Pro Tools®
# Reference Guide

Version 7.4

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# Part I: Introduction

# Chapter 1: Welcome to Pro Tools

Welcome to Pro Tools®! Pro Tools integrates powerful multitrack digital audio and MIDI sequencing features, giving you everything you need to record, arrange, compose, edit, mix, and master professional quality audio and MIDI for music, video, film, and multimedia.

## The Pro Tools Guides

In addition to any printed guides or documentation included with your system, PDF versions of the printed guides and many additional Pro Tools guides and Read Mes are installed automatically during Pro Tools installation to the Digidesign/Documentation folder.

To view or print PDF guides, you can use Adobe Reader or Apple Preview (Mac only).

*Printed copies of the Pro Tools Reference Guide and some guides in the Pro Tools guide set can be purchased separately from the DigiStore (www.digidesign.com).*

### Getting Started Guide

The printed *Getting Started Guide* for your system includes instructions for installing Pro Tools and connecting your studio. For Pro Tools LE™ and M-Powered™, these guides also contain specific methods for accomplishing common tasks (such as recording in a Pro Tools session, importing audio from a CD, and creating an audio CD from a Pro Tools session).

### Guides Accessible in Pro Tools

The main Pro Tools guides are accessible from the Pro Tools Help menu. These include:

• *Pro Tools Reference Guide*, which explains Pro Tools software in detail.

• *Pro Tools Menus Guide,* which covers all the Pro Tools on-screen menus.

• *DigiRack Plug-ins Guide*, which explains how to use Digidesign® plug-ins included with Pro Tools for both real-time and file-based audio processing.

• *Pro Tools Shortcuts* for your operating system, which lists keyboard and Right-click shortcuts for Pro Tools, including those shown in Pro Tools menus.

### Expanded Systems Guide (Pro Tools|HD Systems Only)

This printed guide provides instructions for expanding a Pro Tools|HD® system with additional Digidesign cards and audio interfaces, with or without an expansion chassis.

### Additional Digidesign Printed Guides

Digidesign also provides guides with Pro Tools audio interfaces, dedicated worksurfaces (such as D-Control™) and control surfaces (such as Command|8®), and other Digidesign options (such as MIDI I/O™, PRE, and SYNC HD™). Refer to the separate guide provided with each Digidesign product.

## Conventions Used in These Guides

The Pro Tools guides use the following conventions to indicate menu choices, keyboard commands, and mouse commands:

| Convention | Action |
|---|---|
| File > Save | Choose Save from the File menu |
| Control+N | Hold down the Control key and press the N key |
| Control-click | Hold down the Control key and click the mouse button |
| Right-click | Click with the right mouse button |

The following symbols are used to highlight important information:

☼ *User Tips are helpful hints for getting the most from your Pro Tools system.*

⚠ *Important Notices include information that could affect your Pro Tools session data or the performance of your Pro Tools system.*

⌨ *Shortcuts show you useful keyboard or mouse shortcuts.*

▤ *Cross References point to related sections in this guide and other Digidesign guides.*

### Pro Tools M-Powered

⚠ *References to Pro Tools LE™ in this guide are usually interchangeable with Pro Tools M-Powered™, except as noted in the Pro Tools M-Powered Getting Started Guide.*

## Compatibility Information

Digidesign can only assure compatibility and provide support for hardware and software it has tested and approved.

For a list of Digidesign-qualified computers, operating systems, hard drives, and third-party devices, visit the Digidesign website (www.digidesign.com).

## About www.digidesign.com

The Digidesign website (www.digidesign.com) is your best online source for information to help you get the most out of your Pro Tools system. The following are just a few of the services and features available.

**Product Registration** Register your purchase online. See the Digidesign Registration Information Card included with your system for instructions.

**Support and Downloads** Contact Digidesign Technical Support or Customer Service; download software updates and the latest online manuals; browse the Compatibility documents for system requirements; search the online Answerbase or join the worldwide Pro Tools community on the Digidesign User Conference.

**Training and Education** Study on your own using courses available online or find out how you can learn in a classroom setting at a certified Pro Tools training center.

**Products and Developers** Learn about Digidesign products; download demo software or learn about our Development Partners and their plug-ins, applications, and hardware.

**News and Events** Get the latest news from Digidesign or sign up for a Pro Tools demo.

# Chapter 2: Pro Tools Concepts

This chapter explains some of the principles and concepts that form the foundation of Pro Tools operation and functionality.

## Hard Disk Audio Recording

Hard disk recording is a *nonlinear* (or random access) medium—you can go immediately to any spot in a recording without having to rewind or fast forward.

This differs from tape-based recording, which is a *linear* medium—where you need to rewind or fast forward a tape to hear a particular spot in a recording. To rearrange or repeat material in a linear system, you need to re-record it, or cut and splice it.

Nonlinear systems have several advantages. You can easily rearrange or repeat parts of a recording by making the hard disk read parts of the recording in a different order and/or multiple times. In addition, this re-arrangement is *nondestructive*, meaning that the original recorded material is not altered.

## Pro Tools Nonlinear Editing

Pro Tools is a nonlinear recording editing system that lets you rearrange and mix recorded material nondestructively. Nonlinear editing simply means that you can cut, copy, paste, move, delete, trim, and otherwise rearrange any audio, MIDI, or video in the Pro Tools Edit window.

Nonlinear editing provides significant advantages over dubbing (re-recording), and cutting and splicing magnetic tape. It gives you the greatest possible flexibility for editing and arranging, and it is all nondestructive and "undoable." Additionally, with nonlinear editing in Pro Tools, you will never introduce any degradation of audio fidelity like you would with tape.

# The Digidesign Audio Engine

The Digidesign Audio Engine (DAE) is Digidesign's real-time operating system for digital audio recording, playback, and processing. When you install Pro Tools, DAE is automatically installed on your system.

In the same way that a computer's operating system provides the foundation for programs that run on the computer, DAE provides the foundation for much of the hard disk recording, digital signal processing, and mix automation required by Pro Tools and other products from Digidesign and its Development Partners.

The DAE Playback Buffer Size determines the amount of memory DAE allocates to manage disk buffers. The DAE Playback Buffer Size can be changed in the Playback Engine dialog.

📄 *For information on configuring the DAE Playback Buffer Size, see "DAE Playback Buffer Size" on page 40.*

## Playback Engine Dialog

Pro Tools lets you adjust the performance of your system by changing *system settings* that affect its capacity for processing, playback, and recording. These system settings are available in the Playback Engine dialog (Setup > Playback Engine).

Pro Tools takes advantage of your computer's host processor for certain tasks and optional host-based DSP processing.

Pro Tools LE uses host (CPU) processing to provide audio track recording, playback, mixing, and effects processing. Both Pro Tools LE and Pro Tools HD use host processing to run RTAS® (Real-Time AudioSuite) plug-ins for effects processing. Performance is determined by your system and its Playback Engine settings.

The Playback Engine dialog lets you set a hardware buffer size and allocate a percentage of CPU resources for these tasks.
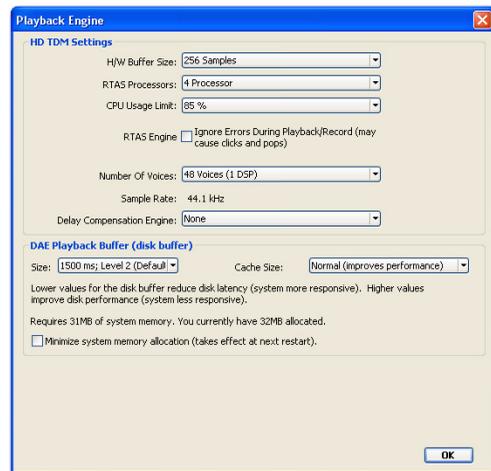


*Playback Engine dialog for Pro Tools|HD system*

On Pro Tools|HD systems, you can select the number of voices and voiceable tracks for your system and its sessions. Voice count choices are based on how much DSP processing you want to allocate for voicing.

On Pro Tools|HD systems, the Playback Engine dialog is also where you assign dedicated DSP resources for Delay Compensation.

📄 *For more information, see "Configuring Pro Tools System Settings" on page 34. See also "System Resources" on page 16.*

# MIDI

MIDI (Musical Instrument Digital Interface) is a communication protocol for musical instruments. This industry standard enables connections between a variety of devices from different manufacturers. Examples of MIDI-compatible equipment include synthesizers, sound modules, drum machines, MIDI patch bays, effects processors, MIDI interfaces, MIDI control surfaces, and MIDI sequencers.

MIDI devices are equipped with 5-pin DIN connectors, labeled as either IN, OUT, or THRU. The MIDI OUT port transmits messages. The MIDI IN port receives messages. The MIDI THRU outputs whatever is received from the IN port. MIDI devices are connected with MIDI cables that are available at most music stores.

USB and FireWire-compatible MIDI devices send and receive MIDI messages to and from the computer over USB or FireWire.
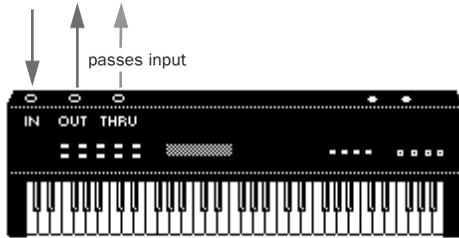


*MIDI signal flow*

⚠ *Not all devices will have all three MIDI ports (IN, OUT, and THRU).*

The MIDI protocol provides 16 channels of MIDI per port. A single MIDI cable can transmit a separate set of messages for each of the 16 channels. These 16 channels can correspond to separate MIDI devices or to multiple channels within a single device (if the device is *multi-timbral*). Each channel can control a different instrument sound. For example, bass on channel 1, piano on channel 2, and drums on channel 10. Similar to a multitrack tape recorder, a MIDI sequencer can record complex arrangements—even using only a single multi-timbral keyboard.

## MIDI Terms

The following are some basic MIDI terms:

**MIDI Instrument** A hardware MIDI device or software instrument (such as an instrument plug-in).

**MIDI Interface** Hardware that lets computers connect to and communicate with MIDI devices.

**MIDI Device** Any physical MIDI keyboard, sound module, effects device, or other equipment that can send or receive MIDI information.

**MIDI Controller** Any MIDI device that transmits MIDI performance data. These include MIDI keyboards, MIDI guitar controllers, MIDI wind controllers, and others. Controllers transmit MIDI from their MIDI OUT ports.

**MIDI Control Surface** Any device (such as the Digidesign Command|8), which uses a MIDI connection to send control messages to a software program, but is not generally used to record MIDI information.

**Multitimbral** The ability of one MIDI device to play several different instrument sounds (such as piano, bass, and drums) simultaneously on separate MIDI channels. This makes it possible for a single multitimbral MIDI instrument to play back entire arrangements.

**MIDI Port** A physical MIDI port on a MIDI interface or a virtual MIDI port created in software. There are separate ports for MIDI In and Out. Physical MIDI ports connect to external MIDI devices using MIDI cables. Virtual MIDI ports connect software (see also Virtual MIDI Nodes).

**MIDI Channel** Up to 16 channels of MIDI performance data can be transmitted on a single MIDI cable. The channel number separates the different messages so your sound sources can receive the right ones.

**Program Change Event** A MIDI command that tells a sound source which of its sounds (or sound patches) to use. The MIDI protocol lets you choose from a range of 128 patches.

**Bank Select Message** Many devices have more than 128 patches, which are arranged in banks. The Bank Select Message is a MIDI command that specifies the bank of patches from which to choose.

**Local Control** A controller setting found on most MIDI keyboards that lets them play their own sound source. Disabling "local control" ensures that a device's internal sound source is only played by external MIDI messages (such as those sent from Pro Tools when MIDI in Pro Tools is routed to the MIDI keyboard). When using Pro Tools, "local control" should usually be disabled. When "local control" is off, your keyboard still transmits data to its MIDI OUT port.

**Continuous Controller Events** MIDI instructions that allow real-time changes to notes that are currently sounding. These include pitch bend, modulation, volume, pan, and many others.

**System Exclusive Data** MIDI data commonly used for sending and retrieving patch parameter information for storage purposes.

**Virtual MIDI Nodes** When using MIDI with instrument plug-ins in Pro Tools, virtual MIDI nodes are created. These nodes act like MIDI ports and provide software MIDI connections between Pro Tools and other MIDI software, such as instrument plug-ins. For example, when you insert Propellerhead's Reason as a ReWire client on a track, the various MIDI inputs to Reason become available to Pro Tools MIDI and Instrument track MIDI outputs.

## Common MIDI Misconceptions

MIDI is not audio, and by itself makes no sound. MIDI is control information only. It is like the piano roll for a player piano; it provides control information for what note to play when, for how long, at what volume, and what sound (instrument). For example, when you strike a key on a MIDI keyboard, it sends a message to a MIDI instrument to play that particular note at that particular velocity using the selected sound (instrument). This could be its internal tone generator (like a synthesizer or sampler), another external MIDI instrument, or an instrument plug-in within Pro Tools. In order to play and hear a MIDI recording, you must have a MIDI instrument. Audio from an external MIDI instrument can be sent to an external mixer or monitored through your Pro Tools audio interface (using either an Instrument track or Auxiliary track).

If you are using an external MIDI instrument, it must be connected to MIDI ports that are recognized by your computer. These ports can be on a Pro Tools interface that has MIDI ports (such as an Mbox 2) or some other MIDI interface (such as a Digidesign MIDI I/O).
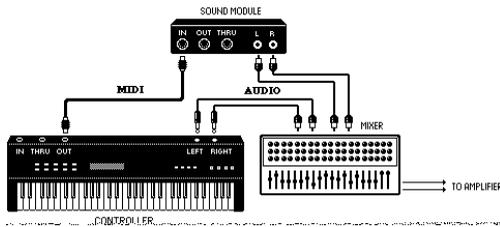
*Signal paths for external MIDI instruments*

To actually hear an external MIDI instrument, you need to connect its audio outputs to a mixing console or connect it to one of the audio inputs of your Pro Tools audio interface.

Just as each Pro Tools system has unique hardware features, each MIDI device has its own features (and limitations) as to the number of voices and instruments it can play at one time. Consult the device's documentation for information on its capabilities.

## MIDI In Pro Tools

Pro Tools provides MIDI sequencing capabilities. You can record, enter, edit, and playback MIDI data on Pro Tools tracks and in the MIDI Event List. MIDI data in Pro Tools can be anything from MIDI note data (note number, on/off, velocity) to System Exclusive (Sysex) messages. MIDI data can be recorded or played back from both external MIDI devices with a MIDI interface (like the Digidesign MIDI I/O or Mbox 2) and other MIDI software (such as instrument plug-ins and ReWire client applications).

## Synchronization

When you are working with multiple time-based systems, such as Pro Tools and an external deck, you want both systems to be synchronized. Synchronization is where one system outputs time code or MIDI Beat Clock and another device synchronizes to or follows that time code or MIDI Beat Clock so that they work together according to the same clock source. Pro Tools can be synchronized to other devices (or other devices can be synchronized to Pro Tools) using SMPTE/EBU time code or MIDI Time Code.

📓 *For more information on different SMPTE/EBU formats, and other concepts related to time code, refer to the Pro Tools Sync & Surround Concepts Guide.*

## Surround

Surround sound simply means having one or more speakers with discrete audio signals (channels) placed behind the listener in addition to the typical stereo pair.

There are multiple types of surround formats in use (from three-channel LCR to 7.1, which has 8 channels).

The most common surround format is 5.1, which refers to having 5 speakers and a subwoofer (the ".1"). 5.1 is used in movie theaters and home entertainment systems. Additionally, most DVDs are mixed to 5.1. The standard speaker placement for 5.1 for surround monitoring is stereo left and right speakers, and an additional center speaker in front, two more stereo left and right speakers in the rear, and the subwoofer on the side.

Only Pro Tools HD supports mixing in surround formats. In Pro Tools, each surround format is considered to be a Pro Tools greater-than-stereo multichannel format.

📓 *For information on fundamental surround concepts, see the Pro Tools Sync & Surround Concepts Guide.*

# Pro Tools Sessions

When you start a project in Pro Tools, you create a *session*. Some basic elements of sessions are explained in this section.

## Session File

A s*ession file* is the document that Pro Tools creates when you choose File > New Session and configure a new session. Pro Tools can open only one session file at a time. The session file is named with a .ptf (Pro Tools file) extension. Session files contain maps of all elements associated with a project, including audio files, MIDI data, and all your edit and mix information. It is important to realize that a Pro Tools session file does not contain any media files (audio or video). Instead, it references audio, video, MIDI, and other files. You can make changes to a session and save those changes in a new session file. This lets you create multiple versions of a session or back up your editing and mixing work.

There are different session file icons for each type of Pro Tools system software.



| Pro Tools HD | Pro Tools LE | Pro Tools M-Powered |

*Session file icons*

Although there are different session file icons, the session files may be opened by the other types of Pro Tools system software (with certain restrictions). See "Opening a Session" on page 97.

☼ *When a session is transferred to a different Pro Tools system, its session file icon changes to the icon type of the destination system.*

## Tracks

Pro Tools tracks are where audio, MIDI, video, and automation data are recorded and edited. Pro Tools tracks also provide audio channels for routing internal busses, and physical inputs and outputs for audio and MIDI.

Pro Tools provides mulitple types of tracks: audio, Auxiliary Input, Master Fader, VCA Master, MIDI, Instrument, and video.



*Audio track in the Edit window (stereo track shown)*
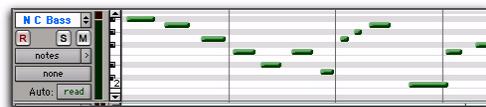


*MIDI track in the Edit window*



*Video track in Frames View*

Audio, MIDI, Instrument, and video track data can be edited into regions or repeated in different locations to create loops, re-arrange sections or entire songs, or to assemble tracks using material from multiple takes.

Auxiliary Input tracks can route internal audio busses or physical inputs to internal busses or physical outputs. Auxiliary Inputs are typically used for audio effects busses, audio throughput (monitoring), and submixing.

Master Fader tracks provide controls for physical audio output channels, including the volume level of your mix, panning, and plug-in inserts.

VCA Master tracks (Pro Tools HD only) provide control of tracks in a Mix Group that has been assigned to the VCA Master.

Video tracks support QuickTime movies (all Pro Tools systems) and VC-1 video files (Windows Vista only). Additionally, Avid video is supported on Pro Tools LE or Pro Tools HD with an Avid video peripheral, or Pro Tools LE with DV Toolkit 2 software. An individual video track can play back only one type of video at a time.

Audio, Auxiliary Input, Master Fader, VCA Master (Pro Tools HD only), and Instrument tracks can be mono, stereo, or multichannel (Pro Tools HD only). When creating a new track, select from the list of channel formats supported by your system.

# Media Files

Pro Tools sessions create, import, export, and reference media files. Media files are audio, MIDI, and video files. Audio and video media files are stored separately from the Pro Tools session file. MIDI data is stored in the session file.

## Audio Files

When you record audio into a Pro Tools session, audio files are created.



*Audio file icons*

Audio files for each session are stored in a folder named "Audio Files." Audio files are listed in the Pro Tools Region List and can appear in an audio track. A section of an audio file can be defined as a region. See "Regions" on page 12.

## MIDI Files

When you record or enter MIDI into a Pro Tools session, all MIDI data is stored in the Pro Tools session file. You can import and export MIDI files to and from Pro Tools sessions, but MIDI recorded or otherwise created in a Pro Tools session does not automatically create new MIDI files.

## Video Files

When you record or import video into a Pro Tools session, all video data is stored as the corresponding video file type (such as QuickTime). Video files can be created in (or copied to) the Video Files folder in the session folder. However, in most cases, Pro Tools references video files that have been captured by another application, such as Avid Media Composer.

## Regions



*Audio region*
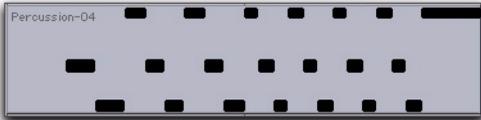


*MIDI region*



*Video region (Frames View)*
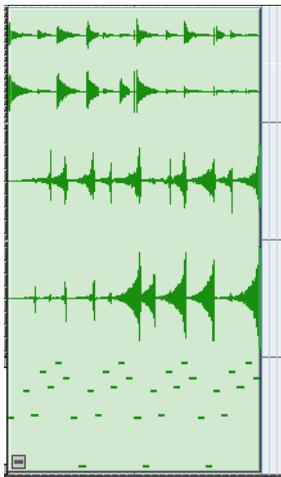


*Region group (Mixed audio and MIDI multitrack region group)*

A *region* is a segment of audio, MIDI, or video data. A region could be a drum loop, a guitar riff, a verse of a song, a recording take, a sound effect, some dialog, or an entire sound file. Regions are especially useful for arranging audio and MIDI. A region can also have associated automation data. In Pro Tools, regions are created from audio files or MIDI data, and can be arranged in audio and MIDI track playlists. Regions can also be grouped (a region of regions) and looped (repeated).

