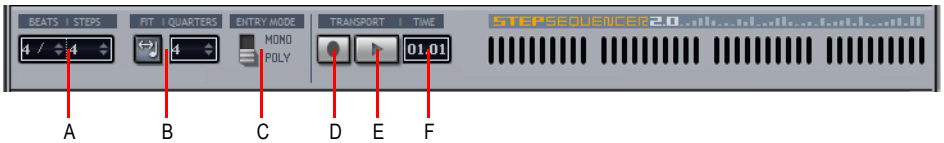
Figure 270. *Step sequencer interface*



A. *Rows* ***B.*** *Toolbar* ***C.*** *Controllers pane (controls on the left side)* ***D.*** *Notes pane*

Toolbar

Figure 271. *Step sequencer toolbar*



A. *Pattern Length (beats per measure and steps per beat)* ***B.*** *Fit to Quarters* ***C.*** *Entry mode (monophonic or polyphonic)* ***D.*** *Step Record* ***E.*** *Play* ***F.*** *Position indicator*

The **Step Sequencer** toolbar consists of the following controls:

- **Pattern Length.** The pattern length is determined by the following settings:
  - **Beats per Measure.** This setting specifies the number of beats per measure. The value range is 1-64 and the default value is 4 beats. Changes are undoable.
  - **Steps per Beat.** This setting specifies the number of steps per beat. The value range is 1-16

and the default value is 4 steps. Changes are undoable.

Note: *When changing the number of steps per beat, you can configure how existing notes are affected. By default, SONAR will preserve the original pattern whenever possible as you add or remove beats. Doing so ensures that notes retain their original position within each beat. If you prefer, you can instruct SONAR to instead append additional steps at the end of each beat. To toggle the behavior, click the* ***Options*** *button and select* ***Preserve Pattern for Step Sizes*** *on the pop-up menu (enabled by default).*

- **Fit to Quarters.** **Fit to Quarters** will force the pattern duration to fit the specified number of quarter notes.

Note: *When you adjust the* ***Fit to Quarters*** *value, the clip duration may change depending on whether or not the clip has been rolled out to expose additional pattern iterations:*

- ***If the clip has a single pattern iteration.*** *When you change the* ***Fit to Quarters*** *value (number of quarter notes), the clip duration will continue to equal the length of one pattern iteration. That is, the clip will not be rolled out.*
- ***If the clip has multiple pattern iterations.*** *When you change the* ***Fit to Quarters*** *value (number of quarter notes), the new clip duration will either equal the old clip duration or the length of the new pattern, whichever is greater.*

- **Entry Mode Toggle.** This button toggles between Monophonic mode and Polyphonic mode, which affects the behavior when entering new notes. In Monophonic mode, only one note (row) may be assigned for each step. Monophonic mode is useful for sequencing melodic lines. When you click in a column to enter a new note, any existing notes in the same column will be removed automatically in Monophonic mode. In Polyphonic mode, you can enter multiple notes in the same column.
- **Step Record.** The **Step Record** button toggles step recording on/off. See To step record notes from a MIDI device.
- **Play.** The **Play** button is used to start/stop the Step Sequencer when SONAR's main transport is idle.
- **Position Indicator.** The Position indicator shows the current measure and beat position in the step sequencer.

Below the main toolbar are three additional buttons:

- **Insert Row.** Click this button to insert a new row above the selected row. This command is undoable.
- **Delete Row.** Click this button to delete the selected row. This command is undoable.
- **Options.** Click this button to load and save patterns and set global options. The pop-up menu contains the following commands:
  - **Load Pattern.** Click to load a Pattern file (.spp) into the Step Sequencer.
  - **Save Pattern As.** Click to save the current pattern as a Pattern file (.spp).
  - **Clear Pattern.** Click to clear all steps in the current pattern.

- **Use Fixed/Default Velocity for Step Recording.** This option lets you specify whether step recording should use the recorded velocity or a fixed velocity value for new notes. For information about setting a fixed velocity, see To specify the default velocity value for new notes.
- **Preserve Pattern for Step Size.** This option lets you specify how existing notes are affected when changing **Steps per Beat** value in the toolbar. When **Preserve Pattern for Step Size** is enabled, the original pattern is preserved whenever possible as you add or remove beats. Doing so ensures that notes retain their original position within each beat. When disabled, additional steps will instead be appended at the end of each beat.
- **Trigger Note on Click.** Enable this option is you want to automatically audition a note when clicking on a step.
- **Set Default Velocity for Steps.** Lets you specify the default velocity value that is assigned to new notes that are enabled in the Step Sequencer. The setting is global, which means it applies to all step sequencer clips and projects. The default velocity value is 100.

See:

Rows

Notes pane

Controllers pane

Step sequencer interface

Working with rows

Working with steps

Working with Controller events

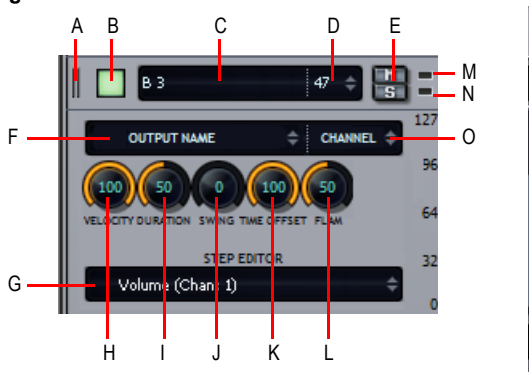
Working with patterns

Working with Step Sequencer clips

Keyboard shortcuts

Rows

Figure 272. *Per-row controls*



A. *Drag to reorder rows* ***B.*** *Select row (and show Controllers pane)* ***C.*** *Note name (click to audition pitch)* ***D.*** *Note number* ***E.*** *Mute and Solo* ***F.*** *Output* ***G.*** *Step Editor parameter (Event Type picker)* ***H.*** *Velocity* ***I.*** *Duration* ***J.*** *Swing* ***K.*** *Time offset* ***L.*** *Flam* ***M.*** *Incoming MIDI activity indicator* ***N.*** *Shared MIDI channel indicator* ***O.*** *Output channel*

Each row represents a specific pitch. Similar to the Drum Editor in the Piano Roll view (in some ways, you can think of a row as a different way of looking at the Drum Map Manager dialog), the controls for each row are located at the left side of the row.

You can insert, delete and reorder rows. The current row is outlined to indicate which row has focus.

To expose all controls, click a row's **Select** button. Each row has the following controls:

- **Select.** Use this button to expose advanced parameters and select the row or rows you want to edit in the Controllers pane. If multiple rows are selected, the Controllers pane is displayed below the top-most selected row. The Controllers pane is hidden if no rows are selected. See To select rows, To edit controller events on a single row and To edit controller events on multiple rows simultaneously.
- **Note Name.** This control shows the name of the note to which the row is mapped. Click the note name to audition the pitch. To rename the note, right-click the row and select **Rename Note** from the pop-up menu.
- **Note Number.** Use this control to specify the row's input note.
- **Mute.** This button mutes the row/note/pitch.
- **Solo.** This button solos the row/note/pitch.
- **Incoming MIDI activity indicator.** This indicator lights up if the row is receiving MIDI input.
- **Shared MIDI channel indicator.** This indicator lights up if a selected row shares the same MIDI channel as any other row. This is a convenient reminder that any controller events you insert in the row will also affect all other rows that share the same MIDI channel.
- **Output.** Use this control to assign all selected rows to any available software instrument or drum map. You can also access the **Map Properties** dialog from the drop-down menu. By default, each row is assigned to the track's output. If you assign different rows to different outputs, the step sequencer will automatically assign the rows to a new drum map (see Using the Step sequencer with drum maps).

- **Channel.** Use this control to specify the output channel for all selected rows.
- **Velocity.** Use this control to apply a velocity offset to a pitch. The value range is -127 to +127 and the default value is 0.
- **Duration.** The Duration knob controls how long each note is held. The value range is 0 to 100% and the default value is 100% (hold each note for its full duration).
- **Swing.** The Swing knob controls the amount of swing that is applied to the sequence. The value range is 0 to 100% and the default value is 50% (no swing).

The default swing value of 50% means that the beats are spaced evenly. A value of 66% means that the time between the first and second beats is twice as long as the time between the second and third beats.

- **Time offset.** This knob lets you apply a time offset to all steps in a row. This is very useful for fine-tuning the rhythm of a pattern. The value range is -50% to 50% and the default value is 50% (no swing).
- **Flam.** This knob lets you adjust the timing of any flammed notes. A flam is a quiet “grace” note that is added to the beginning of a louder “primary” note, resulting in a fuller sounding note when played almost simultaneously. The value range is -50% to 50%. With a value of 50%, the flam is hit exactly in the middle of the step. See To add/remove a flam.

Row context menu

You can right-click any row to access the following commands:

- **Insert Row.** Click to insert a new row. For details, see To insert a row.
- **Delete Row.** Click to delete a row. For details, see To delete a row.
- **Cut Row Steps.** Click to cut a row’s steps. The cut steps are placed on the Clipboard and can be pasted into another row. For details, see To cut/copy/paste all notes in a row.
- **Copy Row Steps.** Click to copy a row’s steps. The copied steps are placed on the Clipboard and can be pasted into another row. For details, see To cut/copy/paste all notes in a row.
- **Paste Row Steps.** Click to paste the Clipboard contents to a row. For details, see To cut/copy/paste all notes in a row.
- **Shift Steps Forward.** Click to move all notes in a row to the right by one step. For details, see To shift all notes in a row to the left or right.
- **Shift Steps Backward.** Click to move all notes in a row to the left by one step. For details, see To shift all notes in a row to the left or right.
- **Velocity Multiplier.** This command lets you specify a level of compression or expansion for a pitch. The value range is 0.10 - 2.00 and the default value is 1.00 (no compression or expansion). A value below 1.00 is compression and a value above 1.00 is expansion. For details, see To compress or expand all note velocities in a row.
- **Rename Row.** This command lets you rename a row.
- **Fill Every > 2-6.** This command lets you automatically insert notes every, 2, 3, 4, 5, or 6 steps. For details, see To automatically enable notes every “n” steps.

See:

Working with rows

Toolbar

Notes pane

Controllers pane

Step sequencer interface

Working with rows

Working with steps

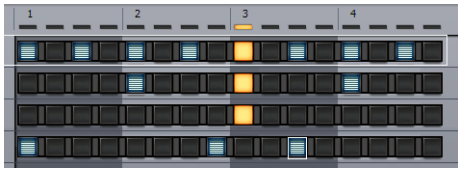
Working with Controller events

Working with patterns

Working with Step Sequencer clips

Keyboard shortcuts

Notes pane



The Notes pane consists of the following controls:

Rows. Each row represents a specific pitch. Similar to the Drum Editor in the Piano Roll view (in some ways, you can think of a row as a different way of looking at the Drum Map Manager dialog), the controls for each row are located at the left side of the row and has the following controls:

- **Note Cells (steps).** Notes are enabled by clicking in a cell and disabled by right-clicking. Active steps are highlighted during playback. For more information about editing steps, see Working with steps.
- **Beat Counter.** The Beat Counter is displayed above the step grid and each “light” in the counter represents a step. Each beat is displayed in an alternate color and the current step is highlighted during playback.
- **Scroll Bars.** Horizontal and vertical scroll bars make it easy to navigate around a sequence that contains many rows or steps.

See:

Working with steps

Toolbar

Rows

Controllers pane

Step sequencer interface

Working with rows

Working with steps

Working with Controller events

Working with patterns

Working with Step Sequencer clips

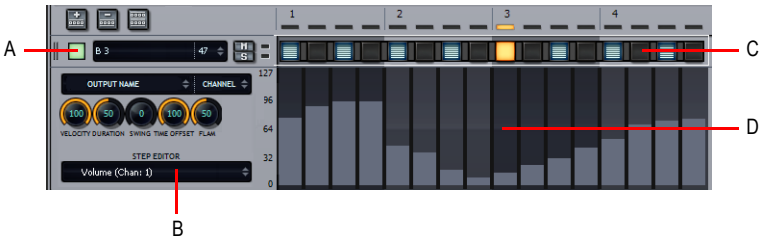
Keyboard shortcuts

Controllers pane

The Controllers pane in the Step Sequencer is similar to the Controllers pane in the Piano Roll view and allows you to include Controller, Pitch Wheel, Channel Aftertouch, RPN and NRPN events in your sequences. You can also edit velocity values in the Controllers pane.

To display the Controllers pane, click a row's **Select** button. Any edits performed in the Controllers pane apply to all selected rows.

For more information about working with controller events, see Working with Controller events and "Adding and Editing Controllers in the Piano Roll" on page 466.



***A.** Click a row's **Select** button to show the Controllers pane below the row **B.** Select the controller type you want to edit in the Controllers pane **C.** Note cells **D.** Controllers pane*

See:

Working with Controller events

Toolbar

Rows

Notes pane

Step sequencer interface

Working with rows
Working with steps
Working with Controller events
Working with patterns
Working with Step Sequencer clips
Keyboard shortcuts

Keyboard shortcuts

You can use the keyboard to navigate around the Step Sequencer interface and adjust settings. A focus rectangle indicates the step/control that is selected.

Action	Key
Open the Step Sequencer View	ALT+SHIFT+5
Insert a new row above the selected row	INSERT
Delete the active row	DELETE
Move focus to the previous control	LEFT ARROW
Move focus to the next control	RIGHT ARROW
When there are multiple strips, move focus to the same control on the previous row	UP ARROW
When there are multiple strips, move focus to the same control on the next row	DOWN ARROW
When focus is on a control in the steps pane, move focus to the strips pane	CTRL+LEFT ARROW
When focus is on a control in the strips pane, move focus to the steps pane	CTRL+RIGHT ARROW
When focus is either on the steps or strips pane, move focus to the toolbar	CTRL+UP ARROW
When focus is on the toolbar, move focus to the strips pane	CTRL+DOWN ARROW
When focus is on steps, toggle step or tie on/off; for buttons, turn on/off	ENTER
When focus is on a step, allow velocity adjustment	SHIFT+ENTER
For spinner controls, increase/decrease value; fine adjust for knobs	+ / - (PLUS and MINUS)
Coarse adjust for knobs	[/] (square brackets)
Toggles the **Audition** (Play) button for the view	CTRL+SHIFT+SPACEBAR

Table 238.

Action	Key
When focus is on the steps pane, move focus to the next enabled note on the same row	TAB
When focus is on the steps pane, move focus to the previous enabled note on the same row	SHIFT+TAB
Shift the active row's steps by 1 step and wrap first step to the end	ALT+LEFT ARROW
Shift the active row's steps by 1 step and wrap the last step to the beginning	ALT+RIGHT ARROW
Load a pattern	CTRL+ALT+L
Save the current pattern	CTRL+ALT+S
Enable/disable MIDI step recording	CTRL+R
Go to previous step when step recording	COMMA (,)
Go to next step when step recording	PERIOD (.)

Table 238.

Note: *You can also use a mouse wheel to adjust the value of the control that has focus. When adjusting note velocities, hold down the SHIFT key for fine control.*

If a knob has focus, you can press ENTER or F2 and type the desired value in an edit box.

See:

Step sequencer interface

Working with rows

Working with steps

Working with Controller events

Working with patterns

Working with Step Sequencer clips

Keyboard shortcuts

Using the Step Sequencer

To open the Step Sequencer

1. Do *one* of the following:

- **To edit an existing pattern.** Select the Step Sequencer clip that you wish to edit in the Step

Sequencer.

- **To create a new pattern.** Click the MIDI track in which you want to create the new pattern. The track then becomes the active track. Make sure that no MIDI clips are selected.

2. Do *one* of the following:

- Select **Views > Step Sequencer**.
- Press ALT+SHIFT+5.

The Step Sequencer window appears.