## Playlist
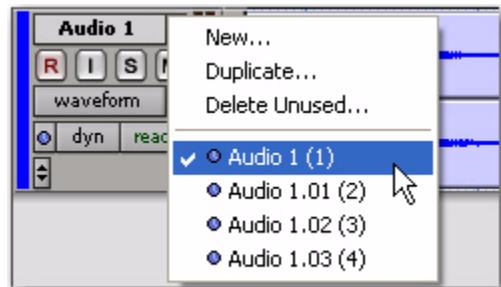


*Playlist selector pop-up menu*

A *playlist* is a sequence of regions arranged on an audio, MIDI, or video track. Tracks have *edit playlists* and *automation playlists*.

On audio tracks, an edit playlist tells the hard disk which audio regions to play in what order. For example, you can have separate audio regions for a song introduction, the first verse, the first chorus, and so on. You can also use the same audio region to access the same piece of audio multiple times at different locations and not use additional disk space. Different versions of the same original audio can be used in different places and have different effects applied. On MIDI and Instrument tracks, edit playlists can store multiple MIDI sequences (or performances) on a track.

A playlist can be made up of a single region or many separate regions. It can be made up of similar elements, such as regions from several different takes of a solo, or dissimilar elements, such as several sound effects.

You can create any number of alternate edit playlists for a track. This lets you assemble different versions of performances or edits on a single track and choose between them from a pop-up menu on the track.

Each track also has a single set of automation playlists, for volume, pan, mute, and each automation-enabled control for the insert and send assignments on that track.

## Channel

The term *channel* is used to describe several related components of a Pro Tools system. The first example of channel refers to a physical input or output of your Pro Tools system. For example, a 96 I/O audio interface provides up to 16 channels of input and output to a Pro Tools|HD system, while an Mbox 2 audio interface provides up to four inputs and two outputs.

The second use of the term *channel* refers to a channel strip in the Pro Tools Mix window. Each track in a Pro Tools session has a corresponding *channel strip* in the Mix window.

Audio and MIDI channel strips have similar controls, but those controls have slightly different effects. For example, audio, Auxiliary Input, and Instrument track channel strip faders control the output gain to the mix bus for that channel, while MIDI channel strip faders send MIDI volume data (MIDI controller 7) to the selected MIDI instrument.



*Channel strip in the Mix window (audio track)*

📖 *The term MIDI channel also describes a separate aspect of MIDI operation. See "MIDI" on page 7.*

## Signal Routing

Pro Tools provides software-based mixing and signal routing controls for audio and MIDI. These controls are located in the Mix window. Some of these controls can also be accessed from the Edit window.

A common audio signal routing task is to submix multiple tracks to a single channel strip (such as an Auxiliary Input) for shared processing and level control. The following example shows three audio tracks submixed to a stereo Auxiliary Input.
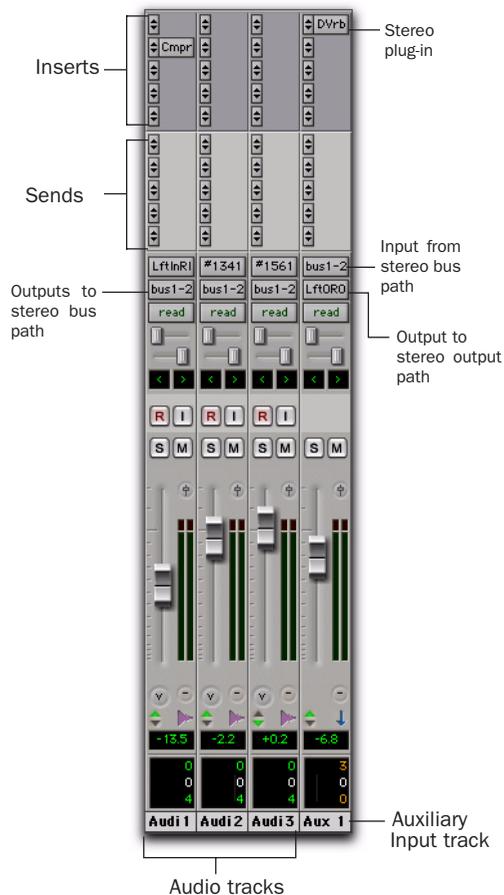


*Submixing to an Auxiliary Input*

## Signal Routing Options

Signal routing options include the following:

**Track Input and Output (I/O) Controls** The most basic type of signal routing is track input and output. A track needs to have an assigned input path to record audio, and an assigned output path in order to be audible through a hardware output. Signals can also be routed to or from other tracks in Pro Tools (or hardware inputs and outputs) using internal busses.

**Auxiliary Input and Master Fader Tracks** Auxiliary Inputs can be used as returns, submixers, and bus masters. Master Fader tracks are used as bus and output master level controls. Both Auxiliary Input and Master Fader tracks can have plug-in and hardware inserts.

**MIDI Tracks** MIDI tracks are generally used for routing MIDI from internal or external sources to external MIDI devices. MIDI data can also be routed to plug-ins on Auxiliary Inputs or Instrument tracks.

**Instrument Tracks** Instrument tracks are the primary way to route MIDI to an instrument plug-in and then route the plug-in's sound to outputs, sends and busses, or other inserts. Instrument tracks can also be used to route audio inputs to other busses, sends, or outputs, as well as to send MIDI to external devices.

**Sends** Sends route audio from tracks to hardware outputs, or to internal busses that are in turn routed to other tracks within Pro Tools. Master Fader and VCA Master tracks do not have sends.

**Plug-in and Hardware Inserts** Plug-in processing occurs completely within the Pro Tools system. Hardware inserts use audio interface inputs and outputs, for traditional insert routing to and from external effects and other devices.

**Instrument Plug-ins** Instrument Plug-ins are different from processing plug-ins in that they generate audio rather than process the audio signal from a track's audio input or from hard disk. Instrument plug-ins are typically played by MIDI.

**Paths** Paths are any routing option in Pro Tools, including internal or external inputs, outputs, busses, and inserts. Pro Tools lets you name these paths, and these path names appear in the Audio Input and Output Path selectors and other menus. See Chapter 6, "I/O Setup" for more information.

**Mixing Formats** Sessions can include combinations of mono, stereo, and greater-than-stereo multichannel format tracks, busses, inputs, outputs, and inserts. Greater-than-stereo multichannel formats are supported on Pro Tools|HD systems only.

**Grouping and VCA Tracks** Tracks can be grouped together for mixing so that their relative mixing settings are maintained when changing any one of the mix settings for any track in the group (that is, changing the volume of one track affects all the other tracks in the group as well). VCA tracks (Pro Tools HD only) provide a single track to control the relative mix settings for all tracks within the selected group.

# Tick-Based and Sample-Based Time

Pro Tools uses both tick-based time and sample-based time. Sample-based time is actual time in minutes and seconds. Samples of audio exist as a fraction of real time. For example, the sample rate of CDs is 44.1 kHz, that is to say there are 44,100 samples per second. Tick-based time on the other hand is measured in bars and beats, not minutes and seconds. The difference is that the number of bars and beats in actual time is variable depending on changes in tempo (how many beats per minute). For example, a single bar can last 5 seconds or 2 seconds depending on how slow or fast the tempo is.

Pro Tools lets you set any track timebase to either sample-based or tick-based. You can also scale the Timeline to be viewed as tick-based or sample-based.

Audio in Pro Tools is sample-based by default. This means that if an audio region is located at a particular sample location, it will not move from that location if the tempo changes in the session—though its bar and beat location *will* change.

MIDI data in Pro Tools is tick-based by default. This means that if a MIDI region is located at a particular bar and beat location, it will not move from that location if the tempo changes in the session—though its sample location *will* change.

You can select whether a track is sample-based or tick-based when it is created, or change timebases later.

### Sample-Based Audio and MIDI

With a sample-based audio track, all regions in the track have an absolute location on the Timeline. Regions stay fixed to the sample time, regardless of where tempo or meter changes occur in a session.

If you make a MIDI track sample-based, all MIDI events in the track have an absolute location on the Timeline. MIDI events stay fixed to the sample time, regardless of where tempo or meter changes occur in a session.

### Tick-Based Audio and MIDI

Tick-based audio is fixed to Bars|Beats, and moves relative to the sample Timeline when tempo and meter changes occur. However, MIDI events and tick-based audio respond differently to tempo changes in respect to duration. MIDI note events change length when tempo or meter is adjusted, while audio regions do not (unless Elastic Audio is enabled). With Elastic Audio not enabled on an audio track, meter and tempo changes affect only the start point (or sync point) for each audio region in a tick-based track. If Elastic Audio is enabled on an audio track, tempo changes apply Elastic Audio processing, which results in changing the duration of the audio region.

### Elastic Audio

Elastic Audio is real-time or rendered Time Compression and Expansion (TCE) of audio. Tick-based Elastic Audio tracks actually change the location of samples according to changes in tempo. The audio stretches or compresses to match changes in tempo.

Pro Tools Elastic Audio uses exceptionally high-quality transient detection algorithms, beat and tempo analysis, and real-time or rendered TCE processing algorithms. Elastic Audio lets you quickly and easily tempo conform and beat match audio to the session's Tempo ruler. It also provides an unprecedented degree of control over transient detection and TCE processing on an event-by-event basis.

With Elastic Audio, Pro Tools analyzes entire audio files for transient "events." For example, an event can be a drum hit, a sung note, or chord played by a guitar. These detected events can then serve as control points for "warping" the audio. Pro Tools can warp (TCE) audio events automatically, such as automatically conform-

ing audio to the session tempo or quantizing audio events, or you can warp audio manually using the standard editing tools in the new Warp Track View.

Elastic Audio is useful in several common workflows: working with loops, correcting performances, remixing, sound design and special effects, and film music and post production.

## System Resources

Track count, plug-in processing, signal path and routing options, and voice availability are ultimately limited by the combined resources available from the host computer, and from your Pro Tools hardware.

Pro Tools provides several ways to manage and conserve resources to maximize the performance of your system. As you begin working with Pro Tools sessions and tracks, you can take advantage of the following features to extend the effectiveness of your available DSP and other resources:

◆ Pro Tools lets you adjust the performance of your system by changing system settings that affect its capacity for processing, playback, and recording. See "Configuring Pro Tools System Settings" on page 34.

◆ In order to free up needed DSP resources, Pro Tools allows for certain items (such as tracks and inserts) to be manually made inactive. Inactive elements are viewable, editable, and retained within the session. See "Active and Inactive Items" on page 17.

◆ All Pro Tools systems provide flexible voice options for audio tracks, to help maximize use of available voices in your system. For more information on voice management and options, see "Voice Borrowing" on page 164.

## Active and Inactive Items

Pro Tools lets you make certain items (such as tracks and inserts) *inactive*, in order to free up DSP resources and mixer connections.

Items in Pro Tools that can be made inactive (or active) include the following:

- Audio, Auxiliary Input, Master Fader, VCA Master, and Instrument tracks
- Track Inputs and Outputs
- Sends
- Side-chain inputs
- Plug-ins
- Hardware inserts
- Paths (session-wide)

⚠ *MIDI tracks cannot be made inactive.*

In addition to manually setting Active and Inactive modes, Pro Tools automatically makes items inactive if there are insufficient or un-available resources.

When *active*, items are fully engaged and operational.

When *inactive,* items are silent and off, although most associated controls can still be adjusted. Different inactive items affect available system resources in specific ways, as follows:

**Plug-ins** When a plug-in is inactive on a track, its DSP is made available for other plug-ins and processing. Plug-in assignments can be made inactive manually, or automatically (see "Automatic and Manual Inactive Mode" on page 18).

**Paths and Path Assignments** When a path or path assignment is inactive, its mixer resources are made available for other signal routing purposes in the session. Paths and assignments can be made inactive manually, or automatically (see "Automatic and Manual Inactive Mode" on page 18).

**Tracks** When a track is made inactive, its voices become available for another track. Mono inactive tracks free up one voice; stereo and multichannel tracks free up one voice per channel. Additionally, when an audio, Auxiliary Input, Instrument, or Master Fader track is made inactive, its plug-ins, inserts, sends, and I/O assignments become inactive, and the associated DSP used is freed up for use elsewhere in the session.

### Display of Inactive Items

When items are inactive, their names appear in *italics,* and their background becomes dark gray. When a track is inactive, the entire channel strip is grayed out.
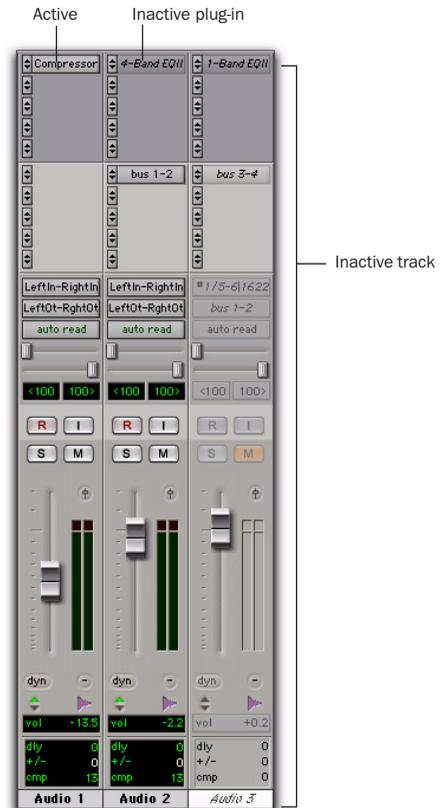


*Active and inactive plug-ins, sends, and tracks*

### Automatic and Manual Inactive Mode

Active and Inactive modes are powerful options for session transfer and system resource management. Pro Tools provides automatic and manual Inactive mode switching. You can manually make items inactive (or active) to selectively manage system resources while editing and mixing.

### Automatically Inactive Items

When opening a session, it is possible that not all signal paths, plug-ins, or audio interfaces used in the session will be available as defined on the current system. When opening a session, sufficient voices may also be unavailable if the session was created on a different Pro Tools system type (for example, opening a session created on a Pro Tools HD system on a Pro Tools LE system).

Whenever this occurs, the session will open as it was last saved. All items that are unavailable, or cannot be loaded due to insufficient resources, are made inactive.

### Manual Inactive Switching

You can manually apply Active or Inactive modes to manage system resources. By making an item inactive, its associated resources are made available elsewhere in the session.

The following are basic instructions for manually making items inactive. Throughout the *Pro Tools Reference Guide*, instructions are provided whenever an item can be made inactive.

### To toggle an item active or inactive:

■ Control-Start-click (Windows) or Command-Control-click (Mac) the item.

You can apply Active or Inactive modes to all or all selected tracks using standard Pro Tools modifiers (Alt and Alt+Shift in Windows, Option and Option+Shift on the Mac).

Side-chain inputs support direct active and inactive switching, but do not follow switching all or all selected side-chain inputs.

## DigiBase

DigiBase is a database management tool for Pro Tools. DigiBase expands upon basic Pro Tools search and import capabilities by providing powerful tools to manage your data both inside and outside of your sessions, on any hard drive connected to the system.

A *database* is a way of organizing data such that it can easily be searched, sorted, managed, and utilized. Your checkbook is an example of a database file. For every check you write, you enter a new record. That record contains information about the check, such as when you wrote it, to whom you wrote it, and for what amount. This information is written in specific columns, or fields. Everything you need to know (the check's *metadata*) is there, even though the check itself is not.

DigiBase browsers let you search, sort, and mange these databases by volume or catalog (DigiBase Pro only). Use DigiBase browsers not only to organize your Pro Tools sessions and media files (audio, MIDI, and video), but also to audition and import by drag and drop.

# Chapter 3: Keyboard and Right-Click Mouse Shortcuts

This chapter provides an overview of Pro Tools mouse and keyboard shortcuts.

📄 *A PDF listing of all shortcuts is available in Pro Tools. Choose Help > Shortcuts.*

## Right-Click Mouse Shortcuts

Pro Tools provides Right-click shortcuts for choosing various Pro Tools commands and menus with any Right-click capable mouse.

📄 *For a complete list of Right-click shortcuts, see the Shortcuts Guide.*

## Global Key Commands

This section covers keyboard shortcuts that apply to many functions in Pro Tools.

📄 *For a complete list of keyboard shortcuts, see the Shortcuts Guide.*

## Track Functions

Pro Tools provides keyboard shortcuts for the following track functions:

- Changing Automation mode
- Enabling playlists
- Adding plug-ins
- Record enabling, soloing, and muting tracks
- Record safing and solo safing tracks
- Assigning inputs, outputs, and sends
- Toggling volume/peak/delay display
- Clearing meters
- Changing track heights

| Command | Windows | Mac |
|---|---|---|
| Apply action to all channel strips/tracks | Alt+ action | Option+ action |
| Apply action to selected channel strips/tracks | Alt+ Shift+ action | Option+ Shift+ action |

## List and Parameter Selection

Pro Tools provides keyboard shortcuts for the following items:

- Selection of tracks in Track List
- Enabling of groups in Group List
- Automation Enable window parameters
- Setting Memory Location parameters

| Command | Windows | Mac |
| --- | --- | --- |
| Toggle item and set all others to same new state | Alt-click item | Option-click item |
| Toggle item and set all others to opposite state | Control-click item | Command-click item |

## Controls and Editing Tools

Pro Tools provides keyboard shortcuts for moving plug-in controls, faders and sliders, the Scrubber, and automation data.

| Command | Windows | Mac |
| --- | --- | --- |
| Fine adjustment of sliders, knobs, and breakpoints | Hold Control while clicking the item | Hold Command while clicking the item |

# Keyboard Focus

The Keyboard Focus in Pro Tools determines how the alpha keys function. Depending on which Keyboard Focus is enabled, you can use the keys on your QWERTY (alpha) keyboard to select regions in the Region List, enable or disable groups, or perform an edit or play command.

You can only enable one of the three Keyboard Focus modes at a time. Enabling a Keyboard Focus will disable the one previously enabled.

There are three types of Keyboard Focus:

**Commands Keyboard Focus** When selected, this provides a wide range of single key shortcuts from the QWERTY keyboard for editing and playing.

With Commands Keyboard Focus disabled, you can still access any of its key shortcuts by pressing the Start key (Windows) or Control (Mac) along with the key.

*For a complete list of Commands Keyboard Focus shortcuts, see the Shortcuts Guide.*

**Region List Keyboard Focus** When selected, audio regions, MIDI regions, and Region Groups can be located and selected in the Region List by typing the first few letters of the region's name.

**Group List Keyboard Focus** When selected, Mix and Edit Groups can be enabled or disabled by typing the Group ID letter (in either the Mix or Edit window).
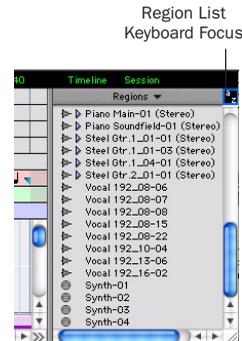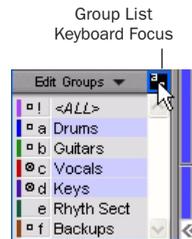


*Keyboard Focus buttons*

**To set the Keyboard Focus, do one of the following:**

▪ Click the a–z button for the focus you want to enable.

– or –

▪ While pressing Control+Alt (Windows) or Command+Option (Mac), press one of the following keys: 1 (Commands), 2 (Region List), or 3 (Group List).

⚠ *Although multiple plug-in windows can have a keyboard focus enabled, only the front-most window receives any keyboard input.*

# Numeric Keypad Modes

The Operation preference for Numeric Keypad mode determines how the numeric keypad functions for Transport.

There are two Shuttle Lock modes (Classic and Transport), and one Shuttle mode.

No matter which Numeric Keypad mode is selected, you can always use the numeric keypad to select and enter values in the Event Edit Area, Edit Selection indicators, Main and Sub Counters, and Transport fields.

**To set the Numeric Keypad Mode:**

**1** Choose Setup > Preferences and click the Operation tab.

**2** In the Transport section, select a Numeric Keypad mode (Classic, Transport, or Shuttle).

**3** Click OK.

📄 *For more information on each mode, see "Numeric Keypad Mode" on page 77.*

# Shuttle Lock Modes

With either Shuttle Lock mode (Classic or Transport) you can use the numeric keypad to shuttle forward or backwards at specific speeds.

• 5 is normal speed.

• 6–9 provide increasingly faster fast-forward speeds.

• 1–4 provide progressively faster rewind speeds (4 is the slowest rewind Shuttle Lock speed, 1 is the fastest).

• Press 0 to stop Shuttle Lock, then press the number to resume Shuttle Lock speed.

• Press Escape or Spacebar to exit Shuttle Lock mode.

### Custom Shuttle Lock Speed

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

The highest fast-forward Shuttle Lock speed (key 9) can be customized.

📄 *For information, see "Custom Shuttle Lock Speed" on page 443.*

### Classic Mode

This mode emulates the way Pro Tools worked in versions lower than 5.0. With the Numeric Keypad mode set to Classic, you can:

• Play up to two tracks of audio in Shuttle Lock mode. Press the Start key (Windows) or Control (Mac), followed by 1–9 for different play speeds.

• Press Plus or Minus to reverse direction.

• Press 0 to stop Shuttle Lock, then press the number to resume Shuttle Lock speed.

• Press Escape or Spacebar to exit Shuttle Lock mode.

• Recall Memory Locations by typing the Memory Location, followed by a Period (.).

## Transport Mode

This mode allows you to set a number of record and play functions, and also operate the Transport from the numeric keypad.

| Function | Key |
|---|---|
| Click on/off | 7 |
| Countoff on/off | 8 |
| MIDI Merge/Replace mode | 9 |
| Loop Playback mode on/off | 4 |
| Loop Record mode on/off | 5 |
| QuickPunch mode on/off | 6 |
| Rewind | 1 |
| Fast Forward | 2 |
| Record enable | 3 |
| Play/Stop | 0 |

With the Numeric Keypad mode set to Transport, you can also:

- Play up to two tracks of audio in Shuttle Lock mode. Press the Start key (Windows) or Control (Mac), followed by 1–9 for different play speeds.
- Press Plus or Minus to reverse direction.
- Press 0 to stop Shuttle Lock, then press the number to resume Shuttle Lock speed.
- Press Escape or Spacebar to exit Shuttle Lock mode.
- Recall Memory Locations by typing Period (.), the Memory Location number, and Period (.) again.

## Shuttle Mode

### (Pro Tools HD Only)

Pro Tools offers another form of shuttling, different from that of the two Shuttle Lock modes. With the Numeric Keypad mode set to Shuttle, playback of the current Edit selection is triggered by pressing and holding the keys on the numeric keypad—playback stops once the keys are released. Various playback speeds are available in both forward and reverse. In this mode, pre- and post-roll are ignored.

| Playback Speeds | Key |
|---|---|
| 1x Forward | 6 |
| 1x Rewind | 4 |
| 4x Forward | 9 |
| 4x Rewind | 7 |
| 1/4x Forward | 3 |
| 1/4x Rewind | 1 |
| 1/2x Forward | 5+6 |
| 1/2x Rewind | 5+4 |
| 2x Forward | 8+9 |
| 2x Rewind | 8+7 |
| 1/16x Forward | 2+3 |
| 1/16x Rewind | 2+1 |
| Loop Selection (1x) | 0 |

With the Numeric Keypad mode set to Shuttle, you can also:

- Recall Memory Locations by typing Period (.), the Memory Location number, and Period (.) again.

⚠️ *Shuttle Lock modes are not available when the Numeric Keypad mode is set to Shuttle.*

# Part II: System Configuration

# Chapter 4: Pro Tools Systems

There are three types of Pro Tools systems:

**Pro Tools|HD** These systems include
Pro Tools HD® software for Pro Tools|HD system hardware.

**Pro Tools LE** These systems include Pro Tools LE
software for 003, 003 Rack, Digi 002®,
Digi 002 Rack™, Mbox® 2, Mbox 2 Pro,
Mbox 2 Mini, or Mbox hardware.

**Pro Tools M-Powered** These systems include
Pro Tools M-Powered software for Digidesign-
qualified M-Audio® interfaces.

⚠ *References to Pro Tools LE in this guide are*
*usually interchangeable with Pro Tools M-*
*Powered, except as noted in the Pro Tools*
*M-Powered Getting Started Guide.*

## Optional Systems

**Pro Tools LE with DV Toolkit 2** Pro Tools LE sys-
tems that have been upgraded with the
DV Toolkit™ 2 software option.

**Pro Tools LE or M-Powered with Music Production**
**Toolkit** Pro Tools LE or M-Powered systems that
have been upgraded with the Music Production
Toolkit software option.

## Pro Tools|HD Systems

Pro Tools|HD systems are available in the con-
figurations shown on page 26. Each system re-
quires at least one Digidesign audio interface
(sold separately). Pro Tools|HD systems can be
expanded by adding Pro Tools|HD system cards
to increase track count, add to the amount of
possible plug-in and mixer processing, and con-
nect additional audio interfaces.

⚠ *Pro Tools system performance depends on*
*factors such as computer processor speed,*
*amount of system memory, and hard drive*
*performance. Contact your Digidesign*
*dealer or visit the Digidesign website*
*(www.digidesign.com) for the latest system*
*requirements and compatibility informa-*
*tion.*

## Pro Tools|HD Systems

### Pro Tools|HD 1

Includes:

- Accel Core (for PCIe) or HD Core (for PCI) card
- Pro Tools HD software

### Pro Tools|HD 2 Accel

Includes:

- Accel Core (for PCIe) or HD Core (for PCI) card
- HD Accel card
- Pro Tools HD software

### Pro Tools|HD 3 Accel

Includes:

- Accel Core (for PCIe) or HD Core (for PCI) card
- Two HD Accel cards
- Pro Tools HD software

### Pro Tools|HD 2

Includes:

- HD Core card
- HD Process card
- Pro Tools HD software

### Pro Tools|HD 3

Includes:

- HD Core card
- Two HD Process cards
- Pro Tools HD software

### Expanded Pro Tools|HD Systems

Any Pro Tools|HD system can be expanded by adding additional HD Process or HD Accel cards. For more information, see the *Expanded Systems Guide*.

📖 *HD Accel and HD Process cards can be used in the same system. For more information, refer to the Pro Tools|HD Getting Started Guide.*

## Supported Audio Interfaces

### (Pro Tools|HD Systems Only)

The following audio interfaces are compatible with Pro Tools|HD systems:

- 192 I/O™
- 192 Digital I/O™
- 96 I/O™
- 96i I/O™

⚠ *Pro Tools|HD systems require the use of at least one 192 I/O, 192 Digital I/O, 96 I/O, or 96i I/O.*

The following "Legacy" Digidesign audio interfaces are supported with Pro Tools|HD systems:

- 888|24 I/O™ and 882|20 I/O™
- 1622 I/O™
- 24-bit ADAT Bridge I/O™

⚠ *"Legacy" I/Os (such as 888|24 I/O) require the use of at least one 192 I/O, 192 Digital I/O, 96 I/O, or 96i I/O.*

## Pro Tools|HD System Playback, Recording and Voice Limits

The following table lists the audio playback, recording, and voiceable track limits of each type of Pro Tools|HD system. Playback and recording voices refer to the number of unique simultaneous playback and record tracks on your system. Total voiceable tracks refers to the maximum number of audio tracks that can share the available voices on your system. (Mono tracks take up one voice. Stereo and multichannel tracks take up one voice per channel.) Voice limits are dependent on the session sample rate and the number of DSP chips dedicated to the system's Playback Engine.

Pro Tools|HD systems can open sessions with up to 256 audio tracks, but any audio tracks beyond that system's voiceable track limit will be automatically set to *Voice Off*.

*Table 5. Pro Tools|HD system audio playback, recording and voice limits*

| Core System Type | Sample Rate (kHz) | Playback Voices (Mono Tracks of Simultaneous Playback) | Recording Voices (Mono Tracks of Simultaneous Recording) | Total Voiceable Tracks |
|---|---|---|---|---|
| Pro Tools|HD 1 | 44.1/48 | 96 | 96 | 112 |
| | 88.2/96 | 48 | 48 | 48 |
| | 176.4/192 | 18 (for PCIe) 12 (for PCI) | 18 (for PCIe) 12 (for PCI) | 18 (for PCIe)<br><br>12 (for PCI) |
| Pro Tools|HD Accel 2, Pro Tools|HD Accel 3 | 44.1/48 | 192 | 192 | 224 |
| | 88.2/96 | 96 | 96 | 120 |
| | 176.4/192 | 36 | 36 | 36 |
| Pro Tools|HD 2, Pro Tools|HD 3, or any expanded Pro Tools|HD system | 44.1/48 | 128 | 128 | 224 |
| | 88.2/96 | 64 | 64 | 80 |
| | 176.4/192 | 24 | 24 | 24 |

Pro Tools|HD systems provide up to 160 Auxiliary Input tracks and a total of 128 internal mix busses. These systems also provide up to 5 inserts and 10 sends per track (depending on the DSP capacity of your system). Pro Tools|HD systems also support up to 128 Instrument tracks, 256 MIDI tracks, 128 VCA tracks, and multiple video tracks.

## Audio Interfaces for Pro Tools|HD Systems

Table 6 lists the input and output capabilities of the various audio interfaces for Pro Tools|HD systems.

*Table 6. Pro Tools|HD system audio interface channel capabilities*

| Interface Type | Number of I/O Channels | Sample Rates (kHz) | A/D Conversion | D/A Conversion | Digital I/O |
|---|---|---|---|---|---|
| 192 I/O | 16 in/16 out | 44.1, 48, 88.2, 96, 176.4, 192 | 24-bit | 24-bit | 24-bit |
| 192 Digital I/O | 16 in/16 out | 44.1, 48, 88.2, 96, 176.4, 192 | None | None | 24-bit |
| 96 I/O | 16 in/16 out | 44.1, 48, 88.2, 96 | 24-bit | 24-bit | 24-bit |
| 96i I/O | 16 in/2 out | 44.1, 48, 88.2, 96 | 24-bit | 24-bit | 24-bit |
| 888|24 I/O | 8 in/8 out | 44.1, 48 | 24-bit | 24-bit (or 20-bit, on older I/O) | 24-bit |
| 882|20 I/O | 8 in/8 out | 44.1, 48 | 20-bit | 20-bit | 24-bit |
| 1622 I/O | 16 in/2 out | 44.1, 48 | 20-bit | 24-bit | 24-bit |
| 24-bit ADAT Bridge I/O | 16 in/16 out | 44.1, 48 | None | 24-bit | 24-bit |

You can expand your Pro Tools|HD system by adding Pro Tools|HD cards to your computer, either directly in the computer or using an expansion chassis. Expanding your Pro Tools system will provide an increased track count, add to the amount of possible plug-in and mixer processing, and let you connect additional audio interfaces. For more information, see the *Expanded Systems Guide*.

⚠ *"Legacy" I/Os (such as 888|24 I/O) require the use of at least one 192 I/O, 192 Digital I/O, 96 I/O, or 96i I/O.*

# Pro Tools LE Systems

Pro Tools LE-based systems are available in the following configurations:

### 003

A 003 system includes:

- Pro Tools LE software
- 003 audio and MIDI interface, with control surface

### 003 Rack

A 003 Rack system includes:

- Pro Tools LE software
- 003 audio and MIDI interface

### Digi 002

A Digi 002 system includes:

- Pro Tools LE software
- Digi 002 audio and MIDI interface, with control surface

### Digi 002 Rack

A Digi 002 Rack system includes:

- Pro Tools LE software
- Digi 002 audio and MIDI interface

### Mbox 2 Pro

An Mbox 2 system includes:

- Pro Tools LE software
- Mbox 2 Pro audio and MIDI interface

### Mbox 2

An Mbox 2 system includes:

- Pro Tools LE software
- Mbox 2 audio and MIDI interface

### Mbox 2 Mini

An Mbox 2 system includes:

- Pro Tools LE software
- Mbox 2 Mini audio interface

### Mbox

An Mbox system includes:

- Pro Tools LE software
- Mbox audio interface

## Processing Capacity

⚠ *The total processing capacity of a Pro Tools LE system depends on the processing power of your computer. Contact your Digidesign dealer or visit Digidesign's website (www.digidesign.com) for the latest system requirements and compatibility information.*

## Pro Tools LE System Capabilities

Table 7 lists the playback, recording, and input and output capabilities of each Pro Tools LE system. Mono tracks of simultaneous playback refers to the number of unique simultaneous playback and record tracks on your system. Total voiceable tracks refers to the maximum number of audio tracks that can share the available voices on your system. (Mono tracks take up a single audio track, while stereo tracks take up two tracks.) If you open a Pro Tools session created on a Pro Tools|HD system containing more than the number of tracks supported on the LE-based system, audio tracks beyond the LE system's voiceable track limit will be automatically set to inactive.

*Table 7. Pro Tools LE system audio playback, recording, and channel capabilities*

| System Type | Mono Tracks of Simultaneous Playback | Total Voiceable Tracks | Number of I/O Channels | A/D Conversion | D/A Conversion | Digital I/O |
|---|---|---|---|---|---|---|
| 003, 003 Rack, Digi 002, or Digi 002 Rack | 32 | 128 | up to 18 in/18 out (48 kHz or lower)<br><br>up to 10 in/10 out (88.2 or 96 kHz) | 24-bit | 24-bit | 24-bit |
| Mbox 2 Pro | 32 | 128 | up to 6 in/8 out (48 kHz or lower)<br><br>up to 4 in/6 out (88.2 or 96 kHz) | 24-bit | 24-bit | 24-bit |
| Mbox 2 or Mbox | 32 | 128 | up to 2 in/2 out | 24-bit | 24-bit | 24-bit |
| Mbox 2 Mini | 32 | 128 | up to 2 in/2 out | 24-bit | 24-bit | N/A |

Pro Tools LE systems provide up to 128 Auxiliary Input tracks, a total of 32 internal mix busses, and up to 5 inserts and 10 sends per track (depending on your computer's processing capacity). In addition, Pro Tools LE systems support up to 32 Instrument tracks and 256 MIDI tracks. Pro Tools LE also supports a single QuickTime video track.

For details on transferring session material between Pro Tools|HD and Pro Tools LE systems, see "Sharing Sessions Created on Different Pro Tools Systems" on page 292.

## Pro Tools M-Powered

A Pro Tools M-Powered system includes:

• Pro Tools M-Powered software

• Digidesign-qualified M-Audio interface (not supplied with M-Powered software)

⚠ *References to Pro Tools LE in this guide are usually interchangeable with Pro Tools M-Powered, except as noted in the Pro Tools M-Powered Getting Started Guide.*

⚠ *For the most current list of Digidesign-qualified M-Audio interfaces, visit the Digidesign website (www.digidesign.com).*

## DV Toolkit 2 and Music Production Toolkit

In addition to all the regular capabilities provided with Pro Tools LE and Pro Tools M-Powered, Pro Tools LE systems equipped with DV Toolkit 2 and Pro Tools LE and M-Powered systems equipped with Music Production Toolkit provide expanded capabilities.

### Support for 48 Mono or Stereo Tracks

Pro Tools LE systems with the DV Toolkit 2 option and Pro Tools LE or M-Powered systems with the Music Production Toolkit option let you play or record up to 48 simultaneous stereo or mono tracks. These higher track counts may require additional drives and faster Digidesign-qualified computers.

📄 *Visit the Digidesign website for more information (www.digidesign.com).*

📄 *For more information on track priority and voice assignment, see "Voice Assignment with Toolkit Options" on page 163.*

### Support for Up to 24 QuickPunch Tracks

With DV Toolkit 2 or Music Production Toolkit, up to 24 mono or stereo audio tracks can be simultaneously recorded with QuickPunch.

⚠ *The combination of audio tracks and QuickPunch tracks cannot be greater than 48.*

### DV Toolkit 2 Capabilitites

**(Pro Tools LE Only)**

### Pro Tools LE Features

DV Toolkit 2 enables the following features for working with audio, film, video, or digital video in Pro Tools LE:

• Session and track features:

  • Up to 48 audio tracks of simultaneous playback or recording, mono or stereo

  • Multiple video tracks, with multiple video playlists and multiple QuickTime movies per track.

  • Ability to use QuickPunch on up to 24 tracks

  • Import Session Data options (Destination Track Names, Time Code Mapping, Find Matching Tracks, Session Data to Import, Track Playlist)

  • MP3 export option (for bounce recording or exporting a region as an MP3 file)

  • DigiBase Pro (including support for Catalog browsers and the ability to search on multiple criteria simultaneously in DigiBase browsers)

- Editing features:
  - Universe window
  - Continuous Scroll
  - Scrub Trim tool
  - Replace Region command
  - TCE Edit to Timeline Selection command
  - Selection of alternate field recorder audio channels in the Pro Tools Timeline
  - Expanding alternate field recorder audio channels to new tracks
- Mixing and Automation features:
  - Snapshot automation for writing or trimming automation data
  - Glide Automation commands
- Time code and synchronization features:
  - Timebase rulers (Time Code and Feet+Frames)
  - Time Code Rate selector
  - Feet+Frame Rate selector
  - Current Time Code Position command
  - Current Feet+Frames Position command
  - Use Subframes option
  - Audio Rate Pull Up and Pull Down
  - Video Rate Pull Up and Pull Down

## Additional Software

DV Toolkit 2 includes additional software for working with audio or digital video in Pro Tools:

**DINR™ (Digidesign Intelligent Noise Reduction™) LE Plug-in** For reducing noise in audio.

**DigiTranslator™ 2.0 Software Option** For exchanging audio and video files, and sequences with other AAF and OMFI-compatible applications.

**TL Space Native™ Convolution Reverb Plug-in** For applying convolution reverb to your audio.

**VocALign Project Plug-in from Synchro Arts Software** For automatically adjusting the timing of one audio signal to match another.

## Music Production Toolkit

### (Pro Tools LE and Pro Tools M-Powered Only)

### Pro Tools Features

Music Production Toolkit enables the following features in Pro Tools LE and M-Powered:

- Session and track features:
  - Up to 48 audio tracks of simultaneous playback or recording, mono or stereo
  - Ability to use QuickPunch on up to 24 tracks
  - MP3 export option (for bounce recording or exporting a region as an MP3 file)
- Beat Detective features:
  - Ability to apply Beat Detective across multiple tracks
  - Collection Mode

### Additional Software

Music Production Toolkit includes additional software for working with Pro Tools:

**DINR™ (Digidesign Intelligent Noise Reduction™) LE Plug-in** For reducing noise in audio.

**Hybrid RTAS Synthesizer Plug-in** For use as a virtual instrument in your Pro Tools sessions.

**Smack!™ LE Compressor Plug-in** For applying compression to your audio.

**SoundReplacer™ Plug-in** For replacing one sound in a track with another (such as replacing only the snares in your drum track with a different one-hit sample)

**TL Space Native™ Convolution Reverb Plug-in** For applying convolution reverb to your audio.

# Chapter 5: System Setup

## Starting Up or Shutting Down Your System

To ensure that the components of your Pro Tools system communicate properly with each other, you need to start them in a particular order.

**Start up your Pro Tools system in this order:**

**1** Make sure all your equipment (including your computer) is off.

**2** Lower the volume of all output devices in your system.

**3** For Pro Tools|HD systems with an expansion chassis, turn on the chassis.

**4** Turn on any external hard drives. Wait approximately ten seconds for them to spin up to speed.

**5** Turn on any worksurfaces (such as D-Command) or control surfaces (such as Command|8).

**6** Turn on any MIDI interfaces, MIDI devices, or synchronization peripherals.

**7** Do one of the following, depending on your Pro Tools system:

- For Pro Tools|HD systems, with the volume of all output devices lowered, turn on your Pro Tools Legacy I/O (such as an 888|24 I/O or 882|20 I/O) first, then your Pro Tools|HD audio interfaces (such as 96 I/O). Wait at least fifteen seconds for your system hardware to initialize.

– or –

- For Pro Tools LE and M-Powered systems that use hardware requiring external power (such as 003), turn on the hardware.

**8** Turn on your computer.

**9** Launch Pro Tools or any third-party audio or MIDI applications.

**Shut down your Pro Tools system in this order:**

**1** Quit Pro Tools and any other running applications.

*To quit Pro Tools, choose File > Exit (Windows) or Pro Tools > Quit (Mac).*

**2** Turn off or lower the volume of all output devices in your system.

**3** Turn off your computer.

**4** Do one of the following depending on your Pro Tools system:

- For Pro Tools|HD systems, turn off your Pro Tools audio interfaces.