Note 1: *You can also open an existing pattern in the Step Sequencer by double-clicking an existing Step Sequencer clip.*

Note 2: *The **Views > Step Sequencer** command is disabled if multiple Step Sequencer clips are selected.*

See:

Working with rows

Working with steps

Working with Controller events

Working with patterns

Working with Step Sequencer clips

Keyboard shortcuts

Working with rows

To insert a row

To delete a row

To reorder a row

To select rows

To edit controller events on a single row

To edit controller events on multiple rows simultaneously

To insert a row

Do *one* of the following:

- Click the **Insert Row** button .
- Press the INSERT key.
- Right-click a row and select **Insert Row** from the pop-up menu.

To delete a row

- Right-click a row and select **Delete Row** from the pop-up menu.

Or

1. Click the row you want to delete (so it has focus).
2. Do *one* of the following:
   - Click the **Delete Row** button .
   - Press the DELETE key.

Note: *By default, the Step Sequencer opens with 12 rows. If you delete any rows in a pattern that contains no note events—or the track is not assigned to a drum map—the Step Sequencer will revert to 12 rows the next time it is opened.*

To reorder a row

1. Click the drag handle for the row that you wish to reorder and keep the mouse button pressed.
2. Drag the mouse up or down to reorder the row.

   The row is outlined in order to show its current position. The yellow outline indicates the row that will be dragged and the red outline indicates where it will go when you release the mouse button.
3. Release the mouse button when the row has been moved to the desired position.

A. *Click the row's handle and drag up/down to reorder a row*

To select rows

Do one of the following:

- To select a single row, click the row's **Select** button.
- To select all rows, press CTRL+A (make sure the Step Sequencer view has focus).
- To select a range of rows, do one of the following:
  - Click the first row's **Select** button, then hold down the SHIFT key and click the last row's **Select** button.
  - Click the first row's **Select** button and drag up/down to select adjacent rows.
- To select discontiguous rows or to toggle a row's select state, hold down the CTRL key while you click the desired row's **Select** button.

The Controllers pane is displayed below the selected row. If multiple rows are selected, the Controllers pane is displayed below the top-most selected row. If no rows are selected, the Controllers pane is hidden.

Editing in the Controllers pane affects all selected rows.

Note: *The **Shared MIDI Channel** indicator lights up if a selected row shares the same MIDI channel as any other row. This is a convenient reminder that any controller events you edit in the row will also affect all other rows that share the same MIDI channel.*

To rename a row

1. Do *one* of the following:
   - Right-click a row and select **Rename Row** from the pop-up menu.
   - Click the row's name to give it focus, then press ENTER or F2.
2. Type a new name and press ENTER.

See:

Working with steps

Working with Controller events

Working with patterns

Working with steps

To enable a note

To audition a note when clicking on a step

To automatically enable notes every "n" steps

To disable a note

To cut/copy/paste all notes in a row

To shift all notes in a row to the left or right

To shift all notes in a colum up or down by one row

To clear all steps

To merge/unmerge notes

To edit a note's velocity

To specify the default velocity value for new notes

To add/remove a flam

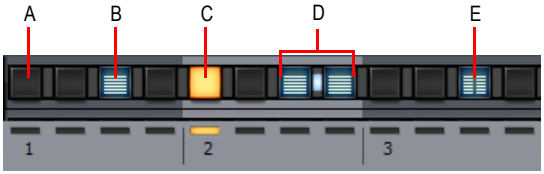
To add slide (portamento) to notes

To specify the likelihood that a note will play (randomize)You can specify the probability of whether an enabled note will play or not. By default, all enabled notes have a Probability value of 100%,

which means the notes always play. To reduce the likelihood that a note will play, decrease the Probability value.

To step record notes from a MIDI device

To edit the drum map properties of a note



A. *Disabled step* ***B.*** *Enabled step (double-click to create a flam)* ***C.*** *Current step (yellow)* ***D.*** *Merged steps* ***E.*** *Flammed step*

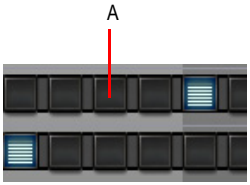
To enable a note

Do *one* of the following:

- **To enable a single note.** Click on the note that you wish to enable.
- **To enable multiple notes of the same pitch.** Click on the first note that you wish to enable and drag across all other notes you wish to enable. By default, dragging is constrained to a single row. If you want to freely drag across different rows, hold down the ALT key while dragging.

The note is enabled.

SONAR creates a new Step Sequencer clip when you enable the first note in an empty pattern.



A. *Click an empty step to enable the note*

Tip: *If you want to hear the note when you click on a step, see* *"To audition a note when clicking on a step" on page 1463.*

To audition a note when clicking on a step

To enable note audition when you click on an empty step:

1. Click the **Options** button .

A pop-up menu appears.

2. Select **Trigger Note on Click** from the pop-up menu.

The **Trigger Note on Click** option is disabled by default.

To automatically enable notes every “n” steps

You can quickly enable notes every 2, 3, 4, 5 or 6 steps:

1. Click on the step where you want the first note to be enabled. If a step is not selected, the first step in the row will be used.
2. Do *one* of the following:
   - Right-click the row you would like to enable the notes on, point to **Fill Every**, then select **2**, **3**, **4**, **5**, or **6**, depending on the desired interval.
   - Press CTRL+2, CTRL+3, CTRL+4, CTRL+5, CTRL+6, depending on the desired interval.

   Notes are enabled at the specified intervals.

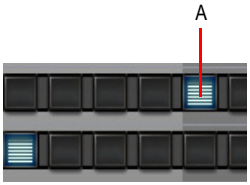
Note: *If the **Entry Mode** is **Polyphonic**, enabled notes will be merged with any existing notes in the row. If the **Entry Mode** is **Monophonic**, existing notes in the row will be cleared.*

To disable a note

Do *one* of the following:

- **To disable a single note.** Right-click on the note that you wish to disable.
- **To disable multiple notes of the same pitch.** Right-click on the first note that you wish to disable and drag across all other notes that you wish to disable. By default, dragging is constrained to a single row. If you want to freely drag across different rows, hold down the ALT key while dragging.

The note is disabled.



A. *Right-click a note to disable the step*

To cut/copy/paste all notes in a row

You can cut or copy all notes from a row and paste the notes to any other row:

1. Right-click to the right of the row that contains the notes you want to cut/copy and select **Cut Row Steps** or **Copy Row Steps** from the pop-up menu.

   The events are placed on the clipboard.

2. Right-click to the right of the row where you would like to paste the notes and select **Paste Row Steps** from the pop-up menu.

   The note events are pasted to the new row and any existing events in the row are removed.

To shift all notes in a row to the left or right

You can easily move all notes in a row to the left or right by one step:

1. Right-click to the right of the row that contains the notes you want to move.

   A pop-up menu appears.

2. Select **Shift Steps Forward** or **Shift Steps Backward** from the pop-up menu.

Or

1. Click a row to give it focus.
2. Press ALT+LEFT ARROW or ALT+RIGHT ARROW.

   All notes in the row are moved by one step.

To shift all notes in a colum up or down by one row

You can easily move all notes in a column up or down by one row:

1. Click any existing note in the column you want to move up or down. (so the note has focus).
2. Press ALT+DOWN ARROW or ALT+UP ARROW.

   All notes in the same column are moved down or up by one row.

To clear all steps

To clear all steps in the pattern:

1. Click the **Options** button .

   A pop-up menu appears.

2. Select **Clear Pattern** from the pop-up menu.

   All steps are cleared.

To merge/unmerge notes

Do *one* of the following:

- **Merge two adjacent notes.** Hold down the CTRL key and click between the two notes.
- **Unmerge two adjacent notes.** Hold down the CTRL key and right-click between the two notes.
- **Merge multiple adjacent notes.** Hold down the CTRL key and click between the first two notes and drag across all other notes you wish to merge.
- **Unmerge multiple adjacent notes.** Hold down the CTRL key and right-click between the first two notes and drag across all other notes you wish to unmerge.

A. *Unmerged note* ***B.*** *Merged notes* ***C.*** *Hold down the CTRL key and click here to merge notes* ***D.*** *Hold down the CTRL key and right-click here to unmerge notes*

To edit a note's velocity

A note's velocity is shown inside the note cell (step).

To edit a note's velocity value, do *one* of the following:

- Click a row's **Select** button to show the Controllers pane, select **Velocity** in the **Step Editor** list, then draw velocity changes in the Controllers pane.
- Hold down the SHIFT key and drag the note up/down.
- Hold down the CTRL key, double-click a note and enter the desired velocity value.
- Click a note to give it focus and use a mouse wheel to adjust the velocity value. Hold down the SHIFT key for fine control.

You can also edit the velocities of multiple notes in one operation:

1. Hold down the SHIFT key and click a step to enter Velocity Editing mode.

   Two horizontal lines are displayed to indicate the range that you can move the mouse to adjust velocities.

2. Drag the mouse up or down across other rows to change the velocities of the steps in that row. Only steps in the same row may be edited.

   Velocity values are updated in real-time as you move the mouse within the row.

3. To commit the new velocity values, move the mouse pointer outside the row or release the mouse button.

Note: *If you would like to audition velocity changes while editing velocities, make sure the* ***Trigger Note on Click*** *option is enabled (see "To audition a note when clicking on a step" on page 1463).*

For more information about working with controller events and velocities, see "Adding and Editing Controllers in the Piano Roll" on page 466.

To specify the default velocity value for new notes

By default, all new note events have a fixed velocity value of 100. To change the default velocity value for new notes:

1. Click the **Options** button .

   A pop-up menu appears.

2. Select **Set Default Velocity for Steps** from the pop-up menu.

   The **Set Default Velocity for Steps** dialog appears.

3. Specify the desired velocity value and click **OK**.

Note: *The default velocity setting is global and only affects new notes.*

To compress or expand all note velocities in a row

1. Right-click a row and select **Adjust Velocity Multiplier** from the pop-up menu.

   The **Adjust Velocity Multiplier** dialog appears.

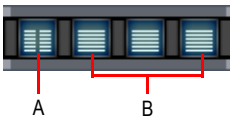
2. Do one of the following:
   - To compress the note velocities, specify a value below 1.00.
   - To expand the note velocities, specify a value above 1.00.

To add/remove a flam

- Double-click the desired step.

  Flammed steps are drawn with a dividing marker halfway through the step.

  To adjust a row's flam timing, click the row's **Select** button to show the Controllers pane, then adjust the **Flam** knob as desired.



A. *Flammed step* ***B.*** *Normal steps*

To add slide (portamento) to notes

To create a smooth slide between two pitches, you must insert controller events in the Controllers pane. For details, see To create a smooth slide (portamento) between pitches.

To specify the likelihood that a note will play (randomize)

You can specify the probability of whether an enabled note will play or not. By default, all enabled notes have a **Probability** value of 100%, which means the notes always play. To reduce the likelihood that a note will play, decrease the **Probability** value.

1. Click a row's **Select** button.

   The Controllers pane appears below the row.

2. Click the **Step Editor** control and select **Probability** from the drop-down menu.
3. Draw events in the Controller pane to specify the desired **Probability** value for each note. The **Probability** value specifies the likelihood that a note will play. The value range is 1 (seldom) to 100 (always).

To step record notes from a MIDI device

In addition to entering note events with the mouse, you can also use a MIDI input device to enter notes.

1. To enable MIDI step recording, do *one* of the following:
   - Click the **Record** button in the Step Sequencer.
   - Right-click the **Play** button in the Step Sequencer.
   - Make sure the Step Sequencer window has focus and press CTRL+R.

   The **Step Record** button displays a red circle to indicate that MIDI Step Recording mode is enabled and the Position Indicator indicates the current position with a red light .
2. On your MIDI input device, play the note(s) that you would like to assign to the current step (as indicated by the red light in the Position Indicator).

   The Step Sequencer will listen for any and all notes that are pressed until a note is released, at which time the notes that were pressed will be turned on and the Step Sequencer will automatically advance to the next step. The following rules apply when step recording:
   - If the pitch that is pressed is already mapped to a row in the Step Sequencer, then the note is turned on.
   - If the pitch that is pressed is not mapped to a row in the Step Sequencer, then the step is skipped.
   - Undo (CTRL+Z) will undo the most recent step entry and move the current position back by one step.
3. To disable step recording, right-click the **Play** button again or press CTRL+R.

   The **Play** button changes back to its normal state .

Specifying Velocity for Step Recording

You can specify whether step recording should use the recorded velocity or a fixed velocity value for new notes. To toggle between the two behaviors, right-click on the **Step Sequencer** toolbar and select **Use Fixed/Default Velocity for Step Recording** from the pop-up menu.

For more information about configuring the default velocity value, see “To specify the default velocity value for new notes” on page 1466.

Step Record Shortcuts

Action	Key
Enable/disable MIDI step recording	CTRL+R
Move the current step backward by one step	COMMA (,)
Move the current step forward by one step	PERIOD (.)
Undo the most recent step entry and move the current position backward by one step	CTRL+Z

Table 239.

Tip: *To insert a rest, simply move the step forward or backward without pressing a key on your MIDI controller.*

See:

Working with Controller events

Working with rows

Working with patterns

Working with Step Sequencer clips

Working with Controller events

You use the Controllers pane to include modulation events, such as Controller, Pitch Wheel, Channel Aftertouch, RPN and NRPN events, in your patterns. Modulation events are independent for each row.

Note: *Modulation events on one row may also affect other rows that share the same output port and channel pair.* ***Velocity*** *and* ***Time Offset*** *parameters are always independent for each row, regardless of port/channel assignments.*

To edit controller events on a single row

To edit controller events on multiple rows simultaneously

To create a smooth slide (portamento) between pitches

To edit controller events on a single row

1. Click a row's **Select** button.

The Controllers pane appears below the row. The Controllers pane contains a series of columns that correspond to the steps in the selected row.

Note: *The **Shared MIDI Channel** indicator lights up if a selected row shares the same MIDI channel as any other row. This is a convenient reminder that any controller events you edit in the row will also affect all other rows that share the same MIDI channel.*

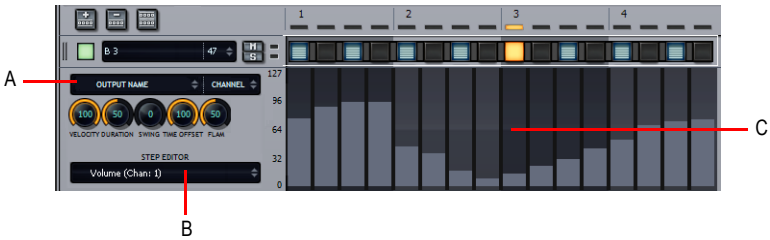
2. Click the **Step Editor** control and select a parameter name from the drop-down menu.

   If the desired parameter is not listed, select **New Value Type** to open the **MIDI Event Type** dialog and specify the following options:

   - **Type.** Choose the type of controller you want to add (for example, choose Control if you want to edit volume).
   - **Value.** This field is unavailable if you choose **Wheel** or **ChanAft** in the **Type** field. If you choose **Control**, **RPN**, or **NRPN** in the **Type** field, choose which Control, RPN, or NRPN you want to add. For example, to edit volume, choose **7-Volume** in this field if you chose **Control** in the **Type** field.
   - **Channel.** Choose a MIDI channel for the controller event.

3. Do one of the following:

   - **To draw a single controller event.** Click in the Controllers pane.
   - **To draw a series of controller events.** Drag in the Controllers pane.
   - **To draw a straight line.** Hold down the SHIFT key and drag in the Controllers pane.
   - **To erase controller events.** Right-click an existing controller event.



***A.** Click a row's **Select** button to show the Controllers pane below the row **B.** Select the controller type you want to edit in the Controllers pane **C.** Draw events in the Controllers pane*

To edit controller events on multiple rows simultaneously

1. Select all the rows you want to edit. For details, see To select rows.

   The Controllers pane appears below the top-most selected row.

2. Click the **Step Editor** control and select a parameter name from the drop-down menu.

   If the desired parameter is not listed, select **New Value Type** to open the **MIDI Event Type** dialog and specify the following options:

- **Type.** Choose the type of controller you want to add (for example, choose Control if you want to edit volume).
- **Value.** This field is unavailable if you choose **Wheel** or **ChanAft** in the **Type** field. If you choose **Control**, **RPN**, or **NRPN** in the **Type** field, choose which Control, RPN, or NRPN you want to add. For example, to edit volume, choose **7-Volume** in this field if you chose **Control** in the **Type** field.
- **Channel.** Choose a MIDI channel for the controller event.