– or –

- For Pro Tools LE and M-Powered systems that use hardware requiring external power (such as 003), turn off the hardware.

**5** For Pro Tools|HD systems with an expansion chassis, turn off the chassis.

**6** Turn off any MIDI interfaces, MIDI devices, or synchronization peripherals.

**7** Turn off any worksurfaces (such as D-Command) or control surfaces (such as Command|8).

**8** Turn off any external hard drives.

# Checking an HD System with DigiTest

Before you use Pro Tools, you may want to run the DigiTest diagnostic application to ensure that all Pro Tools|HD cards in the system are recognized, installed in the proper order, and have valid TDM FlexCable connections. See the *HD Getting Started Guide* for more information.

# Configuring Pro Tools System Settings

Pro Tools lets you adjust the performance of your system by changing *system settings* that affect its capacity for processing, playback, and recording. These system settings are available in the Playback Engine dialog (Setup > Playback Engine).

In most cases, the default settings for your system provide optimum performance, but you may want to adjust them to accommodate large or processing-intensive Pro Tools sessions.

## Hardware Buffer Size

The Hardware Buffer Size (H/W Buffer Size) controls the size of the buffer used to handle host processing tasks such as Real-Time AudioSuite™ (RTAS) plug-ins.

• Lower Hardware Buffer Size settings are useful for improving latency issues in certain recording situations or for improving certain system performance problems.

  • On all Pro Tools systems, lower settings reduce RTAS MIDI-to-audio latency (such as when playing an RTAS virtual instrument live and monitoring the instrument's output). Lower settings can also improve screen response or the accuracy of plug-in and mute automation data.

  • On Pro Tools LE systems, lower settings reduce all input-to-output monitoring latency on any record-armed tracks or Auxiliary Inputs with live inputs.

  • On Pro Tools HD systems, lower settings reduce monitoring latency that occurs on tracks that have one or more RTAS plug-ins. Lower settings can also improve the accuracy of MIDI track timing on systems that do not use a MIDI interface that supports time stamping (such as MIDI I/O). Tracks using MIDI virtual instruments that do not support time stamping will also have better MIDI track timing with lower settings.

◆ Higher Hardware Buffer Size settings are useful for sessions that are using more RTAS plug-ins for playback. These settings allow for more audio processing. They can also be useful to reduce errors on machines that require a higher buffer size.

**To change the Hardware Buffer Size:**

**1** Choose Setup > Playback Engine.

**2** From the H/W Buffer Size pop-up menu, select the audio buffer size, in samples.
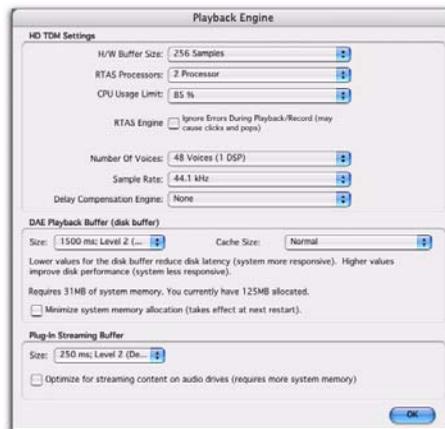


*Playback Engine dialog for Pro Tools|HD system*

**3** Click OK.

## RTAS Processors

The RTAS Processors setting determines the number of processors in your computer allocated for RTAS (Real-Time AudioSuite) plug-in processing.

With computers that have multiple processors, or that feature multi-core processing or hyper-threading, this setting lets you enable multiprocessor support for RTAS plug-ins. Used in combination with the CPU Usage Limit setting, the RTAS Processors setting lets you control the way RTAS processing and other Pro Tools tasks are handled by the system. For example:

- For sessions with large numbers of RTAS plug-ins, you can allocate 2 or more processors to RTAS processing and set a high CPU Usage Limit.

- For sessions with few RTAS plug-ins, you can allocate fewer processors to RTAS and set a low CPU Usage Limit to leave more CPU resources available for automation accuracy, screen response, and video.

- Increase these settings to accommodate TDM to RTAS plug-in conversion. Conversely, decrease these settings if you are only using TDM plug-ins or are converting RTAS plug-ins to TDM. TDM/RTAS conversion can be desirable during recording, depending on latency, voicing needs, and record-monitoring capabilities of the specific TDM and RTAS plug-ins.

- Depending on the importance of video and overall screen response, and on the density of automation being employed, try different combinations of RTAS Processing and CPU Usage Limit settings to achieve the best results. For example, to improve screen response in a medium-sized session using a moderate number of RTAS plug-ins, try reducing the number of RTAS plug-ins, but keep the CPU Usage Limit set to the maximum (99%) on a single processor system.

**To set the number of RTAS Processors:**

**1** Choose Setup > Playback Engine.

**2** From the RTAS Processing pop-up menu, select the number of available processors you want to allocate. The number of processors available varies depending on how many processors are available on your computer:

- Choose 1 Processor to limit RTAS processing to one CPU in the system.
- Choose 2 Processors to enable load balancing across two available processors.
- On systems running four or more processors, choose the desired number of RTAS processors as needed.

**3** Click OK.

### System Usage Window and RTAS Processing

The System Usage window displays the combined amount of RTAS processing occurring on all enabled processors with a single indicator, regardless of how many processors are available in the system. If the System Usage Window shows that you are at the limit of available resources, increase the number of RTAS processors and adjust the CPU Usage Limit setting. (For more information, see "System Usage" on page 49.)

## CPU Usage Limit

The CPU Usage Limit controls the percentage of CPU resources allocated to Pro Tools host processing tasks. Used in combination with the RTAS Processors setting, the CPU Usage Limit setting lets you control the way Pro Tools tasks are carried out by the system.

◆ Lower CPU Usage Limit settings limit the effect of Pro Tools processing on other CPU-intensive tasks, such as screen redraws, and are useful when you are experiencing slow system response, or when running other applications at the same time as Pro Tools.

◆ Higher CPU Usage Limit settings allocate more processing power to Pro Tools, and are useful for playing back large sessions or using more RTAS plug-ins.

The maximum available CPU Usage Limit depends on the number of processors in your computer and on the number of processors you specify for RTAS processing. This value can range from 85 percent for single-processor computers (except for 003, 003 Rack, Digi 002, and Digi 002 Rack, which have a limit of 99 percent), and 99 percent for multiprocessor computers (which dedicate one entire processor to Pro Tools).

On multiprocessor computers, the maximum CPU Usage Limit is reduced when you use all your processors (as selected in the RTAS Processing pop-up menu). For example, on dual-processors, the limit will be 90%. On four-processor computers, the limit will be 95%.

⚠ *Increasing the CPU Usage Limit may slow down screen responses on slower computers.*

### To change the CPU Usage Limit:

**1** Choose Setup > Playback Engine.

**2** From the CPU Usage Limit pop-up menu, select the percentage of CPU processing you want to allocate to Pro Tools.

**3** Click OK.

## RTAS Engine (RTAS Error Suppression)

The RTAS Engine options determine RTAS error reporting during playback and recording. This is especially useful when working with instrument plug-ins.

On Pro Tools|HD systems, there is a single RTAS Engine option. On Pro Tools LE systems, there are two options.

You should only enable RTAS error suppression if you are experiencing frequent RTAS errors that are interrupting your creative workflow. When RTAS error suppression is enabled, you can experience a degradation of audio quality. However, this may be acceptable in order to avoid interrupting playback and recording when working with instrument plug-ins. Be sure to disable RTAS error suppression when you need to ensure the highest possible audio quality, such as for a final mix.

**To enable RTAS error suppression:**

**1** Choose Setup > Playback Engine.
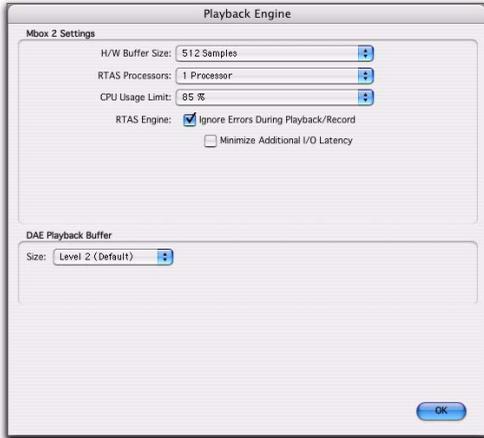


*Playback Engine dialog, Mbox 2*

**2** Select Ignore Errors During Playback/Record.

**3** If available, you can also select Minimize Additional I/O Latency.

**4** Click OK.

### RTAS Error Suppression Options

**Ignore Errors During Playback/Record** When enabled, Pro Tools continues to play and record even if the RTAS processing requirements exceed the selected CPU Usage Limit. This can result in pops and clicks in the audio, but does not stop the transport.

**Minimize Additional I/O Latency (Pro Tools LE Only)** When enabled, any additional latency due to suppressing RTAS errors during playback and record is minimized to 128 samples. Suppressing RTAS errors requires at least 128 samples of additional buffering on some systems. If this option is disabled, the buffer is half the H/W Buffer

Size, or at least 128 samples (whichever is greater). If you are on an older, slower computer, you may want to disable this option to avoid adverse performance.

This option is only available if the Ignore Errors During Playback/Record option is enabled and the Pro Tools system you are using requires additional buffering for RTAS error suppression, as follows:

- Windows:
  - Mbox 2 Pro
  - Digidesign-qualified M-Audio interfaces with Pro Tools M-Powered
- Mac OS X:
  - 003 and 003 Rack
  - Mbox
  - Mbox 2
  - Mbox 2 Mini
  - Mbox 2 Pro
  - Digi 002 and 002 Rack
  - All Pro Tools M-Powered systems

## Number of Voices

### (Pro Tools HD Only)

On Pro Tools|HD systems, the Number of Voices setting lets you control the number of available voices and how those voices are allocated to DSPs in your system. For example, the default number of voices on a Pro Tools|HD 1 system is 48 voices, using one DSP (at sample rates of 44.1 kHz or 48 kHz).

Changing the number of voices affects DSP usage, the total number of voiceable tracks, and overall system performance.

Depending on the session sample rate and the number of Pro Tools|HD cards in your system, there are different choices for voice count. For voice limits on different Pro Tools|HD systems, see "Pro Tools|HD System Playback, Recording and Voice Limits" on page 27.

**To change the Number of Voices and DSP to allocate for voicing:**

**1** Choose Setup > Playback Engine.

**2** Select the number of voices and DSPs to allocate for voicing by selecting a value from the Number of Voices pop-up menu as follows:

- Select minimum voice numbers if you are using high-bandwidth PCI or PCIe cards (such as video capture cards) along with your Digidesign cards. These settings place the lightest processing load on each allocated DSP chip, but generally require more DSP chips be dedicated to voicing and mixing (leaving fewer available for plug-ins).

- Select medium voice numbers when your Digidesign cards are in an expansion chassis, or when you are using other PCI or PCIe cards along with Digidesign cards. These settings generally provide an optimum balance between number of chips needed for voicing, and the processing load placed on each.

- Select higher voice numbers when your Pro Tools|HD cards are the only PCI or PCIe cards in your computer, or when you are using an expansion chassis to run higher track counts (such as 64 tracks at 96 kHz) and you want more voices per DSP (such as 16 voices per DSP at 96 kHz). These settings use fewer DSP chips for mixing (leaving more available for plug-ins) but place the highest processing load on each.
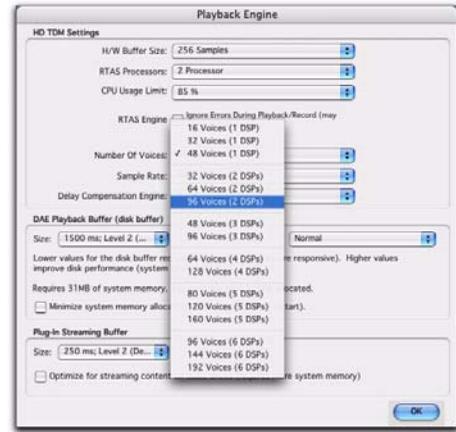


*Number of Voices menu (HD Accel-equipped system)*

**3** Click OK.

## Default Sample Rate (Playback Engine Dialog)

### (Pro Tools HD Only)

The Sample Rate setting in the Playback Engine dialog determines the default sample rate when you create a new session. This setting is available only when there is no session open. Otherwise, the current session sample rate is displayed, but cannot be changed.

⚠ *The Sample Rate setting can affect the number of available voices.*

💡 *You can change the sample rate when creating a new Pro Tools session by selecting a different sample rate in the New Session dialog. (See "Creating a New Session" on page 95.) You can also change the default Sample Rate in the Hardware dialog, as long as no session is open.*

*To make a copy of a session with a new sample rate, use Save Copy In.*

**To change the default Sample Rate in the Playback Engine:**

**1** With no session open, choose Setup > Playback Engine.

**2** Select the sample rate from the Sample Rate pop-up menu.

**3** Click OK.

## Delay Compensation Engine

### (Pro Tools HD Only)

The Delay Compensation Engine determines how much DSP resources are dedicated for Pro Tools Delay Compensation, which manages DSP delays in the Pro Tools mixer.

Within a session, you can choose to enable or disable Delay Compensation (Options > Delay Compensation).

📄 *For more information, see "Delay Compensation" on page 741.*

**To configure the Delay Compensation Engine:**

**1** Choose Setup > Playback Engine.

**2** From the Delay Compensation Engine pop-up menu, select a Delay Compensation setting.

**3** Click OK.

### Delay Compensation Settings

There are three settings in the Playback Engine dialog to dedicate DSP resources for Delay Compensation:

**None** Allocates no DSP resources for Delay Compensation.

**Short** Allocates minimum DSP resources of Delay Compensation for each channel. This is the most efficient setting for Pro Tools|HD Accel systems.

For sessions with only a few plug-ins that do not induce too much DSP-based delay, this setting should be sufficient.

**Long** Allocates maximum DSP resources for Delay Compensation for each mixer channel.

For sessions with a lot of plug-ins resulting in a large amount of DSP-induced delay, select this setting.

## DAE Playback Buffer Size

The DAE Playback Buffer Size determines the amount of memory DAE allocates for disk buffers. In addition to levels, the DAE Playback Buffer Size shows values in milliseconds, which indicates the amount of audio buffered when the system reads from disk.

The optimum DAE Playback Buffer Size for most disk operations is 1500 msec (Level 2).

• DAE Playback Buffer Size settings lower than 1500 msec (Level 2) may improve playback and recording initiation speed. However, a lower setting may make it difficult to play or record tracks reliably with sessions containing a large number of tracks or a high density of edits, or with systems that have slower or heavily fragmented hard drives.

• DAE Playback Buffer Size settings higher than 1500 msec (Level 2) allow higher track count, higher density of edits in a session, or the use of slower hard drives. However, a higher setting may increase the time lag when starting playback or recording, or cause a longer audible time lag while editing during playback.

💡 *Using a larger DAE Playback Buffer Size leaves less system memory for other tasks. The default setting of 1500 msec (Level 2) is recommended unless you are encountering -9073 ("Disk too slow or fragmented") errors.*

**To change the DAE Playback Buffer Size:**

**1** Choose Setup > Playback Engine.

**2** From the DAE Playback Buffer pop-up menu, select a buffer size. Memory requirements for each setting are shown at the bottom of the Playback Engine dialog.
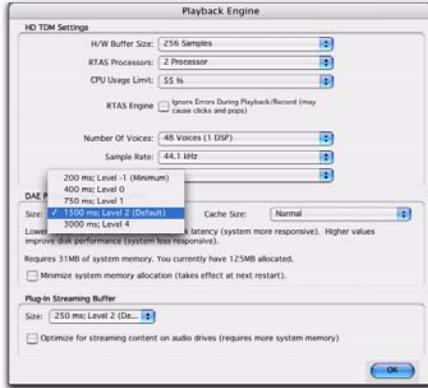


*Playback Buffer Size menu in the Playback Engine dialog*

**3** Click OK.

**4** If Pro Tools needs more system memory for the DAE Playback Buffer, it will prompt you to restart your computer.

## Cache Size

The Cache Size determines the amount of memory DAE allocates to pre-buffer audio for playback and looping when using Elastic Audio.

• A Cache Size setting of Minimum reduces the amount of system memory used for disk operations and frees up memory for other system tasks. However, performance when using Elastic Audio features may decrease.

◆ Normal is the optimum Cache Size for most sessions.

• A Cache Size of Large improves performance when using Elastic Audio features, but it also decreases the amount of memory available for other system tasks, such as RTAS processing.

💡 *Using a larger Cache Size leaves less system memory for other tasks. The default setting of Normal is recommended unless you are encountering -9500 ("Cache too small") errors.*

**To change the Cache Size:**

**1** Choose Setup > Playback Engine.

**2** From the Cache Size pop-up menu, select a disk cache size.
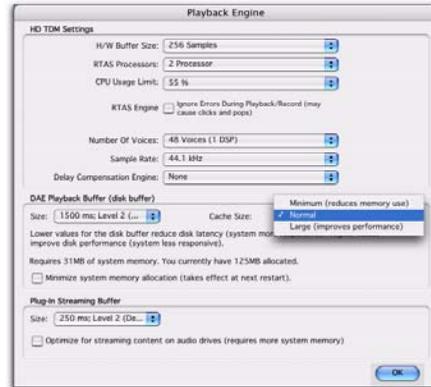


*Cache Size menu in the Playback Engine dialog*

**3** Click OK.

## System Memory Allocation

### (Pro Tools HD Only)

When you start your computer, Pro Tools automatically reserves a portion of system memory for the DAE Playback Buffer. This reserved memory is unavailable to other applications, even if Pro Tools is not running.

You can set Pro Tools to reserve only the minimum amount of required memory, so that more system memory is available to other applications.

**To minimize system memory allocation:**

**1** Choose Setup > Playback Engine.

**2** Select the "Minimize System Memory Allocation" option.

**3** Click OK.

**4** Do one of the following:
- On Windows systems, restart your computer.

– or –

- On Mac systems, if prompted, enter your password, then restart your computer.

## Plug-in Streaming Buffer Size

### (Structure Plug-in Only)

This setting appears in the Playback Engine dialog only if the Structure Professional Sampling Workstation plug-in is installed on your system. The Plug-in Streaming Buffer Size determines the amount of memory DAE allocates for streaming playback from disk with the Structure plug-in. This setting only affects playback if disk streaming is activated in Structure's plug-in controls (see the *Structure Plug-in Guide* for more information).

The optimum Plug-in Streaming Buffer Size for most sessions is 250 ms (Level 2).

- Plug-in Streaming Buffer Size settings lower than 250 msec (Level 2) reduce the amount of system memory used for sample playback and frees up memory for other system tasks. However, reliability of sample playback may decrease.

- Plug-in Streaming Buffer Size settings higher than 250 msec (Level 2) improve the reliability of sample playback, but they also decrease the amount of memory available for other system tasks, such as RTAS processing.

*Using a larger Plug-in Streaming Buffer Size leaves less system memory for other tasks. The default setting of 250 ms (Level 2) is recommended unless you are experiencing problems with the reliability of streaming playback from disk.*

**To change the Plug-in Streaming Buffer Size:**

**1** Choose Setup > Playback Engine.

**2** From the Plug-in Streaming Buffer Size pop-up menu, select a buffer size.
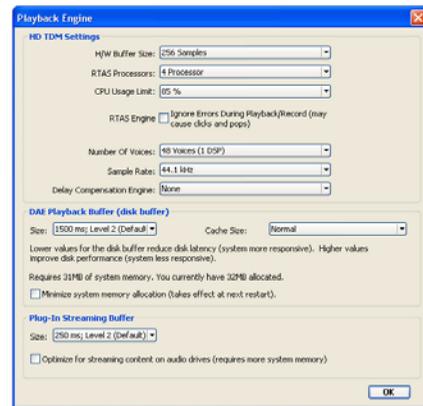


*Plug-in Streaming Buffer Size menu in the Playback Engine dialog*

**3** Click OK.

### Optimizing the Plug-in Streaming Buffer Size

#### (Structure Plug-in Only)

This option appears in the Playback Engine dialog only if the Structure Professional Sampling Workstation plug-in is installed on your system. This option is useful when you are playing samples from the same drive that contains audio for the current session. When this option is selected, Pro Tools automatically optimizes the size of the Plug-in Streaming Buffer to facilitate disk access from both Pro Tools and Structure. The Plug-in Streaming Buffer Size pop-up menu is unavailable when this option is selected.

**To set Pro Tools to automatically optimize the Plug-in Streaming Buffer Size:**

**1** Choose Setup > Playback Engine.

**2** Select the "Optimize for Streaming Content on Audio Drives" option.

**3** Click OK.

# Configuring MIDI Setup

If you plan to use any MIDI devices with Pro Tools, you need to configure your MIDI setup: MIDI Studio Setup (Windows) or Audio MIDI Setup (Mac).

📖 *See your Getting Started Guide for information on configuring MIDI on Windows and Mac systems.*

# Configuring Pro Tools Hardware Settings

Pro Tools lets you configure the signal routing, digital I/O format, default sample rate, clock source, and other hardware-based settings depending on your system configuration.

These system settings are available in the Hardware Setup dialog (Setup > Hardware).

## Configuring Default Sample Rate Setting in Hardware Setup Dialog

The Sample Rate setting determines the default sample rate when you create a new session. This setting is available only when there is no session open. Otherwise, the current session sample rate is displayed, but cannot be changed.

On Pro Tools LE, you can only change the default sample rate in the Hardware Setup dialog

On Pro Tools HD, you can change the default Sample Rate in the Hardware Setup dialog, or in the Playback Engine dialog.

⚠️ *On Pro Tools HD, the Sample Rate setting can affect the number of available voices.*

💡 *You can change the sample rate when creating a new Pro Tools session by selecting a different sample rate in the New Session dialog.*

**To change the default Sample Rate in the Hardware Setup dialog:**

**1** Choose Setup > Hardware Setup.

**2** Select the sample rate from the Sample Rate pop-up menu.

**3** Click OK.

## Configuring Clock Source

The Pro Tools Hardware Setup dialog lets you select the Clock Source for the system.

💡 *Changes made to Clock Source in the Session Setup window will be reflected in the Hardware Setup window and vice versa.*

**Internal** If you are recording an analog signal directly into Pro Tools, you will usually use the Pro Tools Internal clock source.

**External** If you are transferring material into Pro Tools from an external digital device, or if you utilize a common house clock signal, you will synchronize Pro Tools to that digital device or common signal.

Depending on your audio interface, external options can include AES/EBU [Encl], S/PDIF, Optical [Encl], AES/EBU 1–8, TDIF, ADAT, and Word Clock. For details, refer to the guide for your audio interface.

**To select the Clock Source:**

**1** Choose Setup > Hardware.

**2** Choose the clock source from the Clock Source pop-up menu.

**3** Click OK.

⚠️ *Your digital input device must be connected and powered on for Pro Tools to synchronize to it. If your input device is not powered on, leave the Clock Source set to Internal.*

## Configuring Digital Format and Hardware Routing

The Hardware Setup dialog includes additional settings for configuring the digital format and hardware routing for your system's audio interfaces.

The following section outlines the configuration of a Pro Tools|HD system with one or more Pro Tools|HD interfaces (with one or more Legacy interfaces attached).

📖 *To configure a Pro Tools LE or M-Powered system, refer to the Getting Started Guide that came with your system.*

## Example: Configuring Pro Tools|HD Hardware Settings

On Pro Tools|HD systems, you configure Hardware settings for each audio interface connected to your system. For example, Pro Tools|HD systems can have 192 I/O, 192 Digital I/O, 96 I/O, or 96i I/O audio interfaces connected to HD Core and HD Accel or HD Process cards in the system. The 192 I/O, 192 Digital I/O, and 96 I/O can have additional interfaces attached (including older Digidesign audio interfaces— *Legacy I/Os*—such as the 888|24 I/O, 882|20 I/O or 1622 I/O). For more information, see Chapter 4, "Pro Tools Systems."

### Configuring Audio Interfaces

The Main page of the Hardware Setup dialog is where you define which physical inputs and outputs on your audio interface are routed to available inputs and outputs in Pro Tools. You

can think of this window as a patchbay that allows you to route any of the inputs or outputs on your Pro Tools|HD audio interfaces to channel assignments in the Pro Tools mixer.



*Hardware Setup dialog for 192 I/O, Main page*

The Main page also provides controls for defining whether Expansion Port or Legacy Port peripherals are active.

Additional pages are available to configure other controls for each audio interface (such as setting operating levels). For details, refer to the *Getting Started Guide* for your system, or to the guide for your audio interface.

💡 *Identify audio interface connections at any time by selecting the interface name in the Peripherals list, then clicking Identify. All the LEDs on the interface front panel illuminate.*

**To configure Pro Tools|HD audio interfaces:**

**1** Choose Setup > Hardware.

**2** From the Peripherals list, select the Digidesign audio interface connected to the first card in your system. This will be the interface at the top of the list.

**3** Click the Main tab.

**4** From the Clock Source pop-up menu, select the appropriate clock source for the system.

In many cases, you will use Internal. The other choices are for resolving Pro Tools to external clock sources. Depending on your audio interface, Clock Source options can include: AES/EBU [Encl], S/PDIF, Optical [Encl], AES/EBU 1–8, TDIF, ADAT, and Word Clock (optional Word Clock rates are available when operating at higher sample rates).

**5** If you want to send clock output to other devices attached to the audio interface, select the appropriate output from the Ext. Clock Output pop-up menu.

If the Legacy I/O Port is enabled (and not the Expansion I/O Port) then the Ext. Clock Output automatically switches to Slave Clock (256x sample rate). To reset the Ext. Clock Output to Word Clock, change the Port Settings back to Expansion I/O, then select the Legacy I/O in the Peripherals list, and set it to No Interface in the Interface pop-up menu. (The 96i I/O does not support Legacy I/O.)

**6** Select which digital I/O port on your audio interface enclosure is active under Digital Format. Choices include: AES/EBU, S/PDIF, and Optical (S/PDIF). Selecting Optical (S/PDIF) resets the Optical I/O port (which is, by default, eight channels of ADAT I/O) to two channels of S/PDIF Optical I/O. (The 96i I/O supports stereo S/PDIF RCA digital input and output only.) For more information about Pro Tools|HD enclosure and card ports, refer to the guide for your audio interface.

**7** For S/PDIF compatibility with Tascam DA-30 DAT recorders select the Tascam option under S/PDIF Format.

**8** For the 96 I/O and 96i I/O, click the Meters pop-up menu and select whether to meter the input or output signal.

**9** From the Input and Output pop-up menus, select the physical ports (such as Analog 1–2 or Optical 1–2), that will be routed to the corresponding Pro Tools input and output channels (such as Ch 1–2 or Ch 3–4), listed on the left side of the Main page. (This feature is not available with the 96i I/O.)

Inputs and outputs of similar format are differentiated in the input and output channel pop-up menus. For example, the AES/EBU inputs and outputs in the 192 I/O enclosure are listed as AES/EBU [Encl], while the AES/EBU inputs and outputs on the factory-installed Digital I/O card are listed (in pairs) as AES/EBU 1–2, AES/EBU 3–4, AES/EBU 5–6, and AES/EBU 7–8. For 192 I/Os equipped with the optional Digital I/O Card, the additional AES/EBU I/O ports on the optional card are listed as AES/EBU 9–10, AES/EBU 11–12, AES/EBU 13–14, and AES/EBU 15–16.

*Refer to your peripheral's guide for configuration details and restrictions. For example, the Optical 1–8 channels (on the 192 I/O enclosure) will not be available at session sample rates of 88.2 kHz or higher, while the ports on the 192 I/O Digital I/O card will still be available.*

**10** Click other tabs (such as Analog In and Analog Out) for additional configuration options specific to the audio interface. These include:

- On the 96 I/O, configuring the operating levels of analog inputs and outputs (+4 dBu or –10 dBV).
- On the 96i I/O, configuring the operating levels of analog inputs and outputs (+4 dBu or –10 dBV).
- On the 192 I/O analog input, setting the input connector and Soft Limit
- On the 192 I/O, configuring the two sets of trims for analog inputs and outputs.
- On the 192 I/O and 192 Digital I/O, configuring real-time Sample Rate Conversion for digital inputs.
- On the 192 I/O and 192 I/O Digital, configuring inputs and outputs on any optional A/D card, D/A card, or Digital I/O cards installed in the unit.

*For more information on Hardware Setup controls for each Pro Tools|HD audio interface, refer to the Pro Tools|HD Getting Started Guide or the guide for that audio interface.*

**11** Repeat the above steps for each additional Pro Tools|HD audio interface.

*Use the Up and Down Arrow keys to scroll though peripherals in the Peripherals list.*

**12** Repeat the above steps for any Legacy I/Os connected to the Pro Tools|HD audio interfaces in your system. Before you can configure a Legacy I/O, it must first be initialized in Hardware Setup.

**13** Click OK.

## Initializing MIX-Series Legacy I/Os

Before you can configure a Legacy I/O on a Pro Tools|HD system, it must first be initialized in Hardware Setup.

**To initialize a Legacy I/O on a Pro Tools|HD system:**

**1** Start up your Pro Tools system. See "Starting Up or Shutting Down Your System" on page 33.

⚠️ *Before turning on your Legacy I/O, make sure to lower the volume of your output devices. Very loud digital noise may be emitted before the Legacy I/O is initialized.*

**2** From the Peripherals list, choose the primary audio interface (the Pro Tools|HD interface to which your Legacy I/O is connected).

**3** In the Main page of the Hardware Setup dialog, select the Legacy I/O option under Port Settings.

**4** In the Peripherals list, "No Interface" is listed twice, directly below the primary audio interface. Click the first "No Interface." An Interface pop-up menu appears in the Hardware Setup dialog, listing supported I/O choices.

**5** From the Interface pop-up menu, select the type of Legacy I/O you connected. The Main page updates with controls that can be configured.

After you select the type of Legacy I/O, the Main page updates with controls that can be configured. If your Legacy interface does not appear, check connections and repeat from step 1, above. See also "Offline Peripherals" on page 47.

**6** Repeat the above steps for each additional Legacy I/O.

📄 *For information on Hardware Setup controls for each Legacy I/O, refer to the guide for that interface.*

**To remove a Legacy I/O:**

**1** Lower the volume of your output devices.

**2** Turn off your Legacy I/O.

**3** Choose Setup > Hardware in Pro Tools.

**4** In the Main Page of the Hardware Setup dialog, select the Expansion I/O option under Port Settings.

**5** In the Peripherals list, select the name of a Legacy interface.

**6** From the Interface pop-up menu, choose "No Interface."

**7** Repeat the above steps for each additional Legacy I/O.

### Offline Peripherals

When a Legacy I/O and Pro Tools|HD peripheral are connected to your primary Pro Tools|HD peripheral, only one can be online at a time. An offline peripheral is indicated by brackets in the Peripherals list of the Hardware Setup dialog. For example, if you have a 96 I/O and an 882|20 connected to a 192 I/O, and the 96 I/O is offline, it will appear in the Peripherals list as "[96 I/O]."

Peripherals will also go offline if the audio interface or card to which they are attached is made inactive.

## Configuring I/O Setup

The I/O Setup dialog provides a graphical representation of the signal routing for each connected audio interface, with controls to route physical ports on the audio interface to Pro Tools inputs and outputs. These controls mirror the routing controls found in the Hardware Setup dialog—changes made to physical routing in one dialog are always reflected in the other.

The I/O Setup dialog lets you label and map Pro Tools input, output, insert, and bus *signal paths*. The I/O Setup dialog also provides important audition, meter, and surround settings. For more information, see Chapter 6, "I/O Setup."

## Routing a Pro Tools Output Pair to Multiple Destinations

Pro Tools channel pairs can be routed to multiple outputs on an audio interface through the Hardware Setup dialog.

For example, if you assign both Analog 1–2 and Analog 3–4 interface outputs to Pro Tools Output pair 1–2, when you send a signal to Pro Tools Output pair 1–2, that signal will be routed simultaneously to both pairs of output ports on your audio interface.

This lets you send the same signal (such as a stereo pair, a stem mix, or a multichannel mix) to multiple destinations (such as multiple mastering devices).

### To route a Pro Tools output channel pair to multiple audio interface output ports:

**1** Choose Setup > Hardware.

**2** From the Peripherals list, select an interface.

**3** Click the Main tab.

**4** Select an output port pair from an Output pop-up menu.

**5** Start-click (Windows) or Control-click (Mac) the same pop-up menu a second time to choose an additional output port pair.

The output name updates with a plus sign ("+") before it to indicate that multiple output ports are selected. In the pop-up menu, each physical port pair assigned to that Pro Tools output pair is indicated by a check mark.
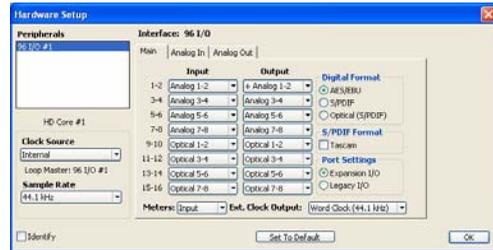


*Hardware Setup dialog for 96 I/O (Main page)*

**6** Repeat the above steps to select additional output destinations. The only limit to output choices is the number of outputs available in your system.

Pro Tools output pairs can also be routed to multiple audio interface outputs in the I/O Setup dialog. For more information, see "Routing Hardware I/O to Pro Tools I/O" on page 56.

# System Usage

## About Processing Bandwidth

Meters in the System Usage window indicate how much of your system's processing power is being used in processing audio, and when writing and playing back automation.

Pro Tools HD, LE, and M-Powered have four common system activity meters:

**PCI** Displays the amount of PCI bus activity.

**CPU (RTAS)** Displays the amount of CPU processing activity for RTAS processing.

**CPU (Elastic)** Displays the amount of processing activity for Real-Time Elastic Audio processing.

**Disk** Displays the amount of hard disk processing activity.
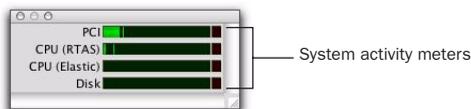


*System Usage window (Pro Tools LE shown)*

As these meters approach their limits, native processing and recording, or playback of automation data can be affected. If CPU or PCI Activity are high, a system error may occur. If Disk Activity is high, Pro Tools may miss playback of some automation data during particularly dense periods of activity, such as while using the Bounce to Disk command.

With Pro Tools HD, there are additional meters:

**TDM Voices Allocated** Displays the total number of TDM voices that can be allocated and the number of voices currently allocated. This includes all voices whether they are allocated explicitly or dynamically, as well as any voices used for routing RTAS processing.

**TDM Time Slots Used** Displays the total number of TDM Time Slots available and the number of TDM Time Slots currently used.

**DSP Usage (Accel Core, HD Core, HD Accel, and HD Process)** Displays the percentage of how much of each DSP chip on each Pro Tools|HD card is currently being used for mixer configurations and TDM plug-ins.
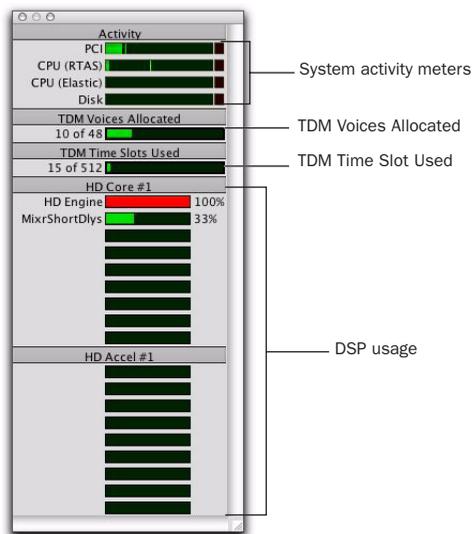


*System Usage window (Pro Tools HD shown)*

**To monitor the usage of resources during a Pro Tools session:**

■ Choose Window > System Usage.

**To reduce processing load, do one of the following:**

■ Reduce the density of automation in places where it shows the most activity. For details, see "Thinning Automation" on page 800.

– or –

■ Turn off meters in Sends View, if enabled (by disabling Show Meters in Sends View in the Display Preferences page). For details, see "Individual Send Views and Meters" on page 727.

## System Usage Views

**(Pro Tools HD Only)**

With Pro Tools HD, there are five different System Usage Views: Small, Large, Detailed, Gas Gauge, and Activity Only. The Detailed and Gas Gauge formats show the percentage of each DSP chip in use.

**To change the System Usage View:**

■ Choose View > System Usage, and one of the System Usage View formats (such as Small).

📄 *For information on using different views to monitor DSP usage, see the Pro Tools|HD Getting Started Guide.*

# Chapter 6: I/O Setup

The I/O Setup dialog (or I/O Setup) provides tools to label, format, and map Pro Tools input, output, insert, or bus *signal paths* for each session. With Pro Tools HD, Digidesign PRE (Mic Preamp) signal paths are supported and you can also configure Delay Compensation for hardware inserts.

The I/O Setup dialog includes a graphical representation of the signal routing for internal bussing, and for each connected audio interface. I/O Setup controls let you route physical ports on the audio interface to Pro Tools inputs and outputs. These controls mirror the routing controls found in the Hardware Setup dialog—changes made to physical routing in one dialog are always reflected in the other.
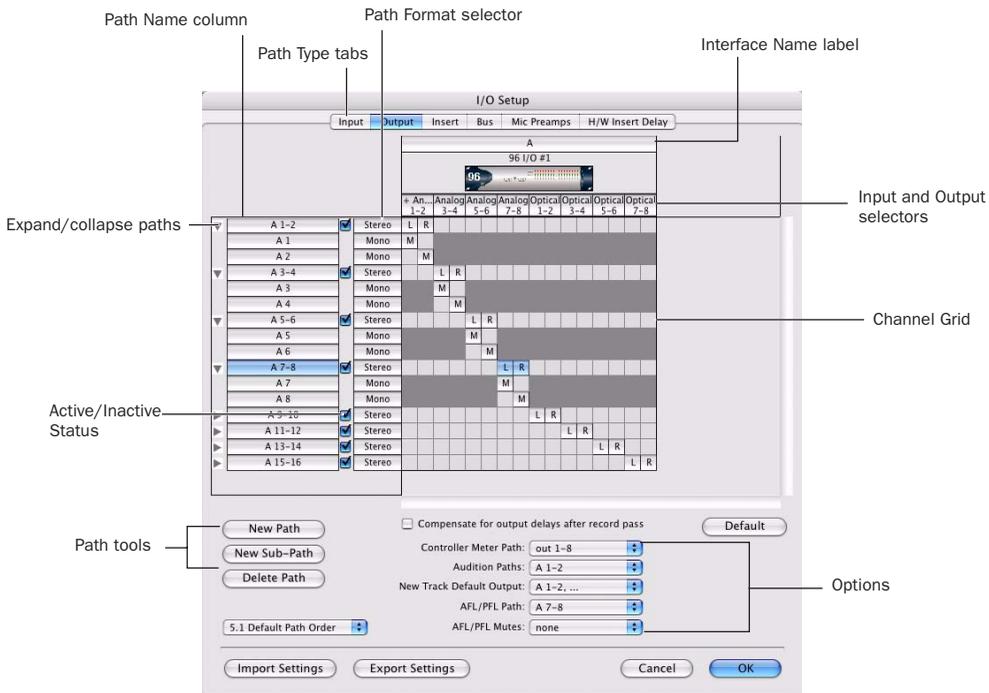


*Figure 1.  I/O Setup dialog on a Pro Tools|HD system with a 96 I/O*

**Opening the I/O Setup Dialog**

The I/O Setup dialog can be opened from the application window (with a session closed), or from within a session (when a session is open).

**To open the I/O Setup dialog:**

**1** Make sure your audio interfaces are enabled and configured properly in the Hardware Setup. See "Configuring Pro Tools Hardware Settings" on page 43.

**2** Choose Setup > I/O.

**Closing the I/O Setup Dialog**

**To close the I/O Setup dialog and save changes:**

▪ Click OK.

When you click OK, Pro Tools checks several settings for routing validity (to prevent feedback loops). If there are any overlapping or invalid settings, you will be required to correct them before the I/O Setup dialog will close. For more information, see "Valid Paths and Requirements" on page 63.

**To close the I/O Setup dialog without saving changes:**

▪ Click Cancel.

**Resizing the I/O Setup Dialog**

**To resize the I/O Setup dialog, do one of the following:**

▪ On Windows, drag any corner of the window.

– or –

▪ On Mac, drag the lower-right corner of the window.

**Navigating in the I/O Setup Dialog**

**To scroll left or right in the I/O Setup dialog:**

▪ Press Alt+Page Up/Down (Windows) or Option+Page Up/Down (Mac).

# Pro Tools Signal Paths

A signal path is a logical grouping of multiple inputs, outputs or busses that has a single name and (channel) format. The I/O Setup dialog lets you define and name paths according to the needs of each project.