3. Do one of the following:
   - **To draw a single controller event.** Click in the Controllers pane.
   - **To draw a series of controller events.** Drag in the Controllers pane.
   - **To draw a straight line.** Hold down the CTRL key and drag in the Controllers pane.
   - **To adjust all existing events.** Hold down the SHIFT key and drag in the Controllers pane.
   - **To erase controller events.** Right-click an existing controller event.

   The edits are applied to all selected rows.

To create a smooth slide (portamento) between pitches

1. Click a row's **Select** button.

   The Controllers pane appears below the row.
2. Click the **Step Editor** control and select **Slide/Portamento** from the drop-down menu.
3. Draw events in the Controller pane where you want to create a slide. The **Slide/Portamento** value specifies the time it takes for the next note to reach its pitch. The value range is 0 (off) to 127 (longest).

See:

Controllers pane

Working with rows

Working with steps

Working with patterns

Working with Step Sequencer clips

Working with patterns

To create a brand new pattern

To edit an existing pattern

To save a pattern

To load a pattern

To preview a pattern

To step record a pattern

To create a brand new pattern

1. Click the MIDI track in which you want to create the new pattern. The MIDI track then becomes the active track. Make sure that no MIDI clips are selected.
2. Select **Views > Step Sequencer**.

The Step Sequencer window appears and SONAR creates a new Step Sequencer clip in the active track.

By default, each row is assigned to the track's output.

Note: *You can also create a new Step Sequencer clip by clicking the **Step Sequencer** button on a software instrument's property page. Doing so creates a new Step Sequencer clip on the first MIDI track or on the Instrument track that corresponds to the software instrument, and the Step Sequencer view opens.*

To convert a MIDI clip to a Step Sequencer pattern

You can convert any existing MIDI clip into a step sequencer pattern. For details, see To convert a MIDI clip(s) to a Step Sequencer clip(s).

To edit an existing pattern

Do *one* of the following:

- Select the Step Sequencer clip that you wish to edit in the Step Sequencer and select **Views > Step Sequencer**.
- Double-click the Step Sequencer clip.

The Step Sequencer window appears.

Note: *A step sequencer clip can only be edited in the Step Sequencer view and not in any other MIDI editing views.*

To save a pattern

Do *one* of the following:

- Click the **Options** button and select **Save Pattern As** from the pop-up menu.
- Right-click in the **Step Sequencer** toolbar and select **Save Pattern** from the pop-up menu.
- Press CTRL+ALT+S.

To specify the default folder for patterns:

1. On the **Tools** menu, click **Global Options** and then click the **Folders** tab.
2. Specify the folder location for Step Sequences.

To load a pattern

Do *one* of the following:

- Click the **Options** button and select **Load Pattern** from the pop-up menu.
- Right-click in the **Step Sequencer** toolbar and select **Load Pattern** from the pop-up menu.
- Press CTRL+ALT+L.
- Drag a pattern from the Media Browser view and drop it in the Notes pane.

You can press CTRL+Z to undo the loaded pattern.

When you load a new pattern, the current pattern is cleared and replaced by the new pattern.

To specify the default folder for patterns:

1. On the **Tools** menu, click **Global Options** and then click the **Folders** tab.
2. Specify the folder location for Step Sequences.

Note: *If other clips are linked to the current Step Sequencer clip, all linked sibling clips will be updated with the loaded pattern.*

To preview a pattern

You can preview step sequencer patterns (.ssp) in the Media Browser. For details, see Auditioning MIDI files.

To step record a pattern

See To step record notes from a MIDI device.

See:

Controllers pane

Working with rows

Working with steps

Working with Controller events

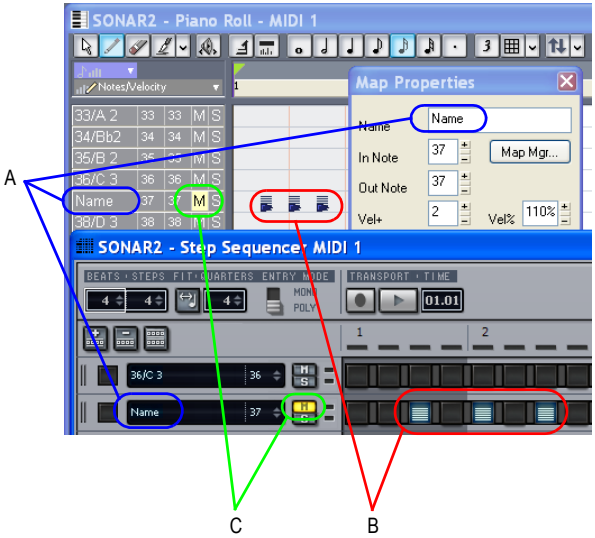
Working with Step Sequencer clips

Using the Step sequencer with drum maps

By default, all rows in a Step Sequencer clip are assigned to the track's output port, which could be a hardware MIDI port, a software instrument, or a drum map.

If you re-assign rows to different output ports, the Step Sequencer will automatically assign the rows to a new drum map.

The following diagram illustrates how the Drum Editor in the Piano Roll view, the Step Sequencer and the **Drum Map Properties** dialog are all interconnected when using a drum map.



***A.** Note Name **B.** Notes **C.** Mute, Solo, Velocity and Velocity Multiplier are separate for the drum map and step sequencer*

A change made in the **Drum Map Manager** dialog will affect the Step Sequencer and vice versa.

Note: *Mute, Solo, Velocity and Velocity Multiplier are separate for the drum map and step sequencer.*

To edit the drum map properties of a note

1. Click a row's **Select** button to show all controls for the selected row.
2. Click the **Output** control and select **Open Drum Map Manager** from the drop-down menu.

   The **Map Properties** dialog appears.
3. Configure the drum map properties as desired. For more information, see "The Map Properties Dialog" on page 532.

Clicking on another row in the Step Sequencer window will update the Map Properties to display information for the new row.

See:

Using Drum Maps

The Map Properties Dialog

Step sequencer interface

Working with rows

Working with steps

Working with Controller events

Working with patterns

Working with Step Sequencer clips

Keyboard shortcuts

Working with Step Sequencer clips

When you create a sequence in the Step Sequencer, SONAR creates a new Step Sequencer clip.

A Step Sequencer clip shows the first iteration of the sequence/pattern and all Step Sequencer clips can be identified by a small Step Sequencer clip icon in the top left corner of the clip. Step sequencer clips are somewhat similar to MIDI Groove clips; you can drag the left and right edges of a Step Sequencer clip to show additional iterations of the sequence pattern.

To convert a MIDI clip(s) to a Step Sequencer clip(s)

You can convert any existing MIDI clip into a step sequencer clip:

1. Select the MIDI clip(s) you wish to convert to a step sequencer clip(s).
2. Right-click the selected clip and choose **Convert MIDI Clip(s) to Step Sequencer** from the Clips pane context menu (hover the mouse over the bottom of the context menu in order to show any “hidden” commands).

   The **Convert MIDI Clip(s) to Step Sequencer** dialog appears.
3. If you want the Step Sequencer to preserve the original timing of the note events instead of quantizing them to the nearest step, select **Preserve original timing (using step offsets)**. The notes will be adjusted to fit the steps, and per-step timing offsets will be created so that the result has the same note times as the original MIDI clip. Any human feel in the part will be preserved.

   If **Preserve original timing (using step offsets)** is not selected, the resulting clip will essentially be a quantized version of the original clip. The start of the clips will be the same and the first notes will be the same. The only thing that will possibly be different is the length of the clip (due to quantizing) and the notes in it may be moved slightly so they fit into the steps.

4. Specify the desired resolution value and click **OK**.

Note: *The resolution value should correspond to the shortest note value that you expect. For example, if you specify Sixteenth notes, you will get four steps per beat. The choices are:*

- *Quarter (1 step per beat)*
- *Eigth (2 steps per beat)*
- *Eigth Triplet (3 steps per beat)*
- *Sixteenth (4 steps per beat)*
- *Sixteenth Triplet (6 steps per beat)*
- *32nd (8 steps per beat)*
- *32nd Triplet (12 steps per beat)*

If a MIDI Groove clip contains any variations between different iterations, each unique iteration will be converted to a separate Step Sequencer clip.

To unlink copied Step Sequencer clips

When you copy step sequencer clips, all copies are linked to each other. This means that any further edits to any of the clips will be automatically reflected in all other linked sibling clips.

If you wish to edit one instance of a step sequencer clip without affecting any other clips, you must first unlink the clip you wish to edit:

1. Right-click the step sequencer clip in the Clips pane to show the Clips pane context menu.
2. Select **Unlink Step Sequencer Clips** from the context menu (point the mouse over the bottom of the context menu in order to show any “hidden” commands).

The clip is now unlinked from the other clips.

Tip: *If you frequently need to unlink step sequencer clips, assign the* **Unlink Step Sequencer Clips** *to a key binding (see “Key Bindings” on page 738).*

See:

MIDI Groove Clips

Step sequencer interface

Working with rows

Working with steps

Working with Controller events

Working with patterns

Working with Step Sequencer clips

Keyboard shortcuts

Using the Step sequencer with drum maps

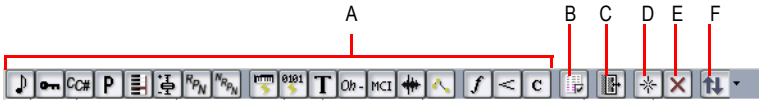
Event List View

Open the Event List view by:

- Selecting one or more tracks and choosing **Views > Event List**
- Selecting one or more tracks and clicking in the **Views** toolbar
- Right-clicking a track in the Clips pane and choosing **Views > Event List**

The Events List view hides or displays all the Events in a project in a list. Clicking one of the buttons in the **Event List** toolbar hides the kind of event that the button represents. You can insert, delete, or change any kind of event, with the exception of Shape events which can only be deleted. Events are displayed in a list format. You can insert, delete, or modify any kind of event, including notes, pitch wheel data, velocity, MIDI controllers, patch changes, wave files, lyrics, text strings, MCI commands, System Exclusive meta-events, and more.

Figure 273. *The **Event List** toolbar*



A. *Hide different kinds of events buttons* ***B.*** *Event Manager* ***C.*** *Show events outside slip edit boundary* ***D.*** *Insert* ***E.*** *Delete* ***F.*** *Pick Tracks*

See:

The Event List View

Event List Buttons and Overview

Event Manager dialog

To Insert a New Event

To Delete an Event

To Delete Several Events

Staff View

Open the Staff view by any of three methods:

- Use the **Views > Staff** command
- Click the **Staff View** button in the **Views** toolbar
- Select **Staff** from the Clips pane right-click pop-up menu

The Staff view displays MIDI note events as musical notation. For some musicians, this may be the most familiar and comfortable view in which to work. The Staff view provides many features that make it possible for you to compose, edit, and print music.

The Staff View Toolbar has all the buttons you need to enter and edit notes, and control the display of your notation.

The Staff view is composed of a Staff pane and a Fretboard. When you first open the Staff view, you may see only the Staff pane and not the Fretboard. Resize the Staff view by dragging its edges until you can see everything easily. When you save your file, whatever size the Staff view is will be the way it appears the next time you open the file.

The **Staff pane** displays MIDI note events as musical notation. For some musicians, this may be the most familiar and comfortable view in which to work. The Staff pane provides many features that make it easy for you to compose, edit, and print music. You can choose from a wide variety of clefs to display your music (see “To change the Staff pane layout” on page 746).

For guitar players who are new to musical notation, the **Fretboard** represents the notes in the Staff pane as they would appear on a guitar or bass fretboard. All notes that appear in the Staff pane at the Now Time are shown in the Fretboard. Page through your track by pressing CTRL+RIGHT ARROW and watch the note names in the Fretboard appear. If you enter notes in the staff at the Now Time, they appear on the fretboard. Likewise, you can enter notes into the staff at the Now Time by clicking the guitar strings on the fretboard. Notes and chords shown in the fretboard can be easily edited by dragging them up and down the guitar strings.

For more information, see:

The Staff View

Basic Musical Editing

Chords and Marks

Staff Pane Layout

Inserting Notes on the Staff

To Audition with the Scrub Tool

Moving, Copying, and Deleting Notes on the Staff

Using Enharmonic Spellings

Adding Expression Marks

Adding Hairpin Symbols

The Fretboard

Tablature

Working with Lyrics

Beaming of Rests

Setting Up a Percussion Staff or Line

Staff View Keyboard Shortcuts

The Staff View Toolbar

The **Staff view** toolbar has all the controls you need to enter and edit notes and symbols, and control the display of your notation.

Here's what each button does:

Button	What it does
Select tool	Select a note or notes
Draw tool	Enter and move notes and/or symbols
Erase tool	Delete notes and/or symbols
Scrub tool	Plays all displayed tracks as you drag the cursor forward or backward
Zoom Out	Zooms out by a fixed percentage, both horizontally and vertically
Zoom fader	Zooms in or out by the amount and direction that you drag it
Zoom In	Zooms in by a fixed percentage, both horizontally and vertically
Snap button	When depressed, controls what size blocks of musical time you can select
1:000 Snap value	This field shows the current value of the Snap to Grid. When you click a note value in the **Staff view** toolbar, the Snap value copies that value, unless you override it by opening the **Snap to Grid** dialog and setting a value.
Fill Durations	Visually rounds up notes to the next note or beat, whichever comes first—useful for displaying recorded MIDI notes, but not for entering notes with the Draw tool
Trim Durations	Visually rounds down note durations if they extend a little past the start of the next note—useful for displaying recorded MIDI notes, but not for entering notes with the Draw tool
Display Resolution	Shows the value of the smallest note you can display—for example, if it's set to a quarter note, and you enter some eight notes, they will display as quarter notes until you set the display resolution to an eighth note
Staff view layout	The left side of this button opens the **Staff View Layout** dialog. The right side of this button opens a drop-down menu where you can select one of two commands: Quick TAB and Regenerate Tablature.
Pick Tracks Combo	The left side of the **Pick Tracks** combo button opens the **Pick Tracks** dialog, and the drop-down arrow on the right side contains the **Show Next Track** and **Show Previous Track** commands

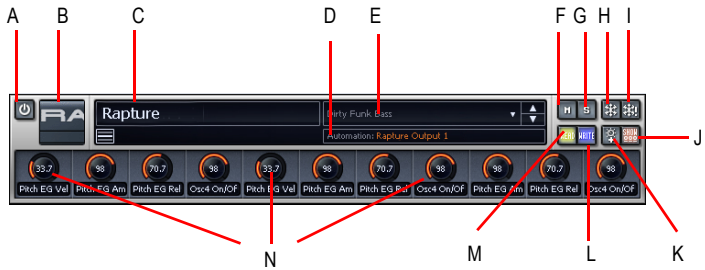
Button	What it does
Play Next	Clicking this button plays the next note from the Now time
Play Previous	Clicking this button plays the previous note from the Now time
Fret View	Clicking this button displays the Fretboard view
	Clicking this button exports tablature to an ASCII file for printing or distribution on the Web
Whole Note	Clicking this button chooses a whole note duration for any notes you insert—there are buttons for durations as small as a 32nd note
Dotted Note	Clicking this button causes any notes you insert to be dotted notes
Triplet	Clicking this button causes any notes you insert to be triplets
40 Note Duration	This window shows the currently selected note duration for inserting notes—you can edit it in the window, but make sure the value in the Display Resolution window is not too large to display the new value
Lyrics tool	Causes the Draw tool to become a lyrics-entering tool
Chord tool	Causes the Draw tool to become a chord-entering tool—after you enter a chord, right-click it to edit it
Expression tool	Causes the Draw tool to become a dynamics-entering tool—click below a staff to create a text box, type some dynamics, and press Enter
Hairpin tool	Causes the Draw tool to become a tool to enter crescendo or decrescendo markings
Pedal tool	Causes the Draw tool to become a tool to enter pedal markings—clicking this tool below a staff enters a pedal down marker and a pedal up marker; you can drag both markers to reposition them
3:01:000 B 7 (95) Cursor position	Show's the cursor's current position in both project time and pitch level; the pitch level is listed in both letter and number formats

Synth Rack View

The Synth Rack view lets you view, insert, delete, and configure your soft synths. You can also mute and solo any or all of them from this view. Each time you insert a soft synth into your project, a new row appears in the Synth Rack view with the name of the soft synth and its current parameters. You can insert as many copies of the same soft synth as you like; each new copy appears in a new row and has the same name, but has a higher

number after the name. ReWire soft synths can only have one copy open. The new higher-numbered name also appears on the menus of audio track inputs and MIDI track outputs.

Figure 274. *One Row in the Synth Rack*



A. *Connect/Disconnect synth button* ***B.*** *Synth icon* ***C.*** *Synth name* ***D.*** *Automation track menu* ***E.*** *Patch menu* ***F.*** *Mute button* ***G.*** *Solo button* ***H.*** *Freeze/Unfreeze button* ***I.*** *Quick Freeze/Quick Unfreeze button* ***J.*** *Show/Hide Assigned Controls button* ***K.*** *Assign Controls button* ***L.*** *Write button* ***M.*** *Read button* ***N.*** *Automated knobs*

The following is a list of the tools and controls in the Synth Rack view, followed by a description. For step-by-step instructions, see the links below.

Button	What it does
Insert	Displays a menu of available synths and ReWire devices; choose one to insert into your project.
Delete	If you want to delete a soft synth from your project, click the name of the soft synth in the Synth Rack view and then click the **Delete** button. **Note:** Always close any ReWire applications in their own interfaces before deleting them from SONAR. Deleting a soft synth from the Synth Rack view does not delete the tracks associated with the soft synth, but does change the associated MIDI track's output to the next lower-numbered output.
Properties	To open the interface of a soft synth, click its name in the Synth Rack view and then click the **Properties** button. You can also open a soft synth's interface by double-clicking its name in the Synth Rack view.
Insert	The **Insert Soft Synth Options** dialog has an **Ask This Every Time** check box, which causes the dialog to appear every time you click the name of a soft synth from the pop-up menu of installed soft synths. If you uncheck this check box, the only way to open the dialog and choose your insertion preferences is to click the **Insert Soft Synth Options** button.
Freeze	This button lets you freeze or unfreeze whatever soft synth currently has focus in the Synth Rack. Each synth also has its own **Freeze** and **Thaw** buttons at the end of its individual control strip in the Synth Rack. See "Freeze Tracks and Synths" on page 617 for more information.

Table 240.

Button	What it does
Automation Track menu	Lets you choose which track to display a synth's automation data on.
Preset menu	Lets you choose preset sounds; click the left/right arrows to step through the menu.
Mute button	Lets you mute the synth, and all tracks associated with this instance of the synth.
Solo button	Lets you solo the synth, and all tracks associated with this instance of the synth.
Freeze/Unfreeze (individual synth)	Lets you freeze or unfreeze a particular synth.
Quick Freeze/Quick Unfreeze (individual synth)	Lets you quick freeze or quick unfreeze a particular synth.
Show/hide assigned controls	Lets you show or hide any assigned control knobs you've created for a particular synth.
Assigned controls	Lets you choose what parameters in the synth's interface to create control knobs for.
Automation Write	Arms **all parameters** of the synth for automation.
Automation Read	Allows the synth to respond to recorded automation.
Automated knobs	These are knobs you create by using the **Assigned Controls** button.
Synth icon	Gives you a quick visual cue to tell one synth from another.
Connect/Disconnect	Disconnecting a synth mutes all tracks associated with it, and frees up memory and CPU cycles.

Table 240.

For step-by-step instructions, see:

Software Instruments

Inserting Soft Synths

Using the Assignable Controls Feature

Multi-port Soft Synths

Playing a Soft Synth

Converting Your Soft Synth Tracks to Audio

Muting and Soloing Soft Synth Tracks

Converting Your Soft Synth Tracks to Audio

Drawing Soft Synth Automation in the Clips Pane

Playing a Stand-alone Synth

ReWire Instruments

Lyrics view

Open the Lyrics view by any of three methods:

- Using the **Views > Lyrics** command
- Clicking the **Lyrics View** button in the **Views** toolbar
- Using the **Lyrics** command from the Clips pane right-click menu

The Lyric view lets you edit a track's lyrics. You can use it to cue yourself or your group with the lyrics during playback and recording.

For more information, see:

Working with Lyrics

Console View

The Console view has new dividers that magnetically snap to the border of a track or bus strip when you drag the divider, new buttons to hide or show all strips of a certain kind (tracks, buses, or mains), simplified show/hide buttons for the controls on each strip (no 3-way buttons), and new scroll buttons to scroll through one strip at a time.

The Console view contains all the controls you need to mix your project. To open the Console view click the **Console view** button in the **Views** toolbar or choose **Views > Console**.

Sound controls in the Console view are grouped in **modules**. There are four types of modules:

Module	What it does
MIDI track	Set the track's output, channel, bank, and patch; set the input source and monitor input levels; mute, solo, and arm the track; set channel volume, panning, chorus, and reverb levels.
Audio track	Set the track's output; set the input source and monitor input levels; mute, solo, and arm the track; set track volume and panning; apply real-time effects, send audio data to buses.
Bus	Receive input from one or more audio tracks, apply real-time effects, and send the results to an output or other bus.
Main out	Each audio hardware output has a corresponding Main out. A main output module contains both a left and right output and two volume controls.

Table 241.

The Console view contains buttons, sliders, and knobs. Knobs can be adjusted in several different ways:

- Click on the center of the knob and drag the mouse up or down to adjust the knob
- Double-click the bottom of the knob to return it to its snap-to position
- You can control all sliders and knobs in the Console and Track Views by hovering over them with the mouse and manipulating the mouse wheel

Volume and pan faders also have snap-to positions. Set the snap-to by moving a control to the desired snap-to position, right-clicking the control, and choosing **Value > Set Snap To = Current**.

You can automate many features of the Console view by recording fader movements and creating snapshots.

The Console view contains meters for recording, playback, and main output levels. You can hide or show any or all of these meters, and choose many different options for the units and format of the data the meters display.

The controls and effects patch points all have tooltips associated with them. To see a description of a particular control or effect, simply rest the cursor over the item for a few seconds.

Main out faders can be linked using the **Link** button . This allows you to adjust both the left and right channel at the same time.

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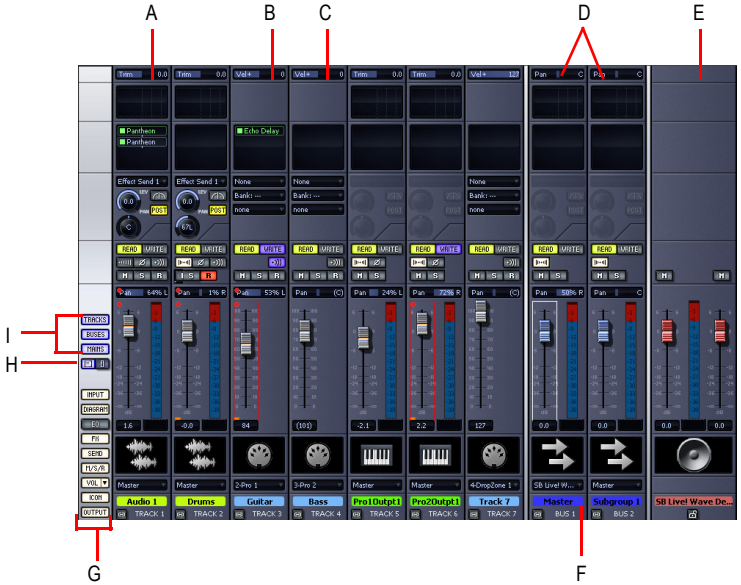
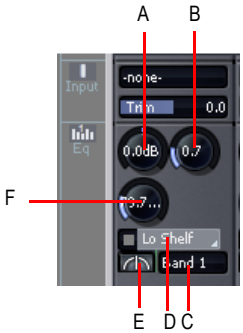
Note: *You can control all sliders and knobs in the Console and Track Views by hovering over them with the mouse and manipulating the mouse wheel.*

Figure 275. *The Console view*



A. *Audio module* ***B.*** *MIDI module* ***C.*** *MIDI velocity* ***D.*** *Bus out* ***E.*** *Main out* ***F.*** *Bus pane* ***G.*** *Show/hide strip controls buttons* ***H.*** *Widen all strips* ***I.*** *Show/hide for tracks, buses, mains*

Note: *The above view does not show EQ. It is pictured below.*



A. *Gain* ***B.*** *Band Q* ***C.*** *Band select* ***D.*** *EQ type select* ***E.*** *EQ enable* ***F.*** *Frequency*

Figure 276. *Audio track strip in Console view*

A. *FX bin* ***B.*** *Aux bus level* ***C.*** *Aux bus pan* ***D.*** *Automation read/write* ***E.*** *Quick Group selector* ***F.*** *Trim control* ***G.*** *Aux send enable* ***H.*** *Mono/Stereo, Phase invert, and Input Echo buttons* ***I.*** *Pan control* ***J.*** *Output* ***K.*** *Track name* ***L.*** *Text*

A. *Click to scroll one strip at a time*

Customizing the Console View

You can show or hide individual tracks or buses in the Console view by opening the **Track Manager** dialog (press M on your computer keyboard). This dialog works independently in the Console view and the Track view.

The **show/hide** buttons in the lower left corner of the Console view have numerous options for customizing what you see in the Console view.

Note: *You control meter display options in the Console view by clicking the drop-down arrow on the **VOL** button that is in the lower left corner of the Console view.*

The following table describes Console view display options:

Button	Description
Tracks	Shows or hides the track strips in the Console view.
Buses	Shows or hides the bus strips (not main outputs) in the Console view.
Mains	Shows or hides the main output strips in the Console view.
Widen All Strips	Widens or narrows all the strips in the Console view.
Input	Shows or hides the **Input** menus in the Console view.
EQ Plot	• Shows or hides the plot for the built-in EQ in the Console view. • Right-click the button to change the plot resolution. • Right-click the plot itself to change the EQ to pre-FX or post-FX, or to open the EQ property page, to enable/disable the EQ, or to turn off bands 5 and 6 of the EQ. The **Reset Hidden EQ Parameters** option appears if you enable bands 5 and 6 in the property page. You can then turn bands 5 and 6 off by unchecking the **Reset Hidden EQ Parameters** option in the right-click menu.
EQ	• Show or hides the built-in EQ. • Right-click the button to show either 1 band or 4 bands.
FX	• Shows or hides the FX bin. • Right-click the button and choose **Show Assignable Controls** from the right-click menu to show or hide 4 controls of the selected effect, if the effect has assignable controls; to display a different control, right-click one of the displayed controls and choose **Reassign Control** from the right-click menu.
Send	• Shows or hides the Send modules. • Right-click the button to display either 2 Sends or 4 Sends, or to show smaller versions of the Send controls.

Table 242.

Button	Description
Vol	• Shows or hides the volume faders and meters • Right-click the button to show or hide the pan controls (the volume faders must be visible to see the pan controls). • Click the drop-down arrow to display the **Meter Configuration** menu. The meter options are explained in the Metering topic in the online help.
Icon	Shows or hides track and bus icons in the Console view.
Output	Shows or hides the **Output** menus in the Console view.

Table 242.

For more information, see:

Mixing MIDI

Routing and Mixing Digital Audio

Using Real-Time Effects

Using Control Groups

Using Remote Control

Automation Methods

Real-Time Audio Effects Processing

Applying MIDI Effects

For step by step instructions:

To Choose the Tracks that are Displayed Using the Track Manager

To Hide a Bus or Track

Changing the Meters' Display

To Set the Snap-to Position of a Knob or Fader

To Insert a New Track

To Rename a Track or Bus

Configuring the Console and Track Views

Video View

Open the Video view by using the **Views > Video** command or by clicking the **Video view** button in the **Views** toolbar. In addition to the Video view, there is also a Video Thumbnails pane in the Track view (see "Using the Video thumbnails pane" on page 225). Cakewalk's **Insert > Video File** command lets you include an AVI, MPEG, or QuickTime video in your project. This video is shown in the Video view in real time as your project plays. The Video view displays the current time (as in the Big Time view) and the video itself. The display in the Video view is synchronized with the Now time,

giving you convenient random access to the video stream. This makes it easy to align music and digitized sound to the video.

If the Video view is the active window, you can now use keyboard shortcuts to advance by a frame or a frame increment. The +/-, and left/right arrow keys move forward/backwards by a single frame. If the control key is pressed, then the frame increment value is used (default = 5 frames) Alternatively you can use the [and] keys to seek by the frame increment.

Commands in the Video view's pop-up menu let you set the time display format, the size and stretch options for the video display, the video start and trim times, and other options. Your project's video and digital audio data can be saved together in a new AVI file with **Tools > Export Video to AVI**. For more information, see Preparing Audio for Distribution.

Note: *The project's video file is saved in the project by reference only; the actual video data remains in the original file.*

Use these options in the **Video File** dialog box:

Look in. Use this field to find the folder that contains the video file you want to insert.

File name. Use this field to find the video file you want to insert. Clicking the name of the file in the window above this field causes it to appear in the **File name** field.

Files of Type. Use this field to select what type of video files to display.

Note: *In order to import and view QuickTime files, you will need to have installed the Quicktime DirectShow filters included with the installer, and you also need to download and install QuickTime from www.apple.com/quicktime.*

Show File Info. If you check this option, Cakewalk displays the video file's format tag, audio sample rate, and length in both audio samples and time.

Import Audio Stream. If you check this option, Cakewalk imports the video file's audio file along with the video. Select a blank track before you do this.

Stereo Split. If you check this option, Cakewalk imports the video file's audio file into two separate tracks, instead of one stereo track.

Open. After you decide what options you want, clicking the **Open** button imports the video and, optionally, the accompanying audio into your project.

For step by step instructions:

Video playback, import, and export

To load a video file into a project

To delete the video from the project

To enable or disable video playback

To set the Time display format

To set the background color

To set the Start and Trim times

See Also:

Optimizing video performance

Tempo View

Open the Tempo view by using the **Views > Tempo** command, or by clicking the **Tempo View** button in the **Views** toolbar.

The Tempo view shows the tempo of your project. You can use the mouse to draw tempo changes directly onto the graph.

The Tempo view provides both a graphic display of the tempo and a list of all tempo changes in your project. In the graphical display you can use your mouse to draw tempo changes directly onto the graph. In the tempo list, you can insert, edit, and delete individual tempo changes. Click the **Tempo List** button to display or hide the **Tempo** list.

If an entire project has a single tempo, the Tempo view shows a straight horizontal line, and a single tempo in the list.

If you want audio clips to stretch with any tempo changes you introduce, you need to enable Groove clip looping on any audio clips that you want to follow the tempo changes. Do this by selecting one or more clips, right-clicking a selected clip, and choosing **Groove > Clip Looping** from the pop-up menu. Each clip that has Groove clip looping enabled has beveled edges instead of sharp corners. The same command disables Groove clip looping on any selected clip that has Groove clip looping enabled.

The graph has several tools you can use to add or modify tempo changes:

Tool	Name	What It's for
	Select	Drag the Select tool in either the graphic display or the tempo list to select tempos for editing.
	Draw	Draw a custom curve indicating changes in tempo.
	Line	Draw a straight line indicating a steady increase or decrease in tempo.
	Erase	Eliminate tempo changes already in place for some portion of a project.
	Snap to Grid	When the **Snap to Grid** button is depressed, any new tempo changes will only be entered as often as the duration value in the tempo view's **Snap to Grid** dialog box (open by Right-clicking the **Snap to Grid** button).

Table 243.

If you make a mistake using any of these tools, you can use **Undo** to correct the error. When you use the Draw tool, the speed with which you drag the mouse determines the density of tempo

events. To insert a larger number of relatively small tempo changes, move the mouse slowly. To insert a smaller number of relatively large tempo changes, drag the mouse quickly.