**Main Paths and Sub-Paths**

Paths in Pro Tools tracks and I/O Setup include *main paths* and *sub-paths*.

**Main Paths** *Main* paths are logical groupings of inputs, inserts, busses, or outputs. For example, a master stereo output path will include both its left and right channels.

**Sub-Paths** A *sub-path* represents a signal path within a main path. For example, a default stereo output path consists of two mono sub-paths, left and right. Mono tracks and sends can be routed to either mono sub-path of the stereo output path.

⭷ *It is especially useful to define and name sub-paths for complex mixing setups, such as a 5.1 Surround mix.*

## Paths in Session Tracks

In sessions, audio is routed using the track Input, Output, Insert, Plug-in, and Send selectors. These selectors let you assign tracks to hardware inputs and outputs, internal busses, and other Pro Tools signal paths.
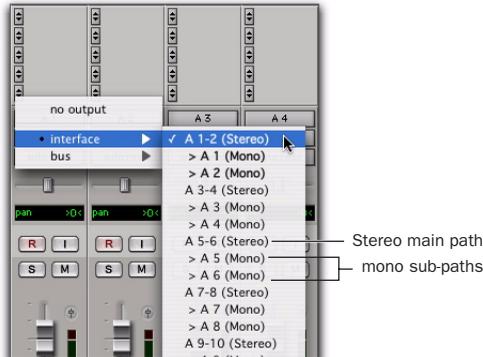


*Main and sub-paths in a session track*

Paths comprise the lists of available signal routing choices in track Input, Output, Insert and Send selectors.

## Paths in the I/O Setup Dialog

The signal routing path choices available in a session are defined in the I/O Setup dialog. For more information, see "I/O Setup Dialog Tabs and Controls" on page 54.
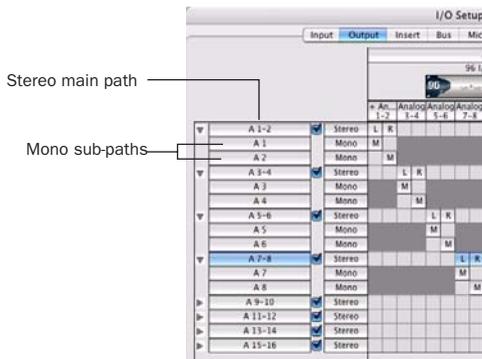


*Main and sub-paths in I/O Setup*

## Path Configurations and I/O Settings

Each Pro Tools session retains its path configurations as I/O Settings.

Each Pro Tools system can have a different path configuration, determined by:

- Whether it is a Pro Tools|HD, Pro Tools LE, or Pro Tools M-Powered system
- On Pro Tools|HD systems, the number and types of audio interfaces
- On Pro Tools|HD systems, the installed Mixer plug-in (Stereo or Surround)

The I/O Settings saved with the session are loaded automatically when the session is opened. Unavailable items (including hardware, paths, or required resources) remain in the session as inactive items (see "Making Paths Active or Inactive" on page 61).

When you create a new session, you can specify which I/O Settings to use (for example, the "Last Used" settings, or one of any custom I/O Settings files).

📄 *You can save and import I/O Settings files in the I/O Setup dialog (see "Importing and Exporting I/O Settings Files" on page 64).*

### Default I/O Settings

A default I/O Settings file is installed automatically by Pro Tools, so you have a set of default paths that will get you started, without the need to configure the I/O Setup dialog. These paths are available in session tracks and are reflected in the I/O Setup dialog. You can customize your I/O Setup configuration at any time, according to the needs of each project (see "I/O Setup Dialog Tabs and Controls" on page 54).

### Default Settings Files

The default Stereo settings file is available on all Pro Tools systems, and provides stereo main paths, each with its own mono sub-paths.

Multichannel settings files are available on Pro Tools|HD systems. These settings provide specialized path definitions for surround mixing. See "Configuring Pro Tools for Multichannel Sessions" on page 850.

### Default Path Names

Default names for input, output, and insert paths are based on the type of system (such as specific Pro Tools LE systems) or type and number of interfaces (Pro Tools|HD systems) you are using.

## I/O Setup Dialog Tabs and Controls

### Path Type Tabs

The I/O Setup dialog provides tabs to open pages for configuring the following I/O Settings:

**Input** Configure input signal path names, formats, and source channel (analog or digital audio interface).

**Output** Configure output signal path names, formats, and destination (audio interface channel or internal send bus).

**Insert** Configure insert signal path names, formats, and destination (audio interface channels).

**Bus** Configure bus signal path names and formats.

**Mic Preamps (Pro Tools HD Only)** Map Digidesign PRE™ outputs to an audio interface's inputs to establish communication between Pro Tools and PRE.

**H/W Insert Delay (Pro Tools HD Only)** Set the amount of Delay Compensation (in milliseconds) for each external device. These times will be used by the Delay Compensation Engine to time align input paths when the hardware insert is in use and Delay Compensation is enabled.

**To open an I/O Setup page:**

■ Click the corresponding tab at the top of the I/O Setup dialog.

## I/O Setup Dialog Signal Path Controls

Depending on the I/O Setup page, the I/O Setup dialog can provide the following controls in its graphical section for configuring signal routing paths:

**Input and Output Selectors** Let you select the physical ports on your audio interface to route to Pro Tools inputs and outputs. Ports are selectable in channel pairs. Available ports for each displayed interface are based on Hardware Setup settings; for example, if the AES/EBU inputs and outputs of an interface are enabled in Hardware Setup, they are available for routing in I/O Setup. The functionality provided with the Input and Output selector is the same as that provided on the Main page of the Hardware Setup dialog.

**Path Name Column** Shows paths that are available for selection, including the name of each defined path. Path names can be renamed.

**Expand/Collapse Triangle** Shows or hides the sub-paths associated with a main path.

**Active/Inactive Status Box** Shows and changes the active/inactive status of each path.

**Path Format Selector** Shows and selects the type/format (such as Mono, Stereo, Quad, or 5.1) of each defined path (greater-than-stereo multichannel formats are supported with Pro Tools|HD systems only).

**Channel Grid** Maps paths to specific interfaces and channels.

## I/O Setup Dialog Buttons, Menus, and Selectors

Depending on the I/O Setup page, the I/O Setup dialog can provide the following buttons, menus, and selectors for configuring signal routing:

**New Path Button** Lets you create a new path on signal path pages for Input, Output, Insert, Bus, or Mic Preamp (Pro Tools HD only).

**New Sub-Path Button** Lets you create a new sub-path on signal path pages for Input, Output, Insert, Bus, or Mic Preamp (Pro Tools HD only).

**Delete Path Button** Lets you delete any selected path or sub-path on signal path pages for Input, Output, Insert, Bus, or Mic Preamp (Pro Tools HD only).

**5.1 Default Path Order Selector (Pro Tools HD Only)** Lets you select the default track layout you want Pro Tools to follow when creating and mapping 5.1-format main or sub-paths in the I/O Setup dialog.

**Import Settings Button** Lets you import an I/O settings file to reconfigure I/O Setup.

**Export Settings Button** Lets you save I/O settings as a file that can be imported into other sessions.

**Default Button** Resets a path type to its default path configuration, depending on which interface you are using and how your Hardware Setup window is configured.

**Compensation for Input Delays After Record Pass (Input Page, Pro Tools HD Only)** Provides automatic compensation for any analog or digital input delay. Enable this option for all recording situations. When recording from a digital source, both the Compensation for Input Delays After Record Pass and the Compensation for Output Delays After Record Pass options must be enabled.

**Compensation for Output Delays After Record Pass (Output Page, Pro Tools HD Only)** Provides automatic compensation for any analog or digital output delay. Enable this option for overdubbing recording situations. Disable this option when working with video. When recording from a digital source, both the Compensation for Input Delays After Record Pass and the Compensation for Output Delays After Record Pass options must be enabled.

**Show Last Saved Setup** Appears in the I/O Setup dialog in certain session transfer situations. For details on this feature, see "Show Last Saved Setup and Show Current Setup" on page 66.

**Pop-Up Menu Selectors I/O Options** Provide selectors with pop-up menus to set paths or orders. The Output and Bus pages provide a Controller Meter Path selector. The Output page also provides selectors for Audition Paths (Region List previewing), New Track Default Output, Default Path Order, AFL/PFL Path (Pro Tools HD only), and AFL/PFL Mutes (Pro Tools HD only). See "I/O Setup Options" on page 67.

**Cancel Button** Closes the I/O Setup dialog without saving changes

**OK Button** Closes the I/O Setup dialog and save changes.

# Routing Hardware I/O to Pro Tools I/O

The I/O Setup dialog lets you define which physical ports on your I/O peripheral are routed to available inputs and outputs in Pro Tools. Use the Input and Output selectors in the I/O Setup dialog to serve as a patchbay to route any of the physical inputs or outputs to your Pro Tools mixer.
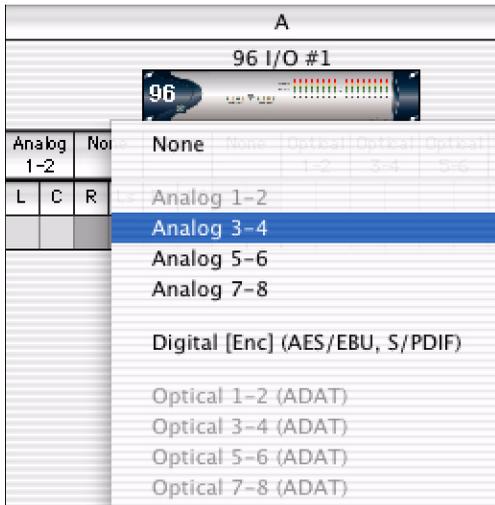


*I/O Channel selector pop-up menu*

**To configure I/O routing in I/O Setup:**

**1** Choose Setup > I/O.

**2** Click the Input or Output tab to display the corresponding path type.

**3** Click the Input or Output selector for the first interface channel pair, located below the first audio interface icon.

**4** From the pop-up menu, select a physical port pair (such as Analog 1–2), to route to a Pro Tools channel pair (such as A 1–2) in the Path Name column on the left.

**5** Repeat the above step for additional channel pairs.

**6** Click OK to save changes and close the I/O Setup dialog.

## Routing a Pro Tools Output Pair to Multiple Destinations

Pro Tools channel pairs can be routed to multiple outputs on an audio interface through the I/O Setup dialog. For example, if you assign both Analog 1–2 and Analog 3–4 interface outputs to Pro Tools Output pair 1–2, when you send a signal to Pro Tools Outputs 1–2, that signal will be routed simultaneously to both pairs of output ports on your audio interface.

This lets you send the same signal (such as a stereo pair, a stem mix, or a multichannel mix) to multiple destinations (such as multiple mastering devices).

The only limit to output choices is the number of outputs available in your system.

📋 *Output path assignments cannot overlap. See "Valid Paths and Requirements" on page 63 for details.*

Pro Tools outputs pairs can also be routed to multiple audio interface outputs in the Hardware Setup dialog. For information, see "Routing a Pro Tools Output Pair to Multiple Destinations" on page 48.

**To route a Pro Tools output channel pair to multiple audio interface output ports:**

**1** Choose Setup > I/O.

**2** Click the Output tab.

**3** Click the Output selector for an interface channel pair, just below an audio interface icon.

**4** From the pop-up menu, select a physical port pair (such as Analog 1–2) to route to the corresponding Pro Tools channel pair (such as A 1–2) in the Path Name column on the left.

**5** Start-click (Windows) or Control-click (Mac) the same Output selector and select an additional output pair from the same pop-up menu.

The output name updates with a plus sign ("+") before it to indicate that multiple output ports are selected. In the pop-up menu, each physical port pair assigned to that Pro Tools output pair is indicated by a check mark.

**6** Repeat the above steps to select additional output destinations.

**7** Click OK to save changes and close the I/O Setup dialog.

# Creating New Paths

The I/O Setup dialog lets you create new main path and sub-paths with custom names, format, and mapping. Custom path names appear in a session's track Input, Output, Insert, and Bus selectors.

**To create a new path:**

**1** Choose Setup > I/O.

**2** Click the Input, Output, Insert, or Bus tab to display the corresponding path type.

**3** Do one of the following:
- Click New Path, or press Control+N (Windows) or Command+N (Mac).

– or –
- Select a main path and click New Sub-Path.

**4** Double-click in the Name field and enter a name for the path.

**5** Press Tab to set the new path name and move to the next path's Name Field, or press Enter (Windows) or Return (Mac) to set the new path name.

**6** Choose a format from the Path Format selector (mono, stereo, or multichannel).
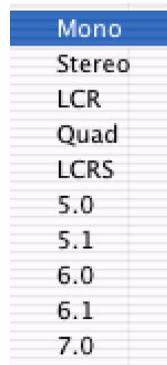


*Path Format selector (Pro Tools HD shown)*

**7** Map the path to a specific audio interface, or bus channel in the Grid column. See "Channel Mapping" on page 62

**8** Repeat the previous steps to configure all path types (Input, Output, Insert, or Bus).

**9** Click OK to save changes and close the I/O Setup dialog. If there are any overlapping or identically named paths, you will be instructed to correct them before the I/O Setup dialog will close. For more information, see "Valid Paths and Requirements" on page 63.

📄 *Multichannel paths and mixing are explained in Chapter 39, "Pro Tools Setup for Surround (Pro Tools HD Only)."*

# Editing Paths

The I/O Setup dialog lets you edit or customize signal path definitions.

Paths can be:

- Restored to default configurations
- Renamed, for easier identification after changing or renaming audio interfaces
- Selected and reordered to change menu order in track selectors
- Selected and deleted
- Remapped to or from different sources or destinations
- Deactivated (or reactivated) to manage unavailable or unnecessary I/O resources

In addition, you can import and export your I/O Setup configurations as I/O Settings files, as well as set default path parameters. See "Working with I/O Settings Files" on page 63.

The following table lists the available path attributes for each path type.

*Path options by type*

| Path Type | Path Options (Attributes) |
|-----------|---------------------------|
| Input | Names, formats, and source channel (analog or digital audio interface) |
| Output | Names, formats, and destination (audio interface output channel or internal send bus) |
| Insert | Names, formats and destination (audio interface channels) |
| Bus | Names and formats |

Path interface names can also be renamed and configured as defaults, which can be restored.

## Restoring Default Paths and Path Names

You can set an I/O Setup path type to its default path configuration at any time. When restoring the default path, Pro Tools does the following:

- Creates new default paths up to the capacity of your system's available audio interfaces and resources.
- Resets selected path names to matching or corresponding paths in the current I/O Setup configuration. For example, if you replace an audio interface on a Pro Tools|HD system, you can use the Default switch to update your I/O Setup definitions with the new hardware configuration.

If there are matching paths available with the new system configuration, existing paths will be updated to include new audio interfaces (Pro Tools|HD systems).

**To restore default paths and path names:**

**1** Choose Setup > I/O.

**2** Click the Input, Output, Insert, or Bus tab to display the corresponding path type.

**3** Click Default.

Pro Tools creates all possible stereo main paths. Mono sub-paths are also auto-created for every stereo main path. These default path names appear in a session's track Audio Input and Output Path selectors.



*Default stereo output paths*

☼ *With Pro Tools|HD systems, to optimize DSP resources, it is best to create mono sub-paths for Outputs and Busses, rather than mono main paths.*

**4** Click OK to save changes and close the I/O Setup dialog.

### Resetting Mix Busses

### (Pro Tools HD Only)

Pro Tools HD 7.x and Pro Tools TDM 6.9 support up to 128 mix busses. However, lower versions of Pro Tools TDM and Pro Tools LE provide only up to 64 or 32 mix busses respectively. When you open a session that was created with Pro Tools LE or a lower version of Pro Tools TDM on a current version of Pro Tools HD, only the number of busses supported on the original system are initially available. You can reset the number of available busses to match your Pro Tools HD system's full capabilities.

**To make all of your busses available in sessions that support a lower number of mix busses:**

**1** Open the I/O Setup dialog.

**2** Click the Bus tab in the upper left.

**3** Click Default.

⚠ *Setting busses to the default setting will rename all busses to their default name.*

**4** Click OK to save changes and close the I/O Setup dialog.

## Renaming Path Names

Path names can be customized in the I/O Setup dialog.

☼ *I/O paths can also be renamed directly from the Edit or Mix window by Right-clicking the Input or Output selector and choosing Rename.*

**To rename a path in the I/O Setup dialog:**

**1** Double-click the path name.

**2** Enter a new path name.

**3** Click OK to save changes and close the I/O Setup dialog.

## Renaming Interface Names

Audio interface names can be customized in the I/O Setup dialog. With Pro Tools HD only, the I/O Setup dialog then bases default Input and Output path names on the custom names.

**To rename an audio interface in the I/O Setup dialog:**

**1** Double-click the label above an interface.
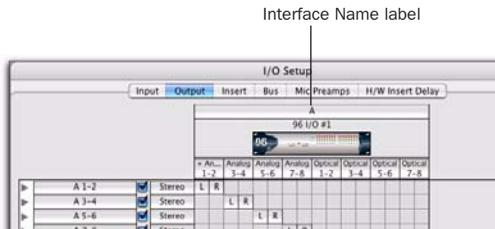


*Interface Names*

**2** Enter a new interface name.

**3** Click OK to save changes and close the I/O Setup dialog.

## Selecting Paths

Individual and multiple paths can be selected in the I/O Setup dialog Path Name column. Selected paths and sub-paths can be reordered higher or lower in the Path Name column to change their menu order in track Input, Output, Insert, and Bus selectors. Paths can also be deleted. Sub-paths follow their main paths when they are moved in the I/O Setup dialog.

**To select a main path or sub-path:**

■ Click the path name.
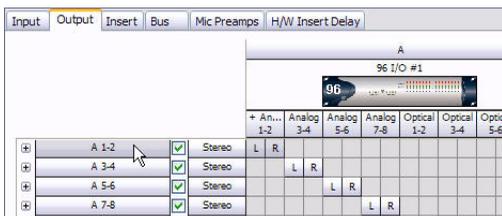


*Selecting paths in the I/O Setup dialog*

**To select a range of paths:**

**1** Click the path name.

**2** Shift-click an additional path name.

All paths that occur between the first path name selected and the additional path name will also be selected.

**To select or deselect noncontiguous paths, do one of the following:**

■ Control-click (Windows) or Command-click (Mac) path names that are unhighlighted to select them.

– or –

■ Control-click (Windows) or Command-click (Mac) path names that are highlighted to deselect them.

**To select all paths and sub-paths:**

■ Alt-click (Windows) or Option-click (Mac) any path name that is unhighlighted.

**To deselect all paths and sub-paths:**

■ Alt-click (Windows) or Option-click (Mac) any path name that is highlighted.

## Reordering Paths

Selected paths and sub-paths can be reordered higher or lower in the Path Name column to change their menu order in track Input, Output, Insert, and Bus selectors.

**To reorder paths in the I/O Setup dialog and Track Selectors:**

**1** Drag one or more selected path names up or down.

**2** Click OK to save changes and close the I/O Setup dialog.

## Deleting Paths

Path definitions can be deleted from the current session to reflect changes to your hardware setup, or to clean up track selector menus by removing unwanted or unnecessary path definitions. After deleting a path, any tracks or send assignments to that path are reset to No Output.

**To delete a main path or sub-path:**

**1** In the I/O Setup dialog, select the path you want to delete.

**2** Click Delete Path.

**3** Click OK to save changes and close the I/O Setup dialog.

**To delete all paths:**

**1** Alt-click (Windows) or Option-click (Mac) any path name.

**2** Click Delete Path.

**3** Click OK to save changes and close the I/O Setup dialog.

## Making Paths Active or Inactive

Pro Tools paths can be Active (on) or Inactive (off, or unavailable). Paths can be globally activated or deactivated in the I/O Setup dialog. Making a signal path inactive will turn off the signal path on any and all tracks currently assigned to it.

Pro Tools also sets unavailable paths to inactive. Paths can be unavailable when hardware or other system resources are unavailable, such as when opening a session saved on a different system.

Tracks can also be made active or inactive. For information, see "Making Track Inputs and Outputs Inactive from the Edit or Mix Window" on page 160.