The tempo list has its own tools for editing tempo changes:

Tool	Name	What It's for
	Tempo List	Displaying a list of all tempo changes in the project.
	Insert	Inserting a new tempo change
	Delete	Deleting a tempo change
	Tempo Properties	Editing a tempo change

Table 244.

For more information, see Using the Tempo View. For step by step instructions:

To Insert a Tempo Change in the Tempo View

To Steadily Increase or Decrease the Tempo in the Tempo View

To Draw a Series of Tempo Changes in the Tempo View

To Erase Tempo Changes in the Tempo View

To Insert a Tempo Change in the Tempo List in the Tempo View

To Edit a Tempo Change in the Tempo View

To Delete a Tempo Change from the Tempo List in the Tempo View

Meter/Key View

Open the Meter/Key view by using the **Views > Meter/Key** command, or by clicking the **Meter/Key View** button in the **Views** toolbar.

The Meter/Key view lets you enter meter and key changes on measure boundaries. Meter and key changes affect all tracks.

The Meter/Key view lets you set and change the meter and key signature for any project or part of a project, over all its tracks.

For more information, see The Meter/Key View.

See also:

What Is Meter?

To Add a Meter/Key Change

To Delete a Meter/Key Change

To Move a Meter/Key Change

To Edit a Meter/Key Change

Markers View

Open the Markers view with the **Views > Markers** command, or by clicking the **Markers view** button in the **Views** toolbar. The Markers view lets you add, move, rename, or delete Marker (labels) for places in your song. The markers make it easier to move from one point to another.

See “Creating and Using Markers” on page 318.

SYSX View

Open the Sysx view by using the **Views > Sysx** command, or by clicking the **Sysx view** button in the **Views** toolbar. System Exclusive messages (Sysx) are commands that are unique to each brand or model of sound module. Consult the manual of each particular machine to find out what Sysx commands it responds to. The Sysx view gives you 256 Sysx banks to hold System Exclusive messages.

See “Using the System Exclusive View” on page 807.

Big Time View

Open the Big Time view by using the **Views > Big Time** command, or by clicking the **Big Time view** button in the **Views** toolbar. The Big Time view lets you see the Now time from a distance while recording. Clicking the time display changes the units of time that the time display uses—the choices are MBT time and SMPTE.

Loop Construction view

The following is a list of the tools and controls in the Loop Construction view, followed by a description. For step-by-step instructions, see the links below.

Save Loop to Wave File Button

Click the **Save Loop to Wave file** button to open the **Save As** dialog. In the **Save As** dialog you can save the current loop (Groove clip) as a Riff Wave file, which are compatible with ACIDized loops. You can save Riff Wave files for use with another SONAR project or with ACID.

Enable Looping Button

Click the **Enable Looping** button to loop clips in the Track view by dragging the right side of a clip with your mouse. When **Enable Looping** is not on, you are able to slip-edit the clip. For more information about slip editing, see “Applying Fades and Crossfades Offline” on page 565.

Beats in Clip Field

The number of beats (quarter notes) in the clip.

Enable Stretching Button

The **Enable Stretching** button instructs SONAR to stretch or shrink the clip to fit the project’s tempo. The **Beats in Clip** and **Original BPM** parameters are used to make the change.

Original BPM Field

The tempo at which the clip was recorded.

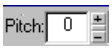
Follow Project Pitch Button

The **Follow Project Pitch** option transposes the loop, if necessary, to the key of the project. A loop recorded in the key of A, used in a project in the key of C, would be transposed up three semitones if the **Follow Project Pitch** check box was checked.

Root Note Field

The **Root Note** represents the key in which the loop was recorded. The **Follow Project Pitch** feature uses this information, when checked, to transpose the loop to match the project’s key.

Pitch Field (coarse)



You can set the transposition of a clip, independent from the project pitch, using the **Pitch (coarse)** field. A positive number transposes the clip up by that number of semitones. A negative number transposes the clip down by that number of semitones. Remember that, if the **Follow Project Pitch** option is checked, the clip follows the project’s pitch, so any transposition changes you make using this option are changes to the project pitch, not the clip pitch.

An example: The project key is C. The clip key is D. If the **Follow Project Pitch** option is checked, the clip is transposed down by two semitones. A value entered into the **Pitch (semitone)** field adjusts the pitch from C. If you enter “-1” the pitch would be transposed down by one additional semitone to B.

Another example: The clip pitch is E. The desired clip pitch is D. If the **Follow Project Pitch** option is not checked, and a value of “2” is entered in the **Pitch (semitones)** field, the clip is transposed down two semitones to D from the original pitch of E.

Pitch Field (fine)

The **Pitch (fine)** field allows you to make tuning adjustments or to transpose the pitch of a clip up to 50 cents. There are 100 cents in one semitone. A Pitch (fine) setting of **1** adjusts the pitch up one hundredth of a semitone. The **Pitch (fine)** option can “fine tune” a slightly out of tune clip so that it is in pitch with the remaining clips in a project.

Stop Preview Button

The **Stop Preview** button stops loop playback.

Preview Loop Button

Plays the current loop repeatedly. Use the **Stop Preview** control to stop playback.

Enable Slice Auto Preview

Turns on slice auto preview.

Slice Auto Preview

This control appears grayed out unless the **Enable Slice Auto Preview** option is on. This option loops the slice auto preview.

Preview Bus Field

Select the output through which you want to listen to the clip.

Clip Properties

The **Properties** button opens the **Clip Properties** dialog.

Select Tool

Use the Select tool to move markers in the Markers bar.

Erase Tool

Use the Erase tool to delete markers in the Markers bar.

Default All Markers Tool

The Default All Markers tool restores all automatically generated markers to the original position and enables all those that were disabled. Manually created markers remain as is.

Slices Resolution

The Slice Resolution control sets the resolution for the creation of markers, or the “slicing” of the looped clip. This control uses note lengths, so the settings are:

- No Slicing
- Whole notes
- Half notes
- Quarter notes
- Eighth notes
- Sixteenth notes
- Thirty-second notes

The automatic markers appear at the note resolutions according to the slider setting. At the eighth note setting, there are eight markers per measure.

This control works well for slicing audio that has more subtle changes in volume with few dramatic transients.

The markers in a loop clip preserve the timing of the audio at that moment. Too few or too many markers can cause unwanted “artifacts” when a loop clip is stretched.

Transient Detection

The Transient Detection control senses transients in your audio clip and assigns a marker at the beginning and end of each one it finds. As you increase the number in this field, smaller transients are detected and the number of markers increases.

Move to Previous Slice

Moves the slice selection to the previous slice in the loop.

Move to Next Slice

Moves the slice selection to the next slice in the loop.

Show/Hide Gain Envelope

Toggle on or off the display of a gain envelope.

Show/Hide Pan Envelope

Toggle on or off the display of a pan envelope.

Show/Hide Pitch Envelope

Toggle on or off the display of a pitch envelope.

Slice Gain Control

Change the gain setting for the selected slice.

Slice Pan Control

Change the pan setting for the selected slice.

Slice Pitch Control

Change the pitch setting for the selected slice.

Slicing Markers

There are two types of slicing markers in the Loop Construction view: automatic and manual. Automatic markers appear in red and are automatically generated by SONAR when you loop enable a clip. The one exception to this is if you import an ACIDized wave file into SONAR. ACIDized files always appear with manual slicing markers. Manual markers appear in purple. If you add a marker or move an automatic marker, it turns purple to show you that it has been edited. For information on editing slicing markers, see “To Edit the Slicing Markers in a Groove Clip” on page 423.

Beat Markers

Beat Markers mark where the beats fall in your clip. There are as many beat markers as there are beats in a clip.

For more information, see:

Working with Loops

Working Groove Clip audio

Creating and Editing Groove Clips

Using Pitch Markers in the Track View

Media Browser View

You can open the Media Browser view in any of the following methods:

- Select **Views > Media Browser** from the menu.
- Click the **Media Browser** icon on the **Views** toolbar.

The Media Browser view allows you to locate, view and preview your sound files.

The **Media Browser view** toolbar has the following controls:

Tool	Name	What It Does
	Move Up	Opens the folder one level above the active folder.
	Refresh	Refreshes the active folder.
	Windows Explorer	Opens Windows Explorer at the same directory being viewed in the Media Browser view.
	Play	Plays the selected media file.
	Stop	Stops the playback of the selected file.
	Auto Preview	Automatically preview files when you click on them in the Media Browser view. If the selected file is a Groove clip, it plays back in the project tempo and key.
	Views	Allows you to change the way the files are viewed in the list view. The available options are the same as in the Windows Explorer.
Content Location: Sample content	Content Location	Allows you to save and recall presets to quickly access your favorite folders.
Preview Bus: SB Live! Audio [DF20] 1/2	Preview Bus	Select the output through which you want to listen to the loop.
	Insert Synth	Inserts a new soft synth, which can be used to audition MIDI files.
	Delete Synth	Deletes the selected soft synth.
	Open Synth Properties page	Opens the user interface for the selected soft synth

Table 245.

Tree View Pane

The Tree view pane lists all of the available files and folders in the selected drive.

Contents List Pane

The Contents List pane displays the folders and files contained in the active folder.

See also:

Media Browser enhancements

Matrix view

Note: *The Matrix view is only available in SONAR Producer.*

The Matrix view lets you trigger individual or multiple audio and MIDI patterns, either with a computer keyboard, mouse or via MIDI remote control. The Matrix view consists of a grid, with unlimited rows and columns. You can drag audio, MIDI Groove Clips, Step Sequencer patterns and Project5 patterns to cells in the grid, and each row can be routed to any track in your project. You can record the Matrix performance to the Clips pane.

The Matrix view can be used as a stand-alone pattern trigger, or it can be synchronized with your project during playback.

There are many uses for the Matrix view, including:

- Experiment with different arrangements or combinations of loops, then record the performance into the Clips pane.
- Trigger any combination of loops in real-time

Figure 277. *The Matrix view*

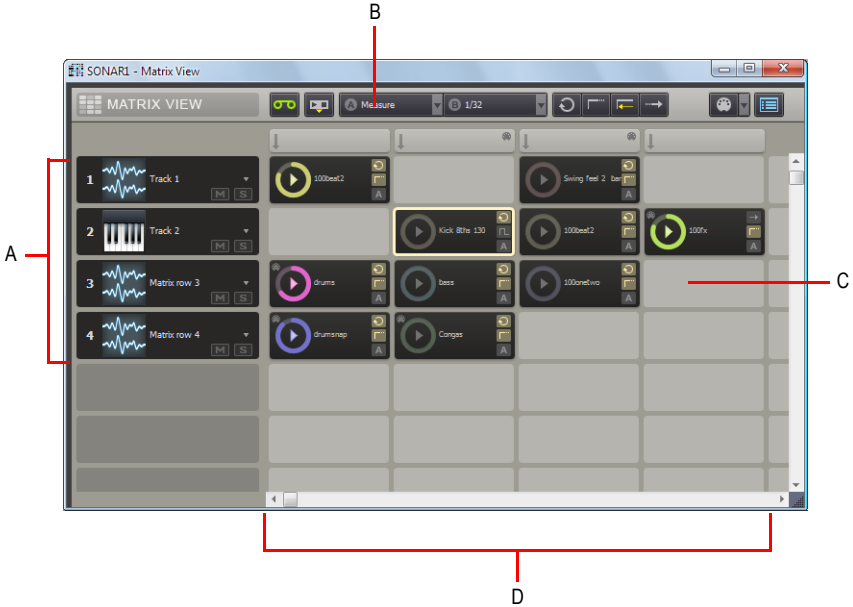
See:

Matrix view user interface

Using the Matrix view

Matrix view user interface

Figure 278. *The Matrix view*



A. *Rows* ***B.*** *Toolbar* ***C.*** *Cells* ***D.*** *Columns*

The Matrix view consists of four sections:

- **Toolbar.** The toolbar contains controls that let you specify how patterns are triggered. For details, see Toolbar.
- **Rows.** Each row is assigned to a track and can play one pattern at a time. A row can be routed to any track in your project. For details, see Rows.
- **Columns.** Each column contains one cell for each row. An entire column can be triggered at once. For details, see Columns.
- **Cells.** A cell is simply a pattern holder. You can drag one pattern into each cell, or leave the cell empty. Only one cell per row can be triggered at a time. For details, see Cells.

Toolbar

Figure 279. *Matrix view toolbar*

A. *Capture Matrix Performance (arm Matrix for recording)* ***B.*** *Follow Transport* ***C.*** *Trigger Resolution* ***D.*** *Alternate Trigger Resolution* ***E.*** *Global Loop Mode* ***F.*** *Global Latch Mode* ***G.*** *Retrigger Mode* ***H.*** *Cell Start* ***I.*** *Cell MIDI Trigger* ***J.*** *Options*

The **Matrix view** toolbar contains the following controls:

- **Capture Matrix Performance** . When the **Capture Matrix Performance** button is enabled, you can record the current Matrix performance into the Clips pane during playback. Rows are recorded to their assigned output tracks. For details, see To record a performance into the Clips pane. You can also perform a Quick Capture of a single pattern. For details, see To render a single pattern to the Clips pane (Quick Capture).

- **Follow Transport** . This toggle lets you specify if the Matrix view should follow SONAR's main transport (Play/Stop) commands. When **Follow Transport** is enabled, patterns will only play when SONAR's transport is rolling. When **Follow Transport** is disabled, you can play the Matrix while SONAR's transport is idle (if you start SONAR's transport in this mode, cells that are already playing will immediately update their positions to synchronize with SONAR's transport). For details, see To synchronize the Matrix with SONAR's transport.

- **Trigger Resolution** Measure . This menu lets you specify the time lag between when you trigger a column or cell, and when it starts/stops playing. The options are as follows:
  - **Immediate.** Playback starts immediately.
  - **Next Measure.** Playback starts on the next measure boundary. This is the default setting.
  - **Next Beat.** Playback starts on the next beat.
  - **Next 1/8 Note.** Playback starts on the next 8th note.
  - **Next 1/16 Note.** Playback starts on the next 16th note.
  - **Next 1/32 Note.** Playback starts on the next 32th note.
  - **Next 1/64 Note.** Playback starts on the next 64th note.

- **Alternate Trigger Resolution** 1/32 . This menu lets you specify the time lag to use when a cell's **Alternate Trigger Resolution** toggle is enabled. The options are as follows:
  - **Immediate.** Playback starts immediately.
  - **Next Measure.** Playback starts on the next measure boundary.
  - **Next Beat.** Playback starts on the next beat.
  - **Next 1/8 Note.** Playback starts on the next 8th note.
  - **Next 1/16 Note.** Playback starts on the next 16th note.

- **Next 1/32 Note.** Playback starts on the next 32th note. This is the default setting.
- **Next 1/64 Note.** Playback starts on the next 64th note.

- **Global Loop Mode** / **.** This toggle lets you specify if a triggered cell should repeat indefinitely, or stop when it reaches the end. When **Loop** is enabled , a triggered cell loops indefinitely. When **Global Loop Mode** is disabled , a triggered cell plays once then stops. This option is enabled by default.

- **Global Latch Mode** / **.** This toggle lets you specify if a triggered cell should stop or keep playing after you release the mouse button or MIDI key. When **Global Latch Mode** is enabled , a triggered cell will continue to play after you release the mouse button or MIDI key. When **Global Latch Mode** is disabled , a triggered cell will stop playing when you release the mouse button or MIDI key.

Note: *Together, the **Global Latch Mode** and **Global Loop Mode** toggles give you flexible control over how cells are triggered.*

- **To play a cell continuously when triggered.** Enable **Global Loop Mode**; enable **Global Latch Mode**
- **To play a cell once through when triggered.** Disable **Global Loop Mode**; enable **Global Latch Mode**
- **To play a cell continuously as long as the mouse/note is held.** Enable **Global Loop Mode**; Disable **Global Latch Mode**
- **To play a cell as long as the mouse/note is held, but stop at end.** Disable **Global Loop Mode**; disable **Global Latch Mode**

- **Retrigger Mode** / **.** This toggle lets you specify if a cell should stop or retrigger from the beginning if triggered during playback. When **Retrigger Mode** is enabled , triggering a playing cell will restart the cell from its beginning. When **Retrigger Mode** is disabled , triggering a playing cell will stop the cell from playing.

- **Cell Start** / **.** This toggle lets you specify globally if a pattern should start from the beginning of the pattern, or if playback may start in the middle of a pattern in order to synchronize with the project's Now time. The two modes are as follows:

  - **Always from Beginning** **.** When you trigger a cell, the pattern will start playing from the beginning of the pattern, after the amount of time listed in the **Trigger Resolution** menu.

  - **Offset to Now Time** **.** When you trigger a cell, the pattern will start playing in sync with the Now time after the amount of time listed in the **Trigger Resolution** menu. It's as if the cell's pattern is repeated throughout the song and you unmute the pattern at a certain point. This is the default setting.

- **Cell MIDI Trigger** **.** This toggle lets you enable/disable MIDI control over the Matrix view.

- **Options** . Click the **Options** button to open the **Matrix Options** dialog. The following option is available:
  - **Triggering Empty Cell(s) Mutes Row(s).** This option determines how playing cells are affected when triggering an empty cell in the same row. If **Triggering Empty Cell(s) Mutes Row(s)** is disabled (default), triggering an empty cell has no effect on other cells. If **Triggering Empty Cell(s) Mutes Row(s)** is selected, triggering an empty cell in a row will force the row to stop playing. Likewise, triggering a column that contains empty cells will force the corresponding row to stop playing. This option is disabled by default.

See:

To specify how soon a pattern should start playing after being triggered

To start a pattern from its beginning

To synchronize a pattern with the project's Now time

To synchronize the Matrix with SONAR's transport

To disable MIDI remote control

To record a performance into the Clips pane

Rows

Figure 280. *Matrix view row*

A. *Assigned track* ***B.*** *Mute/unmute row* ***C.*** *Solo/unsolo row* ***D.*** *Click the arrow to re-assign the row to a different track*

A row is a horizontal collection of cells that is routed to a specific track in your project. Only one cell per row may be triggered at a time.

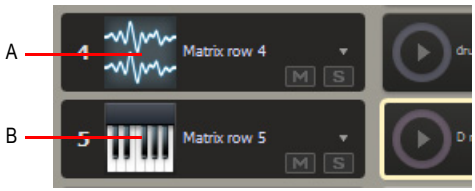
Tip: *To play multiple patterns through the same track simultaneously, assign multiple rows to the same track.*

To the left of the cells are controls that let you mute/unmute a row, solo/unsolo a row, and assign the row to a track in your project. All cells in the row are routed through the assigned track.

The Matrix view supports unlimited rows. Rows are created automatically when you drag patterns into the Matrix view. Each row displays the name of the track it is routed to. Whenever a new row is

created in the Matrix view, a corresponding track is also inserted in the project. New rows are named **Matrix row “n”**.

Note: *Rows that are assigned to audio tracks can only contain cells with audio data. Likewise, rows that are routed to MIDI or Instrument tracks can only contain cells with MIDI data. The Audio or MIDI identity of a row is established when the first pattern is dragged into the row.*



A. *Row contains audio data* ***B.*** *Row contains MIDI data*

See:

To assign multiple patterns to subsequent rows

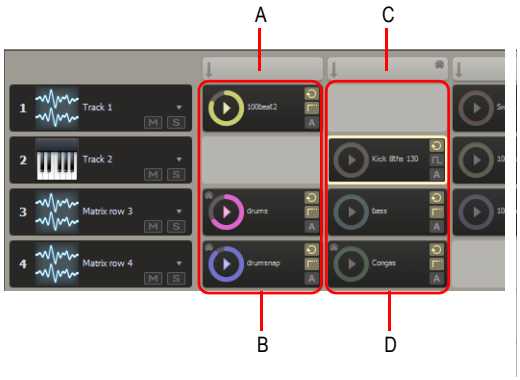
To mute/unmute a row

To solo/unsolo a row

To reassign a row to a different track

Columns

Figure 281. *Matrix view columns*



A. *Column 1 trigger* ***B.*** *Column 1* ***C.*** *Column 2 trigger* ***D.*** *Column 2*

A column is a vertical collection of cells, with one cell per row.

Above each column is a Column Trigger, which lets you simultaneously trigger all cells in a column. Just like cells, the Column Trigger can be triggered with a mouse or via MIDI remote control. If you trigger a column, all other cells in the Matrix will be turned off, since only one cell per row may be triggered.

The Matrix view supports unlimited columns. A column is created automatically when at least one cell in the column contains a pattern.

Tip: *If you frequently need to trigger multiple patterns simultaneously, arrange the patterns into columns, then use the Column Triggers above the columns to trigger the patterns.*

You can right-click a Column Trigger to access the following commands:

- **MIDI Learn.** Use this command to assign a MIDI event to a Column Trigger, which allows you to trigger all cells in the column via MIDI remote control. The **MIDI Learn** command shows a check mark if the Column Trigger is already in MIDI Learn mode, and shows an asterisk (*) if there is already a MIDI event assigned to the Column Trigger.
- **Clear MIDI Mapping for Column.** Use this command to remove any MIDI assignment from the Column Trigger. The column will no longer be triggered via MIDI remote control.
- **Clear MIDI Mapping for All.** Use this command to remove any MIDI assignments from all cells in the Matrix view. Cells will no longer be triggered via MIDI remote control.

See:

To assign multiple patterns to subsequent rows

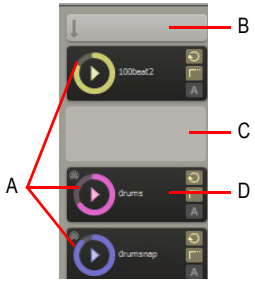
To trigger all cells in a column simultaneously

To trigger a cell or column via MIDI remote control

To stop playing a column

Cells

Figure 282. *Matrix view cells*



A. *Filled cells (contain patterns)* ***B.*** *Column trigger (click to play all cells in a column)* ***C.*** *Empty cell* ***D.*** *Playing cell with progress indicator*

The Matrix view is a grid of unlimited cells arranged into rows and columns.

A cell is simply a pattern holder. You can drag one pattern into each cell, or leave the cell empty. By default, a cell displays the name of the assigned pattern, but the cell can be renamed.

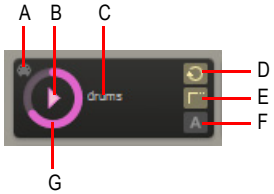
You can trigger cells by clicking with a mouse or via MIDI remote control. Only one cell per row can be triggered at a time. Patterns repeat themselves until you stop playback or until another pattern in the same row starts to play.

A cell blinks when it is triggered but not yet playing. In this state, the cell has been queued for playback, and will play as soon as the current **Trigger Resolution** is reached.

During playback, a cell displays a “play” icon and a circular progress indicator to show the position of the loop as it is playing.

A filled cell contains the following controls:

Figure 283. *Matrix view cell*



A. *MIDI Learn indicator* ***B.*** *Trigger area* ***C.*** *Cell name* ***D.*** *Loop mode* ***E.*** *Latch mode* ***F.*** *Alternate trigger mode* ***G.*** *Progress indicator*

- **Cell name.** The name of the cell. By default, a cell displays the name of the assigned pattern, but the cell can be renamed. For details, see To rename a cell.
- **Progress indicator.** During playback, a cell displays a circular progress indicator to show the position of the loop as it is playing.
- **MIDI Learn indicator.** The MIDI Learn indicator shows if the cell has been assigned to MIDI remote control.
- **Trigger area.** Click the Trigger area to trigger the cell according to the global **Trigger Resolution** and **Cell Start** settings.

Note: *When triggered with a mouse, a cell is triggered when the mouse button is pressed, not when the mouse button is released.*

- **Alternate Trigger mode.** When a cell’s Alternate Trigger mode is enabled, the cell will trigger using the global **Alternate Trigger Resolution** setting. For details, see To trigger a cell with an alternate trigger time.
- **Loop mode.** Each cell has a **Loop Mode** button, which lets you override the **Global Loop Mode** setting. By default, each cell inherits the **Global Loop Mode** setting. When a cell’s **Loop Mode** toggle is enabled, the cell will no longer follow the **Global Loop Mode** setting. For details,

see To use independent Loop mode per cell.

Note: *After a cell's **Loop Mode** button has been engaged, the cell will no longer continue to follow the **Global Loop Mode** setting, even if you disable the cell's **Loop Mode** button. To restore the link to the **Global Loop Mode** setting, hold down the CTRL key and click the cell's **Loop Mode** button.*

- **Latch mode.** Each cell has a **Latch Mode** button, which lets you override the **Global Latch Mode** setting. By default, each cell inherits the **Global Latch Mode** setting. When a cell's **Latch Mode** toggle is enabled, the cell will no longer follow the **Global Latch Mode** setting. For details, see To use independent Latch mode per cell.

Note: *After a cell's **Latch Mode** button has been engaged, the cell will no longer continue to follow the **Global Latch Mode** setting, even if you disable the cell's **Latch Mode** button. To restore the link to the **Global Latch Mode** setting, hold down the CTRL key and click the cell's **Latch Mode** button.*

You can right-click a cell to access the following commands:

- **Rename Cell.** Use this command if you want to rename the cell.
- **Clear Cell.** Use this command to remove any pattern and MIDI assignment from the cell.
- **MIDI Learn.** Use this command to assign a MIDI event to a cell, which allows you to trigger the cell via MIDI remote control. The **MIDI Learn** command shows a check mark if the cell is already in MIDI Learn mode, and shows an asterisk (*) if there is already a MIDI event assigned to the cell.
- **Clear MIDI Mapping for Cell.** Use this command to remove any MIDI assignment from the cell. The cell will no longer be triggered via MIDI remote control.
- **Clear MIDI Mapping for All.** Use this command to remove any MIDI assignments from all cells in the Matrix view. Cells will no longer be triggered via MIDI remote control.

In addition to a mouse, you can use the computer keyboard to navigate between cells:

- Use the ARROW keys to move focus to another cell that contains data.
- Press ENTER to trigger the cell that has focus.
- Press DELETE to clear the cell that has focus.

See:

To assign a pattern to a cell

To assign multiple patterns to subsequent columns

To remove a pattern from a cell

To specify how soon a pattern should start playing after being triggered

To start a pattern from its beginning

To synchronize a pattern with the project's Now time

To trigger a cell

To trigger all cells in a column simultaneously

To trigger a cell or column via MIDI remote control

To stop playing one or more cells

To rename a cell

To move a pattern to another cell

To copy a pattern to another cell

To render a single pattern to the Clips pane (Quick Capture)

See also:

Matrix view user interface

Using the Matrix view

Using the Matrix view

To open the Matrix view
To assign a pattern to a cell
To assign multiple patterns to subsequent rows
To assign multiple patterns to subsequent columns
To remove a pattern from a cell
To specify how soon a pattern should start playing after being triggered
To start a pattern from its beginning
To synchronize a pattern with the project's Now time
To synchronize the Matrix with SONAR's transport
To trigger a cell
To trigger all cells in a column simultaneously
To trigger a cell or column via MIDI remote control
To disable MIDI remote control
To clear MIDI event assignments
To retrigger a playing cell
To pause or resume playback of all playing cells
To stop playing one or more cells
To stop playing a column
To use independent Latch mode per cell
To use independent Loop mode per cell
To mute/unmute a row
To solo/unsolo a row
To reassign a row to a different track
To rename a cell
To move a pattern to another cell
To copy a pattern to another cell
To record a performance into the Clips pane
To render a single pattern to the Clips pane (Quick Capture)

To open the Matrix view

- Do *one* of the following:
  - Select **Views > Matrix view**.
  - Press CTRL+SHIFT+M.

- Click the **Matrix View** button on the **View** toolbar.

To assign a pattern to a cell

You can drag audio, MIDI Groove Clips, Step Sequencer patterns and Project5 patterns from the Media Browser view or from the Clips pane into the Matrix view. Do *one* of the following:

- **To assign a pattern to a cell in an existing row.** Drag a pattern to the desired cell in an existing row.
- **To assign a pattern to a cell in an empty row.** If you drag a pattern to an empty row, you can specify if the new row should be assigned to an existing track or to a new corresponding track:
  - **To create a new row and assign it to the most recently created or assigned track.** Drag a pattern to the desired cell in an empty row.
  - **To create a new row and corresponding track.** Hold down the ALT key and drag a pattern to the desired cell in an empty row.

  Any new rows and tracks that are created by the Matrix are named “Matrix Row n”.

  When dragging a clip from the Clips pane, the cell will automatically inherit the clip name and color. If the clip has no name, the cell will be named “Audio” or “MIDI”.

Note 1: *Rows that are assigned to audio tracks can only contain cells with audio data. Likewise, rows that are routed to MIDI or Instrument tracks can only contain cells with MIDI data. The Audio or MIDI identity of a row is established when the first pattern is dragged into the row.*

Note 2: *When you drag a clip from the Clips pane and drop it in the Matrix view, the Matrix view will use the entire raw clip data, even if the clip is cropped. If you want the Matrix view to only use the uncropped part of the clip, first use the **Edit > Bounce to Clip(s)** command to create a new clip. If you want the clip to loop smoothly, you may also want to convert the new clip to a Groove clip and edit it in the Loop Construction view before you drag it into the Matrix view.*

To assign multiple patterns to subsequent rows

1. Select multiple patterns in the Media Browser view or the Clips pane.
2. Drag the selected patterns to the desired target cell.

   The first pattern is assigned to the target cell, and any additional patterns are assigned to subsequent rows below the target cell.

To assign multiple patterns to subsequent columns

1. Select multiple patterns in the Media Browser view or the Clips pane.
2. Hold down the SHIFT key and drag the selected patterns to the desired target cell.

   The first pattern is assigned to the target cell, and any additional patterns are assigned to subsequent columns the right of the target cell.

To remove a pattern from a cell

- Do *one* of the following:
  - Click the cell then press the DELETE key.
  - Right-click the cell and select **Clear Cell** from the pop-up menu.
  - Drag the pattern to a different cell.

To specify how soon a pattern should start playing after being triggered

When you trigger a cell or column, playback starts after the amount of time that is selected in the **Cell Trigger Time** Measure menu in the **Matrix view** toolbar.

- Click the **Trigger Resolution** menu and select one of the available options:
  - **Immediate.** Playback starts immediately.
  - **Next Measure.** Playback starts on the next measure boundary.
  - **Next Beat.** Playback starts on the next beat.
  - **Next 1/8.** Playback starts on the next 8th note.
  - **Next 1/16.** Playback starts on the next 16th note.
  - **Next 1/32 Note.** Playback starts on the next 32th note.
  - **Next 1/64 Note.** Playback starts on the next 64th note.

  After a cell has been triggered, the cell blinks until the **Trigger Resolution** is reached, at which time playback starts.

To start a pattern from its beginning

- Make sure the **Cell Start** toggle is in Always from Beginning mode before you trigger the pattern.

Tip: *To trigger a cell using the opposite mode of the current **Cell Start** setting, hold down the ALT key when you trigger the cell.*

To synchronize a pattern with the project's Now time

- Make sure the **Cell Start** toggle is in Offset to Now Time mode before you trigger the pattern.

Tip: *To trigger a cell using the opposite mode of the current **Cell Start** setting, hold down the ALT key when you trigger the cell.*

When you trigger a cell in Offset to Now Time mode, the pattern will start playing in sync with the Now time after the amount of time listed in the **Trigger Resolution** menu. It's as if the cell's pattern is repeated throughout the song and you unmute the pattern at a certain point.

To synchronize the Matrix with SONAR's transport

- Make sure the **Follow Transport** button is enabled.

  Patterns will now only play when SONAR's transport is rolling.