**To globally activate or deactivate a path:**

**1** Choose Setup > I/O.

**2** Select a path type using the tabs at the top of the window.

**3** Set the Active/Inactive control for the path.
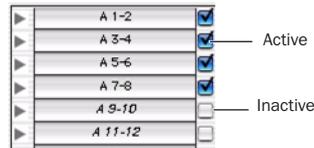


*Active and inactive path settings in I/O Setup*

Inactive tracks that were assigned to the path display in italics in the track path selectors.
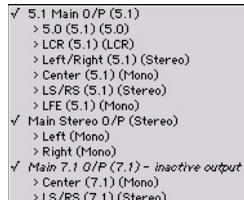


*Active and inactive paths in a track Output Path selector*

**4** Click OK to save changes and close the I/O Setup dialog.

### Display of Active and Inactive Paths in I/O Setup

**Unhighlighted (Italics)** Indicates the path is inactive.

**Highlighted (Non-Italics)** Indicates the path is active.

**Highlighted (Italics)** Indicates the path is active, but there are not enough system resources available.

# Channel Mapping

Paths must be mapped to a specific audio interface, or bus channels in the Grid. Paths can be mapped when they are created, and remapped at any time.

**To map channels:**

**1** Select a main path or sub-path.

**2** In the row for the selected path, click in the Grid column under an audio interface and channel.



*Mapping channels*

Other channels for the path type, if any, fill to the right. For example, when mapping a new stereo path, clicking in the path row under output channel 1 fills both channel 1 and 2 (left to 1, right to 2).

▤ *To remap channels in a path, see "Remapping Channels" on page 62.*

**3** Click OK to save changes and close the I/O Setup dialog.

If there are any overlapping or invalid settings, you will be required to correct them before the I/O Setup dialog will close. For more information, see "Valid Paths and Requirements" on page 63.

### Channel Mapping and Surround Mixer

### (Pro Tools HD Only)

When mapping multichannel paths, the left channel (L) is mapped first to the clicked Grid box, and remaining channels fill immediately to the right according to the default path order. Be-cause some multichannel mixing formats use unique track layouts, Pro Tools lets you set the default format in the I/O Setup dialog (see "I/O Setup Options" on page 67).
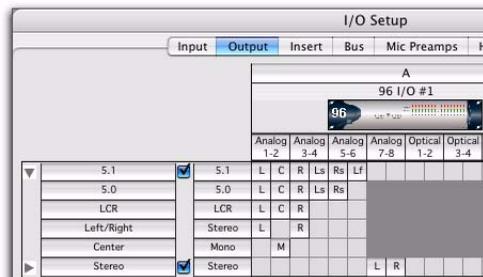


*Customized Output paths for a 5.1 mix*

# Remapping Channels

You can move the individual assignments to different channels, to reorder the path's definition (for example, changing a multichannel map to L-R-C-LF-LS-RS).

**To remap channels in a path:**

▪ Drag the channel to the new location in the Grid. Other channel assignments will move (shuffle) to accommodate dragged channels.

### Channel Shuffling

Moving a signal from right to left results in a shuffle of other signals after the new destination channel. Moving a signal from left to right shuffles any and all signals after the new destination channel and leaves the previous channel empty.

⚠ *Changing a path's format erases any current channel mapping.*

### Sub-Paths Follow Main Paths

When a main path is remapped, its sub-paths (if any) will remap automatically to maintain consistent routing. For example, remapping a stereo path to different hardware outputs results in any of its sub-paths moving with it.

## Valid Paths and Requirements

While configuring the I/O Setup dialog, certain rules apply for path definition and channel mapping. All paths must be valid before the I/O Setup configuration can be applied.

Though it is possible to set up invalid mappings in the Channel Grid, Pro Tools will not accept an I/O Setup configuration unless all paths meet the path definition and channel mapping requirements, as follows:

**Minimum Path Definitions** All paths must have a name, be of a specific format, and have a valid I/O mapping.

**Overlapping Channels and Valid Paths** Channel mapping follows certain rules regarding overlapping paths.

- There can be no partial or complete overlaps between any two main Output paths, any two Insert paths, or any two main Bus paths.
- A newly-created Output or Bus path must either be completely independent of other maps (not mapped to any other available I/O interface/channels), or it must be a sub-path completely contained within a larger path (for example, an LCR sub-path within a larger 5.1 path).
- Output and Insert paths can overlap in I/O Setup, but only one or the other can be used at any given time in a session. (Inputs, however, can be routed to multiple tracks.)

## Working with I/O Settings Files

I/O Settings can be managed when transferring sessions, and when developing I/O Setup configurations over the course of multiple sessions and projects.

## I/O Settings Files

When creating a new session, you can set the session's I/O Setup configuration by selecting an available I/O Settings file. I/O Settings can also be imported before or after you open a session. The following types of I/O Settings are available:

**Last Used** The most recent (or *last used*) I/O Setup configuration is saved as a Last Used settings file. See "Last Used I/O Settings" on page 64 for more information.

**Factory I/O Settings** The Pro Tools Installer provides settings files for factory I/O setups for stereo and surround (Pro Tools HD only). See "Audio Interfaces and Session Transfer" on page 65 for more information.

**Custom I/O Settings** The current I/O Setup configuration can be edited and saved as a custom I/O Setting using the Export command in the I/O Setup dialog. See "Importing and Exporting I/O Settings Files" on page 64.

### Default I/O Settings at First Launch

The first time you launch Pro Tools and create a session, you can choose default Stereo Mix or Surround Mix settings, depending on your system and installation choices. See "Audio Interfaces and Session Transfer" on page 65.

## Importing and Exporting I/O Settings Files

You can export and import I/O Setup configurations as I/O Settings files. This lets you save settings for different projects, import settings for reconfiguring I/O Setup, and manage path definitions and signal routing setups.

### Exporting I/O Settings

**To export and save an I/O Setup configuration as a custom I/O Settings file:**

**1** Update I/O Setup settings (see "I/O Setup Dialog Tabs and Controls" on page 54).

**2** Click Export Settings.

**3** Name and save the settings file.

☼ *To start sessions with a blank or empty I/O Setup dialog, you can create and export an I/O Settings file in which all definitions have been deleted.*

### Importing I/O Settings

I/O Settings can be imported before or after you open a session.

When you import I/O Settings, you can choose to delete any unused path definitions before importing the new paths, or leave unused path definitions intact and add the new paths to the current I/O Setup configuration.

☼ *You can also import I/O path and assignment names, as well as other session data, from a different session by using the Import Session Data command (see "Import Session Data Dialog" on page 267).*

**To import I/O Settings:**

**1** Click Import Settings in the I/O Setup dialog.

**2** Select an I/O settings file in the Import Settings dialog and click Import.

**3** A dialog appears asking whether you want to delete existing paths. Do one of the following:

- Click Yes to remove any unused paths and add the imported paths to the current I/O Setup configuration. Any I/O assignments and automation data associated with the unused paths are also deleted.

– or –

- Click No to add the imported paths to the current I/O Setup configuration.

If the import results in overlapping paths, the new paths will appear in the I/O Setup dialog as Inactive. See "Making Paths Active or Inactive" on page 61.

After importing I/O Settings, you can then reassign path routing definitions in the I/O Setup dialog by remapping, renaming, and deleting paths. See "Creating New Paths" on page 57.

### Last Used I/O Settings

If any changes are made to the I/O Setup dialog, these changes are saved to the Last Used settings file when the I/O Setup dialog is closed (by clicking OK).

Changes to I/O Setup are saved along with the current session (if one is open). Custom I/O Settings files will not contain recent changes unless you export an updated settings file.

The Last Used setting is available as a choice when creating a session or when importing I/O Settings in the I/O Setup dialog.

## Factory I/O Settings

Pro Tools provides I/O Settings files for Stereo and Surround mixing. These files provide generic main and sub-path definitions for either mixing format.

Factory I/O Settings are available as a choice when creating a session or when importing I/O Settings in the I/O Setup dialog.

### Stereo Mix Settings File

The Stereo Mix settings file consists of all possible stereo and mono paths for your session.

💡 *Using the "Stereo Mix" settings file has the same effect as clicking Default for every individual tab in I/O Settings. See "Creating New Paths" on page 57 for details.*

Specifically, the Stereo Mix settings file creates the maximum number paths of each type, as determined by the available system's I/O Setup and hardware configuration.

### Surround Mix Settings File (Pro Tools HD Only)

The Surround Mix provides additional, surround-specific Output and Bus settings files. See "Surround Mix Settings Files" on page 851 for more information.

## Custom I/O Settings

Custom I/O Settings files can be created by changing I/O Setup controls and then exporting the I/O Setup configuration (see "Exporting I/O Settings" on page 64). Custom I/O settings are available as a choice when creating a session or when importing I/O Settings in the I/O Setup dialog.

## Audio Interfaces and Session Transfer

Pro Tools sessions store the *type* and *order* of audio interfaces connected and active when the session was last saved. When opening a session on a system with different audio interfaces, the I/O Setup may need to update.

### Unavailable I/O

When opening a session, Pro Tools checks to see if the hardware configuration has changed since the session was last saved. If the current hardware configuration differs from that saved in the session, paths associated with the unavailable I/O are made inactive.

### Remapping

Remapping occurs when a session's original I/O Setup does not match that of the current system and session paths are remapped to current hardware.

Systems of equivalent I/O capability are remapped directly. For example, a session tracked to a Pro Tools|HD system through two 192 I/O audio interfaces would include 32 input paths spread across the two 16-channel interfaces. The session is taken to a second Pro Tools system that has a 96 I/O audio interface (a 16-channel I/O unit) and a 1622 I/O (with its 16 analog inputs) connected to its Legacy Port. When the session is first opened on the second system, Pro Tools will map the 32 input paths to the inputs of the two interfaces.

When hardware is unavailable to a session being opened, assignments can either be replaced using the remap option, or opened as Inactive. Any tracks left assigned to an unavailable path will not be audible. This can be beneficial, however, when you want to reassign tracks into your system's mix one at a time.

📄 *See "Making Paths Active or Inactive" on page 61 for more information.*

### Show Last Saved Setup and Show Current Setup

When a session is opened that contains path definitions for unavailable I/O interfaces, the I/O Setup dialog lists those paths in italics.

The Show Last Saved Setup button displays the audio interfaces used in the original session. This temporary display lets you check the last saved I/O configuration for reference while configuring the session for your system.

Once a session has been opened with unavailable I/O retained, you can then reassign tracks to available I/O paths.

📄 *To redefine the paths, see "Editing Paths" on page 58.*

## Opening Older Sessions Saved in Direct Outputs Mode

Direct Outputs mode, as found in older versions of Pro Tools, has been replaced by the default mono sub-paths available through all valid I/O in the I/O Setup dialog.

The Default switch creates main Output paths with appropriate mono sub-paths. These sub-paths provide discrete monophonic routing.

When a session is opened that was saved in Direct Outputs mode, Pro Tools maps all the output assignments to equivalent mono sub-paths (as available).

To convert a session so that it emulates Direct Outputs mode, use the Auto Assign Ascending Outputs feature, as follows:

### To auto assign track outputs for Direct Outputs:

**1** Make sure that all tracks you want to assign are visible (hidden tracks will not be affected).

**2** Select the tracks you want to assign.

**3** Control-Alt-click (Windows) or Command-Option-click (Mac) the Output selector of the left-most track and assign it to the sub-path for Output #1. All visible tracks will be auto-assigned to unique mono sub-path outputs in ascending order.

💡 *You can identify audio interface connections at any time by selecting the interface name in the Peripherals list of the Hardware Setup dialog, then clicking Identify. All the LEDs on the interface front panel will illuminate.*

# I/O Setup Options

Pro Tools systems have additional I/O Setup features. These include default signal routing for metering and auditioning, and default track layout for multichannel mix formats.

## Controller Meter Path

### (D-Control, D-Command, and ProControl Only)

The Controller Meter Path selector determines the path displayed across the Output meters of D-Control, D-Command®, or ProControl control surfaces. For more details, refer to your control surface documentation.

This selector is available in the Output and Bus pages of I/O Setup.

## Audition Paths

You can specify the output path through which files and regions are auditioned in the Region List or in DigiBase browsers.

### Using the Default Audition Path

When you audition a file or region in the Region List, Pro Tools routes the audio output through the Audition Path. Pro Tools assigns a default Audition Path to the first available main Output path of the corresponding format. You can also select a different Audition Path in the I/O Setup dialog.

☼ *On Pro Tools|HD systems with more than one audio interface, you can only select the first audio interface as an audition path.*

### Configuring Audition Paths

You can specify the monitoring outputs for Region List auditioning using the Audition Paths menu.

**Audition Paths Main Menu** The main menu consists of all path format choices available on the current system (Mono and Stereo on all systems, and LCR and greater on Pro Tools|HD systems).

**Audition Paths Submenus** Each path format choice has a submenu listing Output paths of that given format. (The mono submenu lists Output paths of any format.)

#### To configure an Audition Path:

■ Select a path from the Audition Paths menu or submenus.

#### To audition regions in the Region List:

■ Alt-click (Windows) or Option-click (Mac) the region in the list.

#### Auditioning Discrete Signals in Multichannel Items

In the Region List, multichannel regions are auditioned through the current Audition Path. Signals can be auditioned "in-place," or through all outputs, as described below.

#### *Audition In-Place*

When auditioning a mono component of a mono component region, the mono region can be played from the corresponding channel of its parent mono component region. This playback method is called *audition in-place*.

#### To audition in-place:

**1** In the Region List, make sure the stereo or multichannel region is in expanded view (showing .L, .R, and other component channels).

**2** Alt-click (Windows) or Option-click (Mac) the region for the channel you want to audition.

*Audition to All Outputs*

When auditioning a mono component of a mono component region, the region can be routed equally to all outputs of the parent region's Audition Path.

**To audition through all channels of the main audition path:**

▪ Shift-Alt-click (Windows) or Shift-Option-click (Mac) on the signal in the Region List.

## New Track Default Output Path

You can specify the default output path assignment for new tracks, in each available format.

💡 *The New Track Default Output can be set to bus paths, as well as output paths.*

The New Track Default Output selector is available in the Output page of I/O Setup dialog only.

**To specify a default output for new tracks in the I/O Setup dialog:**

▪ Click the New Track Default Output selector and select a format and Output.

## AFL/PFL Path

### (Pro Tools HD Only)

Tracks soloed in AFL (After Fader Listen) or PFL (Pre Fader Listen) Solo mode are routed to the current AFL/PFL Path, as set with the AFL/PFL Path selector.

This selector is available in the Output page of I/O Setup dialog only.

📖 *See "Solo Modes" on page 168 for more information on using AFL or PFL Solo modes.*

**To select the AFL/PFL Path output:**

**1** Choose Setup > I/O.

**2** Click the Output tab to display the Output page.

⚠ *If you do not see the AFL/PFL Path selector, check that you have installed the Surround Mixer in the Plug-ins (Used) folder. For information on switching Mixer plug-ins, see the Pro Tools|HD Getting Started Guide.*

**3** Select a path from the AFL/PFL Path selector.

⚠ *Selecting None as the AFL/PFL Path disables AFL and PFL Solo modes. When None is selected, AFL and PFL cannot be used.*

**4** Click OK to close the I/O Setup dialog.

*Setting AFL or PFL Path Levels*

You can set a separate master AFL/PFL Path level for all AFL solos and all PFL solos.

💡 *Tracks do not need to be soloed to have the master AFL/PFL Path level adjusted.*

**To set the AFL/PFL Path level for AFL or PFL solos:**

**1** Choose Options > Solo Mode, and select a Solo mode, as follows:

- If you want to set the level for AFL solos, select AFL.

– or –

- If you want to set the level for PFL solos, select PFL.

**2** In the Mix or Edit window, Control-click (Windows) or Command-click (Mac) a Solo button on any track.

**3** Adjust the AFL/PFL Path fader.

**4** Click on the new fader position (or press Esc) to close the fader display.

⌨ *To set the AFL/PFL Path level to 0 dB, Control-Start-click (Windows) or Control-Command-click (Mac) any Solo button.*

### AFL/PFL Mutes (Output Path) Selector

#### (Systems without a D-Control or D-Command Control Surface)

If you are not using a D-Control or D-Command worksurface, your regular Pro Tools output path can be muted when you send a signal to the AFL/PFL Path. The muted path is set with the AFL/PFL Mutes (Output Path) selector.

📄 *See "Solo Modes" on page 168 for more information on selecting and using AFL or PFL Solo modes.*

**To set which output path is muted when tracks are soloed in AFL or PFL Solo mode:**

**1** Choose Setup > I/O.

**2** Click the Output tab to display the Output page.

**3** Select a path from the AFL/PFL Mutes (Output Path) selector.

**4** Click OK to close the I/O Setup dialog.

## Default Path Order

### (Pro Tools HD Only)

The Default Path Order selector lets you select the default track layout you want Pro Tools to follow when creating and mapping 5.1-format main or sub-paths in the I/O Setup dialog.

This selector is available in the Output page of I/O Setup dialog only.

This setting does not affect existing path definitions or metering—it only specifies channel mapping in new 5.1-format paths.

**To choose a Default Path Order:**

▪ Select the channel mapping from the Default Path Order menu.
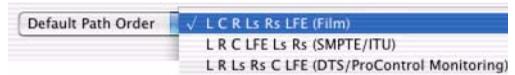


*Default Path Order selector*

📄 *For more information about multichannel mixing, see Chapter 39, "Pro Tools Setup for Surround (Pro Tools HD Only)."*

## Mic Preamps

### (Digidesign PRE with Pro Tools HD Only)

On the Mic Preamps page of the I/O Setup dialog, signal paths for one or more Digidesign PRE multi-purpose microphone preamplifiers can be mapped to Pro Tools HD audio interfaces. Refer to the *PRE Guide* for more information.

# H/W Insert Delay Compensation

### (Pro Tools HD Only)

To compensate for the delay (latency) of any external hardware devices (such as an effects unit) used in your session, you can set the amount of Delay Compensation (in milliseconds) for each external device. These times will be used by the Delay Compensation Engine to time-align input paths when the hardware insert is in use and Delay Compensation is enabled.
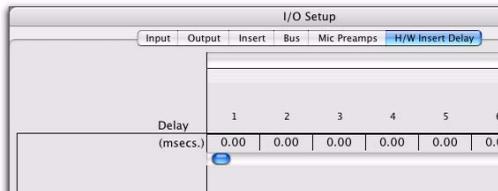


*Insert offset delay field*

### To set an insert delay offset:

■ Enter a value, in milliseconds, in the field corresponding with the input where the hardware insert is connected.

If you do not know your hardware's insert delay, see "Determining Your Hardware's Insert Delay" on page 70.

⚠ *Insert delay offsets only have an effect when the I/O is used for hardware inserts.*

## Determining Your Hardware's Insert Delay

You can check the documentation for your external hardware to see if it identifies the hardware latency, or you can use the following procedure in Pro Tools to determine the latency for hardware inserts.

### To determine your hardware's insert delay, do one of the following:

**1** Change your session's Main Time Scale to Min:Sec.

**2** Create two tracks.

**3** Route the tracks as follows: Route the output of track 1 to the device's inputs, then route the input of track 2 to the device's outputs.

**4** Place a short tone (or other sound with a definitive beginning) on track 1.

**5** Record enable track 2 and press Record Enable and Play in the Transport window to play back the audio in track 1 and record it to track 2.

**6** After recording, zoom in and measure the difference between where the audio starts in track 1 and track 2. The difference is the value you would enter as your hardware's insert delay offset.

# Chapter 7: Preferences

The settings in the Preferences dialog define how Pro Tools features work by default. This dialog can be opened from the application window (with a session closed), or from within a session (when a session is open).

The Preferences dialog has several tabbed pages in which you can specify your preferred settings for various types of session parameters. Each Preferences page is covered in detail in this chapter.

**To change Pro Tools preferences:**

**1** Choose Setup > Preferences.

**2** Click the tab for the page that has preferences you want to change.

**3** Change preferences as desired.

**4** Click OK to save changes and close the window.
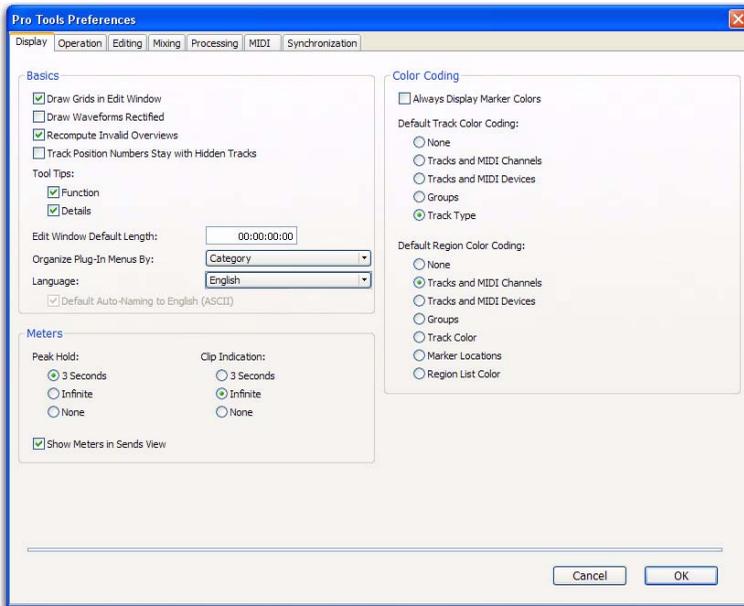


*Figure 2. Pro Tools Preferences dialog on a Pro Tools|HD system (Display Preferences page shown)*

# Global and Local Preferences

Pro Tools preferences are either global (system-wide) or local (for the current session only).