To trigger a cell

- Do *one* of the following:
  - Click the desired cell.
  - Use the ARROW keys on your computer keyboard to navigate to the desired cell, then press ENTER.
  - If the cell has been assigned to a MIDI event, press the appropriate key, pad or button on your MIDI controller. For details, see To trigger a cell or column via MIDI remote control.
  - After the cell has been triggered, the cell blinks until the **Trigger Resolution** is reached, at which time playback starts.

  The global **Cell Start** toggle determines if the pattern will play from the beginning of the pattern or synchronize to the project's Now time. In Always from Beginning mode , patterns always start from the beginning. In Offset to Now Time mode , patterns synchronize to the project's Now time.

Tip: *To trigger a cell using the opposite mode of the current **Cell Start** setting, hold down the ALT key when you trigger the cell.*

During playback, the cell displays a "play" icon and a circular progress indicator to show the position of the loop as it is playing. Patterns repeat themselves until you stop playback or until another pattern in the same row starts to play (non-looped content play as one-shots, meaning the patterns play only once).

Note 1: *Only one cell per row can be triggered at a time. You can trigger multiple cells simultaneously as long as they are located in different rows.*

Note 2: *Together, the **Global Latch Mode** and **Global Loop Mode** toggles give you flexible control over how cells are triggered.*

- **To play a cell continuously when triggered.** Enable **Global Loop Mode**; enable **Global Latch Mode**
- **To play a cell once through when triggered.** Disable **Global Loop Mode**; enable **Global Latch Mode**
- **To play a cell continuously as long as the mouse/note is held.** Enable **Global Loop Mode**; Disable **Global Latch Mode**
- **To play a cell as long as the mouse/note is held, but stop at end.** Disable **Global Loop Mode**; disable **Global Latch Mode**

See also:

To trigger a cell with an alternate trigger time

To trigger a cell or column via MIDI remote control

To trigger a cell with an alternate trigger time

1. Click the cell's **Alternate Trigger Mode** button.
2. Do *one* of the following:
   - Click the desired cell's trigger area.
   - Use the ARROW keys on your computer keyboard to navigate to the desired cell, then press ENTER.
   - If the cell has been assigned to a MIDI event, press the appropriate key, pad or button on your MIDI controller. For details, see To trigger a cell or column via MIDI remote control.
   - After the cell has been triggered, the cell blinks until the **Alternate Trigger Resolution** is reached, at which time playback starts.

See also:

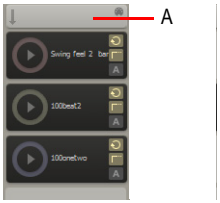
To trigger a cell

To trigger all cells in a column simultaneously

- Click the Column Trigger at the top of the column.

  All the patterns in the column start playing and any other playing cells are turned off.

  The shorter patterns in a column repeat until the longest pattern finishes.



A. *Click the Column Trigger to trigger all cells in the column*

See also:

To trigger a cell or column via MIDI remote control

To trigger a cell or column via MIDI remote control

You can trigger a cell or column via MIDI remote control, but you must first specify the MIDI message that should trigger the cell or column.

1. Right-click the cell or Column Trigger that you would like to trigger via MIDI remote control, and select **MIDI Learn** from the pop-up menu.

   The cell has a yellow outline. The next MIDI event the Matrix receives will be assigned to all cells that are in MIDI Learn mode.

Note: *If the **Cell MIDI Trigger** button in the **Matrix view** toolbar is disabled, it will automatically be enabled when a cell is in MIDI Learn mode.*

2. Press the desired key, pad or button on your MIDI controller.

   The incoming MIDI message is assigned to all cells that are in MIDI Learn mode.

Tip: *You can put multiple cells on different rows into MIDI Learn mode, and all cells will be triggered by the same MIDI event.*

The MIDI message is assigned to a specific cell in the grid, not to any particular pattern or loop. You can even use MIDI Learn on empty cells.

After a cell has been assigned to a MIDI message, you can press the corresponding key, pad or button on your MIDI controller to trigger the cell.

1. Make sure the **Cell MIDI Trigger** button in the **Matrix view** toolbar is enabled.
2. Press the desired key, pad or button on your MIDI controller.

   All cells that are assigned to the incoming MIDI message will be triggered.

Note: *You can also use a MIDI modifier key to trigger a cell using the opposite mode of the current **Cell Start**, **Global Loop Mode**, **Global Latch Mode**, or **Retrigger Mode** settings. To MIDI learn the MIDI modifier functions, click the **Matrix Options** button and click the corresponding MIDI modifier function:*

- *Use Alternate Trigger Mode*
- *Use Alternate Timing Mode*
- *Use Alternate Latch Mode*
- *Use Alternate Retrigger Mode*
- *Use Alternate Loop Mode*

To disable MIDI remote control

- Make sure the **Cell MIDI Trigger** button in the **Matrix view** toolbar is disabled.

To clear MIDI event assignments

- Do *one* of the following:
  - **To clear MIDI assignments for a single cell.** Right-click the desired cell and select **Clear MIDI Mapping for Cell** on the pop-up menu.
  - **To clear MIDI assignments for a single Column Trigger.** Right-click the desired cell and select **Clear MIDI Mapping for Column** on the pop-up menu.
  - **To clear MIDI assignments for all cells and Column Triggers.** Right-click any cell or Column Trigger and select **Clear MIDI Mapping for All** on the pop-up menu.

To retrigger a playing cell

1. Make sure the **Retrigger Mode** toggle in the **Matrix View** toolbar is enabled.
2. Do *one* of the following:
   - Click the desired playing cell.
   - Use the ARROW keys on your computer keyboard to navigate to the desired playing cell, then press ENTER.
   - If the cell has been assigned to a MIDI event, press the appropriate key, pad or button on your MIDI controller. For details, see To trigger a cell or column via MIDI remote control.

   The playing cell restarts from its beginning.

To pause or resume playback of all playing cells

1. Make sure the **Follow Transport** button is enabled.
2. Press the SPACEBAR key.

To stop playing one or more cells

- Do *one* of the following:
  - Click the playing cell.
  - Click an empty cell in a row to stop that row.
  - If the cell is assigned to a MIDI event, press the corresponding key, pad or button on your MIDI controller (see To trigger a cell or column via MIDI remote control).

To stop playing a column

- Do *one* of the following:
  - Click the Column Trigger above the column.
  - If the column is assigned to a MIDI event, press the corresponding key, pad or button on your MIDI controller (see To trigger a cell or column via MIDI remote control).

To use independent Latch mode per cell

- Click the cell's **Latch Mode** button.

The cell now uses its own independent Latch mode and no longer follows the **Global Latch Mode** setting.

Note: *After a cell's **Latch Mode** button has been engaged, the cell will no longer continue to follow the **Global Latch Mode** setting, even if you disable the cell's **Latch Mode** button. To restore the link to the **Global Latch Mode** setting, hold down the CTRL key and click the cell's **Latch Mode** button.*

To use independent Loop mode per cell

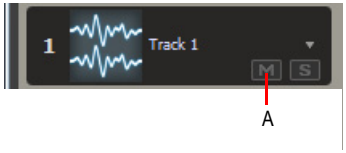
- Click the cell's **Loop Mode** button.

The cell now uses its own independent Latch mode and no longer follows the **Global Loop Mode** setting.

Note: *After a cell's **Loop Mode** button has been engaged, the cell will no longer continue to follow the **Global Loop Mode** setting, even if you disable the cell's **Loop Mode** button. To restore the link to the **Global Loop Mode** setting, hold down the CTRL key and click the cell's **Loop Mode** button.*

To mute/unmute a row

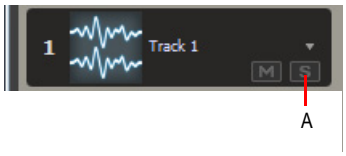
- Click the row's **Mute** button.



A. *Click the row's **Mute** button mute/unmute a row*

To solo/unsolo a row

- Click the row's **Solo** button.

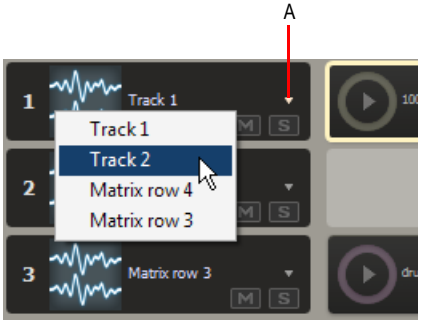


A. *Click the row's **Solo** button solo/unsolo a row*

To reassign a row to a different track

- Click the arrow next to the track name and select a track from the drop-down menu.

Rows that contain audio patterns can be assigned to any available audio track, and rows that contain MIDI patterns can be assigned to MIDI tracks.



A. *Click arrow to reassign a row to a different track*

To rename a cell

1. Right-click a cell and select **Rename Cell** from the pop-up menu.

   The **Rename Cell** dialog appears.
2. Type a new name and click **OK**.

To move a pattern to another cell

- Drag a pattern to an empty cell.

To copy a pattern to another cell

- Hold down the CTRL key and drag the pattern to another cell.

To record a performance into the Clips pane

You can capture (record) the output of the Matrix on the same tracks that rows are assigned to. When capturing data from the Matrix, any existing clips in the target tracks are unaffected.

1. Specify the desired triggering time lag in the **Trigger Resolution** Measure drop-down menu.
2. Click the **Capture Matrix Performance** button to enable it.
3. Move the project's Now time to where you want to start recording.
4. Trigger the cells you would like to record.

Note: *You can turn cells on and off while SONAR is capturing the performance.*

5. Press **Play** in SONAR to start playback.

   As cells are triggered in the Matrix view, the Clips pane displays corresponding preview clips.

If SONAR's transport is looping, captured Matrix performance data will overwrite itself.

6. When you want to stop recording, press **Stop** in SONAR or press the SPACEBAR key.

   SONAR records the output of all unmuted rows to their respective target tracks. The new clips inherit their colors from the triggered cells.

   Audio patterns record as audio clip in the Clips pane, and MIDI patterns record as MIDI clips. If you want to undo the recording, press CTRL+Z.

Note: *In addition to capturing an entire performance, you can also perform a Quick Capture of a single pattern. For details, see To render a single pattern to the Clips pane (Quick Capture).*

See also:

To render a single pattern to the Clips pane (Quick Capture)

To render a single pattern to the Clips pane (Quick Capture)

You can perform a Quick Capture of a single cell to render the pattern to the Clips pane.

- Hold down the CTRL and ALT keys and click the cell.

  One repetition of the pattern is rendered on the row's target track at the current Now time.

See:

Matrix view

Navigator View

The Navigator view displays a large part of your project so you can see an overview of your song. The Navigator view is a floating version of the Navigator pane found at the top of the Track view.

Track Rectangle

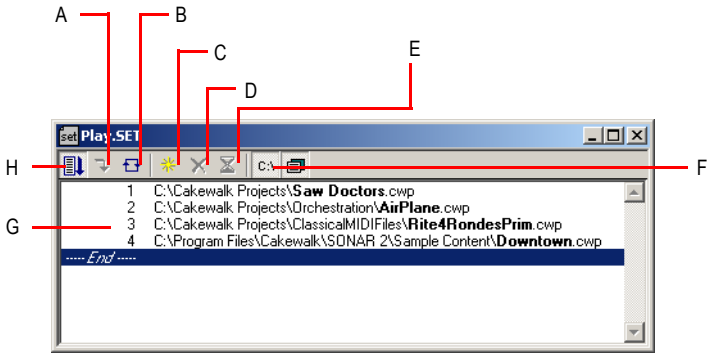
The Track Rectangle appears as a green rectangle within the Navigator view. The Track Rectangle indicates the section of your project which appears in the Clips pane of the Track view. You can move the Track Rectangle or change its size.

For more information, see “Using the Navigator View” on page 303.

Play List View

Open the Play List view by using the **File > New** command to open the **New Project** dialog box, and choosing Play List set from the list of files (it’s near the top of the list). This view lets you set up a series of songs to play sequentially.

The Play List view lets you create, edit, and save a **play list** (or **set**) of up to 128 SONAR projects. Once you’ve created the list, you can play back the entire sequence automatically. You can even program the list to pause between songs for a fixed amount of time or to wait for a keystroke before proceeding.



***A.** Switch to the next song **B.** Repeat the list **C.** Add a song **D.** Drop a song **E.** Set a delay **F.** Display full path **G.** List of songs **H.** Enable the play list*

Play lists can be saved for future use. Play list files have the extension .SET.

See To create and edit a play list and To play files from the Play List view.

See also:

Surround Panner

The large surround panner has the following controls:

- **Angle and Focus marker.** A small sphere that you can drag in any direction to both control and display the following two parameters:
  - **Angle.** This is the perceived angle of the sound source as it differs from the position directly in front of the listener. The scale is 0 to 180 degrees on the listener's right, and 0 to -180 degrees on the listener's left. 0 means the sound is coming from directly in front of the listener, and plus or minus 180 degrees means that the sound is coming from directly behind the listener.
  - **Focus.** This is the perceived distance of the sound source from the center of the circle on a scale of 0 to 100, 0 meaning the center of the circle, and 100 meaning the perimeter.
- **Width markers.** These are two smaller spheres equidistant from the Angle and Focus marker. Their distance from each other and from the front of the circle shows the Width value (see definition below). You can also drag the Width markers to control Angle and Focus.
- **Speaker icons/squares.** Each surround channel is represented by a speaker icon in the large panner, and a white square in the small panner. The large panner also has a corresponding volume level in dB directly in front of each icon. The position of each speaker icon shows you each speaker's position in the surround mix. Clicking a speaker icon or square **mutes** the corresponding channel, causing the icon or square to become grey.
- **Angle slider.** This slider both displays and controls the angle value.
- **Focus slider.** This slider both displays and controls the focus value.
- **Width slider.** This slider both displays and controls the width value. *Width* is a measure of how wide an area the sound seems to be coming from on a scale of 0 to 360 degrees. At 0 and 360 degrees, the sound seems to all come from a single speaker. At 180 degrees the sound seems to come from directly opposite sides. The default angle matches the project's left and right channel angle. For example, in 5.1 SMPTE/ITU surround, the default width is 60 degrees.
- **Front/Rear Balance slider (large panner only).** Abbreviated as FrntRrBl, this slider adjusts the front and rear balance. Drag it to the left to reduce the level from the front speakers, or drag it to the right to reduce rear level.
- **LFE slider.** This slider both displays and controls the level of sound sent to the LFE channel.
- **LFE Only button (large panner only).** This button mutes all channels except the LFE channel.

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Aftertouch

MIDI property controlling how much pressure is applied after sending a Note On message. See “Channel aftertouch (ChanAft)” on page 1526 and “Key aftertouch (KeyAft)” on page 1530.

AIFF

Short for ***A**udio **I**nterchange **F**ile **F**ormat*, the audio file format on the Macintosh platform. Files in this format have the extension .aif or .aiff.

Archive

Silence and suppress the processing of a track. Archived tracks are not loaded into RAM, so they can’t be unmuted in real time. Use the archive command to reduce the demand on your CPU. See “Mute” on page 1532.

Arm

Enable a track for recording.

See Choosing an input.

Audio clip

A visual reference to a portion of, or an entire, recorded audio file. This is represented graphically as a wave form which can be edited and manipulated in a variety of manners.

Audio track

An audio track is a reference point for playing and recording a single digital audio file stored on your computer's hard drive. The inputs of the audio track are where you would like to record a signal from and the outputs are where you would like to send this signal to monitor.

Audition

Preview audio effects before applying them to a track.

See Basic Audio Processing.

Automation
Ability to change controllable parameters over the length of a track. This is achieved by referencing “snapshots” or “nodes” assigned to specific parameter values in relation to their position on the timeline and is achieved with envelopes.

See Quick Automation Guide.

Bank
A means of categorizing sounds. A “bank” can store up to 128 “patches”.

Bit depth
The amount of data allocated to reproducing a sound wave of digital audio file. Closely related to the dynamic range of the audio file. 1-bit typically represents 6dB of dynamic range when converting an analog signal to a digital signal. Thus, the greater the bit depth, the greater the dynamic range.

Broadcast wave
A wave file with the following embedded information: description, originator, origination date, origination time, and SMPTE time reference.

Bundle file
A single file that incorporates all project information and audio data. Bundle files are useful for creating backups of your work or for moving projects from on computer to another.

Cakewalk Application Language (CAL)
An event-processing language that extends Cakewalk with custom editing commands. Useful for applying quantization, humanization, or other instant changes to MIDI events.

See Running CAL Programs.

Channel
Path through which MIDI transmits information. MIDI devices typically send data over 1 of 16 channels, or over all channels simultaneously (Omni).

Channel aftertouch (ChanAft)
MIDI property regulating the pressure applied to all the notes of the instrument on the specified channel.

Chord
Three or more notes played simultaneously. Typically represented by a single letter representing its root, numbers representing additional notes, and symbols representing its quality. On the guitar chord grid, the notes are shown on the neck of a guitar.

See Adding Chord Symbols.

Chord symbol
The **c** among the expression marks on the staff view. Put one above the notes where you want to define a guitar chord grid.

See Chords and Marks.

Clip
A reference to a portion or entire audio or MIDI file stored on your computer. Clips can be edited, moved, linked, copied etc. as a means of creating your project.

Clone
A command that allows you to copy a track along with its properties. You can choose to copy the clips or events or both. You can choose the destination track for the copy.

Controllers
Pedals, knobs, and wheels on your electronic instrument that you can use to change the sound while you're playing.

See Controllers, RPNs, NRPNs, and Automation Data.

Controls
Sliders, faders, knobs, and buttons on the console or your on-line equivalent of Controllers.

See Mixing.

Crescendo
A passage of music during which the volume gradually increases.

Crossfade
One clip fading in while another fades out. You can create destructive or non-destructive crossfades. For more information, see Fades and Crossfades.

dB
The abbreviation for Decibel.

See The Decibel Scale.

Decibel
A logarithmic unit used to measure loudness; abbreviated dB.

See The Decibel Scale.

Decrescendo
Also referred to as a diminuendo, is a passage of music during which the volume gradually decreases.

Digital audio
Music or sound recorded digitally, as on a compact disk as opposed to an analog signal recorded to tape.

DMA
Direct Memory Access. DMA settings determine how your computer’s sound card communicates with Cakewalk.

See The Wave Profiler for information about how to change DMA settings.

DRM (Dump Request Macro)
Utility for getting synthesizer data into a bank.

Duration
In SONAR's **Step Record** dialog box, duration means the actual length of time that a note sounds, as opposed to the notated value of the note, which could be different. If you check the **Follow Step Size** option in the dialog box, the notated value and the duration are the same.

Echo
Enables real-time monitoring of the associated track's inputs through the outputs of your sound device.

Effects (audio effects)
Systematic changes you can make to parts or all of the music, like reverb, chorus, and delay.

See Audio Effects (Audio Plug-ins) and Using Real-Time Effects.

Envelopes
Reflects the changes in value for a specified parameter (volume, for example) over a period of time. Also refers to the graph of the change—same as vector.

See Automation.

Event
Note, MIDI action, or audio clip.

Expression
Chord symbol, text of any sort (like *ff* or *con amore*), hairpin, or pedal marks.

Expression marks
Dynamic markings and other musical instructions (like decrescendo, con amore, etc.) in the Staff view.

See Adding Expression Marks.

Fade
Gradual increase or decrease in volume.

See Fades and Crossfades and Automation.

Fade-in
A gradual increase in volume from absolute silence.

See Fades and Crossfades and Automation.

Fade-out
A gradual decrease in volume toward absolute silence.

See Fades and Crossfades and Automation.

Frame
One of the many single photographic images in a motion picture or video. It the smallest unit used for SMPTE synchronization.

See SMPTE/MIDI Time Code Synchronization.

Frame rate
Indicates the number of frames displayed per second.

From time
The beginning of a selection. Set it in the **Select** toolbar.

See “Now time” on page 1532.

Full-duplex
The ability to stream data in two directions simultaneously. Sound cards that support full-duplex allow for simultaneous recording and playback of audio.

See Recording audio.

Global layout
The arrangement of your views as the appear in Cakewalk. You can save layouts to use with other projects.

See Layouts, Templates and Key Bindings.

Groove clip
Audio clip that contains pitch and tempo information that allows SONAR to automatically adjust the pitch and tempo of the clip to that of the project you insert it into.

Groove pattern
Piece of music used as a template for the groove quantize command.

See To Use the Groove Quantize Command.

Groove quantize
Lets you lay a grid over your groove pattern, then adjust time, duration, and velocity of selected notes so they line up with the grid.

See To Use the Groove Quantize Command.

Group
An entity consisting of multiple controls or buttons and specifying relationships between or among them.

Guitar chord grid
Displays chord symbols as well as the fingerings on the fret board of a guitar above the Staff View.

See Chords and Marks

H:M:S:F
Short for Hours, Minutes, Seconds, and Frames, which is the time format used for SMPTE time.

Hairpin symbol
Crescendo or decrescendo mark.

See Chords and Marks

Input
The selection for which channel of a device you wish to receive signal from.

See Choosing an input.

Input monitoring
Hearing real-time playback of a track's input as it is being sent to, or recorded, in SONAR. You can enable input monitoring with a track's **Input Echo** button.

Inspector menu (same as context menu)
Menu appropriate for a particular location or item. Display a context menu by right-clicking on the location or item.

Instrument definitions
A file that contains information necessary to communicate settings about banks, patches, controllers, and other features of an instrument.

See Creating Instrument Definitions.

Key aftertouch (KeyAft)
MIDI property regulating the pressure applied to an individual note.

Key offset
The number of half-steps by which to transpose the track. A value of 12 raises the notes an octave. You can transpose all note in a track on playback by setting this value (Key+) in the Tracks pane.

Key signature
Key of the piece, how many sharps or flats it has, and how the music displays in the various views.

Latency
Often referred to as “buffer size” is a measurement of the time it takes, in samples, for audio to travel from its source, through a sound card's drivers and converters, into SONAR, and back through the sound card to your speakers.

Layout
Current arrangement of all views in a particular project.

See Layouts, Templates and Key Bindings.

Linked clips
Clips so specified that any change made to one applies to all.

See Splitting and Combining Clips.

Live mode
Temporary condition of a project with all automation turned off. You can toggle back and forth between live mode and regular mode by clicking the **Live Mode** button.

Locked (SMPTE) time
Locks a marker to a specified time from the start of the music. Not affected by changes in tempo or time signature.

See Creating and Using Markers.

Looping
Repetition of a part of the whole piece of music.

Loops
Small pieces of audio data, suitable for being repeated back to back, such as a single drum beat or measure.

Lyrics
Words to go along with music.

See Working with Lyrics.

Marker
Flag marking a specific time in the music.

MBT
Short for Measure, Beat and Tick number which is the time format used for beats.

9:04:0060 is the 60th tick of the fourth beat of the ninth measure.

MCI command (Media Control Interface command)
Special event in the Event List view that lets you control other multimedia hardware and software.

Meter
The meter, or time signature, divides time into rhythmic pulses. Specifies the number of beats per measure and the note value of each beat.

See Setting the Meter and Key signatures.

Metronome
A feature that plays a regularly recurring audible beat which aids in accurate performances. Can be observed in playback or recording. The rate is set by the tempo of the project.

See “Tempo” on page 1536.

MIDI
Musical Instrument Digital Interface. The means by which computers communicate with most sound cards, keyboards, and other electronic instruments.

Note: *MIDI data does not contain any audio data.*

Mixdown
Combination of two or more audio tracks into a stereo submix. See Routing and Mixing Digital Audio.

MMC (MIDI Machine Code)
A protocol that controls an MMC-equipped remote device through MIDI.

See MIDI Machine Control (MMC).

MME
Multi Media Extensions—the name of Windows' built-in audio and multmedia software that was originally developed for Windows 3.0, and is still used by many sound card drivers. WDM drivers offer much better performance.

MTC Sync
MIDI Time Code sync. Messages are received in SMPTE/MTC format from an external MIDI device and generate MTC.

See "SMPTE" on page 1535.

Mute
Silences a track to not be heard during playback or recording.

Normal template
A default project template which includes a predetermined amount of tracks and/or buses.

Now time
The current time in a project or where you are in the music. This is Represented by a vertical line which travels throughout the timeline.

See The Now time and how to use it

NRPN
Non-Registered Parameter Numbers.

See Controllers, RPNs, NRPNs, and Automation Data.

Offline
Not in real time. When you apply an effect to a track offline, you permanently alter the data in that track; then you play the track to hear the effect. When you add an effect to a track in real time, you start the track playing, and you add the effect while the track plays. The data in the track does not change, but the sound of it coming through the effect does.

Offset
Shift (time, key, velocity) by a specified number of units. For example, you could offset the start of a track by two measures.

Overload
Loss of audio information caused by the audio level exceeding 0 db.

Pan
Degree to which a sound or piece of music comes from the left or right speaker. This control is commonly used to adjust the level of a signal in different channels. In a stereo mix, the level is adjusted between the left and the right speakers.

Patch
Particular sound in an electronic device. Patches are stored in banks, in groups of 128.

Pedal mark
Expression mark indicating when the player should hold down the pedal and release it.

Phase
Frequency dependent time delay. All frequencies experience phase, but as a whole this is not noticeable as they are affected uniformly. If frequencies fall out of phase, however, they interfere with each other constructively or destructively. This can be measured by calculating the period length, as well as amplitude and magnitude values of a recorded wave form. If two frequencies fall 180 degrees out of phase, they will enduce destructive interference and thus completely cancel each other out.

Pitch bend
Controller that changes the pitch of a MIDI note.

Pitch marker
A marker in the Time Ruler which transposes the root note pitch of all groove clips and ACIDized loops in a project.

Pitch wheel
Controller that changes the pitch of a MIDI note.

Port
Computer connector for sending or receiving data.

PPQ
Abbreviation for Parts per Quarter Note. MIDI sequencers divide each beat into fractions of a beat (called ticks) for timing and editing purposes. You can place events in precise timing locations, up to the sequencer’s current PPQ. PPQ is adjustable on most sequencers, up to about 960 PPQ. PPQ values of 96, 120. and 480 are common.

Project pitch
Also known as the default project pitch. The project pitch is the pitch that all groove clips and ACIDized loops in your project follow if there are no pitch markers in the project. You can set the project pitch in the **Markers** toolbar.

Property
Any attribute or value belonging to an object. Often you can see these by right-clicking on the object. For example, right-clicking on a clip and choosing **Properties** from the resulting menu, displays the **Clip Properties** dialog box, which lists its properties as its name, start time, length, and color.

Quantize
Correct human imperfection in start and duration of selected notes so they line up with a specified time grid.

Quantize resolution
Used to set how precise (in notes or ticks) you wish applying quantization to be.

Quantize strength
Measure of how close you wish quantized notes to be in relation to the quantize resolution.

See To Use the Groove Quantize Command

Record
To capture audio to a digital audio file or store incoming MIDI data in a MIDI track.

RIFF wave
The standard digital audio format used under Windows and for CD's, with a file extension of .wav.

RMS
Short for Root Mean Square. A method of measuring an average of the amplitudes that occur in a complete cycle of a frequency. RMS is a little over seventy per cent of peak level.

RPN
Registered Parameter Numbers.

See Controllers, RPNs, NRPNs, and Automation Data.

Ruler
Bar showing evenly-spaced measure intervals. It appears in the Track, Staff, and Piano Roll views.

Sampling rate
The number of samples per second a digital audio file is recorded at. A higher sampling rate typically increases the fidelity recordings, as it helps to avoid phase shifting and aliasing artifacts. A higher sampling rate will yield larger audio files and more hard drive space used.

Scrub
A tool used for previewing audio. The scrub tool allows you to playback audio faster or slower as a useful auditioning tool.

Sensitivity (window)
Distance from a timing grid a note has to be to be unaffected, or affected less, by quantizing.

Shape
An automation envelope created in the Track view or Console view.

Size
The number of events in a track, listed in the Size column of the Tracks window. This number changes every time you add or delete events to or from that track.

Slip editing
Non-destructive editing process that allows the start and/or end time of an audio or MIDI clip to be trimmed by simply dragging the front or back end of the clip.

SMPTE
Society of Motion Picture and Television Engineers. SMPTE format measures time in hours, minutes, seconds, and frames.

Snapshot
Collection of automation settings that become active at a specific time. When the Now Time reaches that time, all of those particular settings take effect.

Solo
Silences all tracks except for those that are soloed during playback and recording. Multiple tracks can be soloed at once.

Split point
In the Staff view, the point at which you split a track into treble and bass staves. Notes at or above the split point go into the treble staff, those below into the bass staff.

Staff
A set of horizontal lines developed for music notation.

Striping
Recording an analog time code signal onto a track.

Submix
A grouping of specific tracks with similar qualities and/or effects (such as a submix of guitars or vocals). Creating submixes, by sending groups of tracks to a group specific buses for example, allows for quick adjustments when it comes to mixing, such as muting or applying reverb to all the vocals.

See Routing and Mixing Digital Audio.

Swing
Systematic uneven spacing of notes on a timing grid, to give music a swing feel.

Sysx
Short for System Exclusive, refers to MIDI messages that only a specific device can use and understand. Cakewalk's System Exclusive library, which can store, record, and display for viewing or editing 256 banks, each holding any number of patches.

See System Exclusive Data.

Sysx bank
A Sysx *bank* is a storage area plus some associated parameters such as a destination output and an optional description. Each bank can hold any number of messages; the amount of data it can hold is limited only by available memory. The banks are saved in the Cakewalk song file. Each bank can also be saved as a .syx file in the format used by the public domain MIDIEX utility.

Take
A single pass of recording a part or a song. Multiple “takes” are often used in the studio as a means of editing the best of each take for the final production.

Template
A file which stores specific project layouts, such as numbers of tracks and/or plug-in assignments, but does not store any audio or MIDI data. Useful for creating new projects which might require a similar layout.

See Layouts, Templates and Key Bindings.

Tempo
The speed at which the project or selection of music is played at. Measured in rhythmic beats per minute.

See “Metronome” on page 1531.

Thru time
Time up to which the music is to be played back or recorded. Set it in the **Select** toolbar.

Ticks
Subdivisions of quarter notes. MIDI projects often use a resolution of 480 parts per quarter note (PPQ); each part is also called a tick.

Time
In Cakewalk, Now time, from time, or thru time. When an event takes place in the music.

Time offset
Adjustment of all track events by a specified amount of time.

See Adjusting the time alignment of a MIDI track (Time+).

Time ruler
Bar showing evenly-spaced intervals. It appears in the Track, Staff, and Piano Roll views. You can use the Time Ruler to change the Now Time, make a time selection, and insert markers. For more about the Time Ruler, see The Time ruler.

Timebase
Same as PPQ. Timing resolution, measured in pulses (ticks) per quarter note. Determines how finely you can specify notes.

See Setting the MIDI timing resolution.

TPQ
Same as timebase or PPQ. Short for Ticks Per Quarter note.

Track
Cakewalk's representation of one or more lines of music with shared properties, for example, music played by one instrument.

Transients
Peaks of loudness in an audio clip. Used to determine where the beats lie in audio clips.

Vector
The graph of the change of a parameter’s value. In audio programs, some parameters can be changed by drawing vectors; means the same as drawing Envelopes.

Velocity
A measurement taken when recording MIDI note events of how fast a key is struck. A MIDI notes velocity will dictate how loud the note will sound during playback.

Volume
Loudness of a sound or piece of music.

WASAPI
WASAPI (short for Windows Audio Session Application Programming Interface) is a new driver model available in SONAR that allows it to communicate with the new audio features in Windows Vista.

WDM
Windows Driver Model—low-latency audio driver that bypasses the operating system’s audio streaming software so that the driver can communicate directly with the sound card and the audio application.

Widget
A graphical element of a StudioWare panel (such as a knob or slider) that controls a parameter on a MIDI instrument or runs a CAL program.

Wipe
Deletes a track's clips and events, but leaves its properties. You can undo a **wipe**, but not paste it.

xRPN
RPN and NRPN.

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