## Global (System-Wide) Preferences

Global preferences are applied to all sessions. These preferences become the default preferences for any existing sessions that you subsequently open or any new sessions that are created.

## Local (Current Session) Preferences

Local preferences are applied to the current session (if one is open). Local preferences are not applied to older sessions that are subsequently opened.

## Preferences and New Sessions

New sessions use global preference settings, plus the most recent local preference settings. The most recent local settings refer to the last open session (unless subsequent changes were made in the Preference dialog from the application window).

## Local (Current Session) Preferences List

All Preferences are global, except for the following, which are local:

- Display Preferences
  - Edit Window Default Length
  - Always Display Marker Colors
  - Default Track Color Coding options
  - Default Region Color Coding options

- Operation Preferences
  - Custom Shuttle Lock Speed
  - Back/Forward Amount (Pro Tools HD only)
  - QuickTime Playback Priority options
  - PEC/Direct Style Input Monitoring (Pro Tools HD only)
  - DestructivePunch File Length (Pro Tools HD only)

- Editing Preferences
  - None

- Mixing Preferences
  - Coalesce Trim Automation Options (Pro Tools HD only)

- Processing Preferences
  - Convert Imported "WAV" Files To AES31/BroadcastWave

- MIDI Preferences
  - Play MIDI Notes When Editing
  - Display Events as Modified by Real-Time Properties
  - Automatically Create Click Track in New Sessions
  - Default Thru Instrument
  - Pencil Tool Resolution When Drawing Controller Data
  - Delay for External Devices Options (Pro Tools HD only)

- Synchronization Preferences
  - None

# Display Preferences
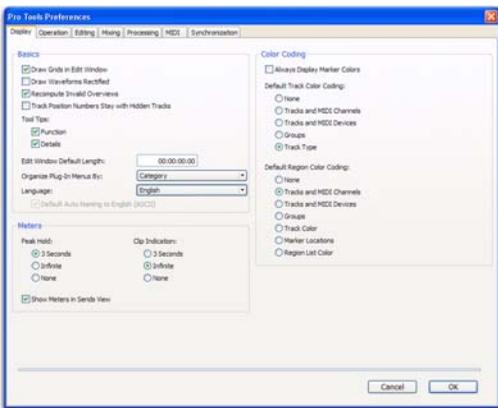


## Basics Section

**Draw Grids in Edit Window** Adds grid lines to the Edit window. Grid line resolution is based on the zoom level of the Edit window.

**Draw Waveforms Rectified** Displays audio waveform data in rectified view. In this view, audio waveforms are displayed so that their positive and negative waveform excursions (the portions that fall above and below the center line) are summed together and viewed as a single positive-value signal. This view allows more waveform detail to be seen in either normal or reduced track height views. It can be particularly useful when editing volume automation data, since it depicts waveform levels as starting at the bottom of the track.

**Recompute Invalid Overviews** Prompts Pro Tools to look for missing or corrupted overview data (the data used to create waveform displays) when it opens sessions. If Pro Tools finds that overview data is missing or corrupted, it will re-create one or more overviews for the session. This may take some time if there are many tracks in the session. If you suspect that over-

view data for a session has become corrupted, or if you import audio files which have no overview data into a session, make sure this preference is enabled for the session, save and close the session, then reopen it. Pro Tools will recreate any overviews for the session when it opens.

**Track Position Numbers Stay with Hidden Tracks** When selected, tracks keep their track numbers even when hidden. When not selected, numbers are only assigned to tracks that are shown. In this case, shown tracks are then numbered sequentially, and hidden tracks are not numbered.

### Tool Tips Display Options

**Function** Configures Tool Tips to show the basic function of the item.

**Details** Configures Tool Tips to show the complete name of an abbreviated name or item (such as a track name). Details view can also show the hidden or abbreviated value of parameters, as well as input and output assignments.

### Edit Window Default Length

This preference sets a default length for the Edit window in hours, minutes, seconds, and frames (Pro Tools HD or Pro Tools LE with DV Toolkit 2 only). This is useful if you want to assemble a session of a particular length or leave extra room to expand the Edit window's work area in your session. The maximum length is 12 hours and 25 seconds at 48 kHz, and proportionally less at higher sampling rates. For best scrollbar sensitivity, set the length to slightly longer (a minute or more) than the total session or song length.

### "Organize Plug-in Menus By" Options

These option customize how plug-in menus are organized in the Insert selector or Plug-in selector.

**Flat List** Organizes plug-ins in a single list, in alphabetical order.

**Category** Organizes plug-ins by process category (such as EQ, Dynamics, and Delay), with individual plug-ins listed in the category submenus. Plug-ins that do not fit into a standard category (such as the DigiRack Signal Generator), or third-party plug-ins that have not had a category designated by their developers, appear in the Other category. Plug-ins can appear in more than one category.

**Manufacturer** Organizes plug-ins by their manufacturer (such as Digidesign, Eventide, Line 6, and McDSP), with individual plug-ins listed in the manufacturer submenus. Plug-ins that do not have a Manufacturer defined will appear in the "Other" manufacturer folder.

Most Digidesign-distributed third-party plug-ins will be grouped under Digidesign when Manufacturer view is enabled.

**Category and Manufacturer** Organizes plug-ins in two levels of menus. The top menus display plug-ins by process category (such as EQ, Dynamics, and Delay), with individual plug-ins listed in the category submenus. The bottom menus display plug-ins by manufacturer (such as Digidesign, Eventide, Line 6, or McDSP), with individual plug-ins listed in the manufacturer submenus.

### Language Options

**Language** Sets the language to use in the Pro Tools application, independently of what language version of Windows is used.

**Default Automatic Naming to English** Causes automatically named session elements in a session to be named in English even when working with the Pro Tools application set to another language.

## Meters Section

### Peak Hold Options

These options determine how long the peak indicators on track meters stay lit after a peak is detected.

**3 Second Peak Hold** When selected, track meters display the last peak level for three seconds.

**Infinite Peak Hold** When selected, track meters display the last peak level until you click them to clear them.

**No Peak Hold** When selected, track meters do not hold the peak level.

### Clip Indication Options

These options determine how long the clip indicators on plug-in, send, and track meters stay lit after a clip is detected.

**3 Second Clip Hold** When selected, meters display the last clip indication for three seconds.

**Infinite Clip Hold** When selected, meters display the last clip indications until you click them to clear them.

**No Clip Hold** When selected, meters do not hold the clip indication.

### Show Meters in Sends View

When the Sends View is displaying individual send controls, you can select this option to show send level meters. Deselecting this option can help speed up screen redraws and processing.

## Color Coding

**Always Display Marker Colors** Lets you choose to view Marker colors in the Markers ruler, regardless of the settings you choose for Default Region Color Coding.

### Default Track Color Coding Options

These color coding options determine the default color coding assignment for tracks in the Edit and Mix windows. Choices are:

**None** Turns off color assignment for tracks.

**Tracks and MIDI Channels** Assigns a color to each track in the Mix or Edit window according to its voice assignment or MIDI channel assignment.

**Tracks and MIDI Devices** Assigns a color to each track in the Mix or Edit window according to its voice assignment or MIDI device assignment.

**Groups** Assigns a color to each track according to its Group ID. If groups are suspended using the Suspend Groups command, the tracks color bars are not shown.

**Track Type** Assigns a color to each track according to its type (audio, MIDI, Instrument, Auxiliary or Master Fader).

### Default Region Color Coding Options

These color coding options determine the default color coding assignment for tracks, Marker Locations, and regions residing in the track playlist and Region List. Choices are:

**None** Turns off color assignment for regions. Regions are drawn with black waveform or MIDI notes on a light gray background.

**Tracks and MIDI Channels** Assigns a color to each region in the Edit window according to its voice or MIDI channel assignment.

**Tracks and MIDI Devices** Assigns a color to each region in the Edit window according to its voice assignment or MIDI device assignment.

**Groups** Assigns a color to each region according to the Group ID of its track. If groups are suspended using the Suspend Groups command, all regions display black waveforms or MIDI notes on a light gray background.

**Track Color** Assigns a region color based on the color assigned to the track.

**Marker Locations** Assigns a unique color to each marker area in the Marker ruler, including the area preceding the first marker.

**Region List Color** Assigns a color to each region based on its color in the Region List.

# Operation Preferences
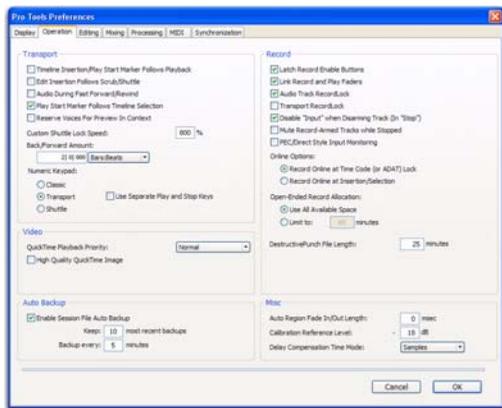


## Transport Section

**Timeline Insertion/Play Start Marker Follows Playback** When selected, the Timeline Insertion and the Play Start Marker both move to the point in the Timeline where playback stops. When deselected, the Timeline Insertion and Play Start Marker do not follow playback, but return to the point in time where playback began.

*Press Start+N (Windows) or Control+N (Mac) to toggle the Timeline Insertion/Play Start Marker Follows Playback preference on and off.*

**Edit Insertion Follows Scrub/Shuttle** When selected, the edit cursor automatically locates to the point where scrubbing stops.

**Audio During Fast Forward/Rewind** When selected, audio is audible during fast forward or rewind.

**Play Start Marker Follows Timeline Selection** When enabled, the Play Start Marker snaps to the Timeline Selection Start Marker when you move the Timeline Selection, draw a new Timeline Selection, or adjust the Timeline Selection Start. When disabled, the Play Start Marker doesn't move with the Timeline selection.

**Reserve Voices for Preview in Context (Pro Tools HD Only)** When enabled, Pro Tools reserve the appropriate number of voices for preview in context (previewing audio files in DigiBase during session playback). The number of available voices is reduced by the channel width of the selected Audition Paths on the Output page of the I/O Setup window. For example, if the number of playback voices is set to 48 in the Playback Engine, and you have a stereo audition path selected in the I/O Setup, only 46 voices will be available for tracks. If you have a 5.1 audition path, only 42 voices will be available. When this option is disabled, you will not be able to preview in context if there are not enough available voices.

**Custom Shuttle Lock Speed** Sets the highest fast-forward Shuttle Lock speed (key 9) for Shuttle Lock modes (Classic or Transport). The range for this setting is 50–800%.

*For more information, see "Custom Shuttle Lock Speed" on page 443.*

**Back/Forward Amount** Sets the default length of Back, Back and Play, Forward and Forward and Play. The timebase of the Back/Forward Amount settings follows the Main Time Scale by default, or you can deselect Follow Main Time Scale and select another timebase format: Bars:Beats, Min:Sec, Time Code, Feet+Frames, or Samples.

### Numeric Keypad Mode

Numeric Keypad mode determines how the numeric keypad functions. You can always use the numeric keypad to select and enter values in the Event Edit Area, Edit Selection indicators, Main and Sub Counters, and Transport fields.

**Classic** Selects a Shuttle Lock mode that emulates the way Pro Tools worked in versions lower than 5.0. With the Numeric Keypad mode set to Classic, you can play up to two tracks of audio in Shuttle Lock mode. Press the Start key (Windows) or Control (Mac), followed by 0–9 for different play speeds. Press Plus (+) or Minus (–) to reverse direction. Recall Memory Locations by typing the Memory Location number, followed by Period (.).

📄 *To customize the highest fast-forward Shuttle Lock speed, see "Custom Shuttle Lock Speed" on page 443.*

**Transport** Selects a Shuttle Lock mode that lets you set a number of record and play functions, and also operate the Transport from the numeric keypad. With the Numeric Keypad mode set to Transport, you can play up to two tracks of audio in Shuttle Lock mode. Press the Start key (Windows) or Control (Mac), followed by 0–9 for different play speeds. Press Plus (+) or Minus (–) to reverse direction. Recall Memory Locations by typing Period (.), the Memory Location number, and Period (.) again.

📄 *To customize the highest fast-forward Shuttle Lock speed, see "Custom Shuttle Lock Speed" on page 443.*

**Shuttle (Pro Tools HD Only)** Selects a type of shuttling different from that of Shuttle Lock mode. With the Numeric Keypad mode set to Shuttle, playback is triggered by pressing and holding the keys on the numeric keypad—playback stops once the keys are released. Various playback speeds are available in both forward and reverse. You can also recall Memory Locations by typing Period (.), the Memory Location number, and Period (.) again.

### Use Separate Play and Stop Keys

When enabled, this option lets you start playback with the Enter key and stop playback with the 0 key on the numeric keypad. This is useful for quickly starting and stopping playback when auditioning loop transitions. Use Separate Play and Stop Keys is only available in Transport Numeric Keypad mode.

⚠ *When this option is enabled, it overrides using the Enter key to add Memory Location markers. Instead, press Period (.) and then Enter on the numeric keypad to add a Memory Location marker.*

## Video Section

### QuickTime Playback Priority Options

**Normal** This is the default setting for QuickTime Movie Playback Priority. It gives no extra priority to movie playback over other screen update tasks such as metering, moving faders, and so on. In most cases you should use this setting.

**Medium** This setting gives QuickTime movie playback a higher priority relative to other Pro Tools screen update tasks. Use this setting if you experience inconsistent QuickTime movie playback with the Normal setting.

**Highest** This setting gives QuickTime movie playback highest priority. In this mode, Pro Tools disables screen activity and requires you to use the Spacebar to stop playback. Use this setting if you require uninterrupted QuickTime movie playback.

### High Quality QuickTime Image

When enabled, Pro Tools decompresses both fields of each interlaced frame of QuickTime video. When viewing a QuickTime movie in the Pro Tools Video window, select this option to display the movie at the highest possible resolution. Deselecting this option can help improve performance if your system experiences problems playing back a session with QuickTime video.

### Avid Video Errors Stop Playback
### (Pro Tools HD with Avid Video Engine Only)

When selected, Pro Tools automatically stops playback of audio and video if a single frame of video is dropped.

When not selected, Pro Tools continues playback of audio even if frames are dropped. In most cases, video playback will recover within a few frames and continue playing audio and video in sync.

### Avid Video NTSC Has Setup (NTSC-J)
### (Pro Tools HD with Avid Video Engine Only)

This preference lets you adjust the level of NTSC video black output between 7.5 IRE (standard) or 0 IRE. When this option is selected, output level is 0 IRE.

## Auto Backup Section

**Enable Session File Auto Backup** When selected, Pro Tools automatically saves backups of your Pro Tools session file while you work. Backups are saved to in the Session Files Backup folder in your session folder.

**Keep** specifies the total number of incremental backups that are kept.

**Backup Every** Specifies how often the session is saved.

## Record Section

**Latch Record Enable Buttons** When selected, multiple audio tracks can be record-enabled. When not selected, multiple audio tracks cannot be record-enabled. Record-enabling an audio track takes other audio tracks out of record-enabled mode.

**Link Record and Play Faders** When selected, Pro Tools does not remember separate fader levels for tracks when they are record-enabled, allowing you to maintain the same monitoring level for tracks during recording and playback.

**Audio Track RecordLock (Pro Tools HD Only)** This option configures Pro Tools tracks to either emulate a digital dubber, or to maintain legacy behavior for track record status.

- When selected, the record-enabled audio tracks remain record-enabled when playback or recording stops.
- When not selected, record-enabled audio tracks are taken out of record enable when Pro Tools is stopped. This prevents tracks from remaining armed from pass to pass, emulating track record behavior of a digital dubber.

**Transport RecordLock (Pro Tools HD Only)** This option lets the Transport Record (the Record button in the Transport controls) be configured to either emulate a digital dubber, or to maintain legacy behavior for the Transport master Record.

- When selected, the Transport Record remains armed when playback or recording stops. This saves having to re-arm the Transport between takes, emulating digital dubber behavior.

- When not selected, the Transport Record disarms when Pro Tools is manually stopped or stops due to a loss of time code. This replicates standard Pro Tools recording behavior.

The Transport RecordLock preference is automatically disabled and grayed out when Destructive record mode is enabled.

**Disable "Input" When Disarming Track (In "Stop") (Pro Tools HD Only)** For flexibility, TrackInput monitoring can be customized to remain selected regardless of track record status, or to automatically switch to Auto Input monitoring after a recording pass. This lets you optimize monitoring for a typical dubbing workflow (in which you might want tracks to remain in Input Only mode until explicitly switched to Auto Input monitoring) or a typical music tracking workflow (in which leaving a track in Input Only monitoring mode after recording can result in accidental double-monitoring).

- When selected, taking an audio track out of record enable (any mode) takes it out of Input Only mode, regardless of the global monitor mode, and switches it to monitor audio from disk only.

- When not selected, audio tracks remain in Input Only monitoring mode until explicitly switched to Auto Input monitoring.

**Mute Record-Armed Tracks While Stopped (Pro Tools HD Only)** This setting determines monitor status of record-armed tracks.

- When selected, Pro Tools mutes all record-enabled tracks when the transport is stopped. Input can still be monitored while stopped using the TrackInput Monitor button.

- When not selected, Pro Tools does not mute audio input on record-enabled tracks when the transport is stopped.

**PEC/Direct Style Input Monitoring (Pro Tools HD Only)** This option changes the way the Track-Input monitoring mode is indicated on-screen (and on supported control surfaces) to emulate "PEC" (playback) and "Direct" (input/bus) indication on some large format consoles.

- When not selected, the TrackInput button shows the letter "I." The button remains gray to indicate Auto Input mode and lights green to indicate Input Only mode.

- When selected, the TrackInput button remains gray and shows the letter "D" to indicated Input Only mode ("Direct"); it lights green and shows the letter "P" to indicate Auto Input mode ("Pec" or playback).

## Online Options

**Record Online at Time Code (or ADAT) Lock** When selected, online recording begins as soon as Pro Tools receives and locks to incoming time code.

**Record Online at Insertion/Selection** When selected, online recording begins at the edit cursor location. Recording continues until Pro Tools stops receiving time code. If you make a selection, Pro Tools records online for the length of the selection.

### Open Ended Record Allocation

This preference determines how much of your available hard drive space is allocated for recording.

**Use All Available Space** When selected, the drive's entire available space is allocated. Generally, this is a good setting for recording longer takes, as it provides the maximum amount of drive space. Additionally, when recording multiple tracks, the files are spread across your drive. This can sometimes slow down the recording process for hard drives that use certain file systems, including HFS+ and NTFS.

**Limit To** Sets the maximum allowable recording duration for one take. This can help reduce the time it takes to begin recording by allocating only a portion of your hard drive. The number of minutes specified is allocated for each record-enabled track. You may want to experiment with this number to achieve the recording performance you want.

If you do not regularly record longer takes, set a smaller length (such as a low multiple of the song's total length).

### DestructivePunch File Length (Pro Tools HD Only)

This preference sets the duration of consolidated audio files when preparing tracks for DestructivePunch mode. The default value for this setting is 25 minutes.

### Misc (Miscellaneous) Section

### (Pro Tools HD Only)

**Auto Region Fade In/Out Length** Sets a default length for fade-ins and fade-outs automatically applied to region boundaries. Using automatic fade-ins and fade-outs saves you the trouble of editing to zero-crossings or creating numerous rendered fades in order to eliminate clicks or pops in playback. Autofades are not written to disk. Value range is from 0–10 ms for the Auto Region Fade In/Out Length. A value of zero means that no auto-fading will occur. The Auto Fade value is saved with the session, and is automatically applied to all free-standing region boundaries until you change it.

**Calibration Reference Level** Sets a default calibration reference level in dB when Pro Tools is in Calibration mode. For audio interfaces that have trims (such as the 192 I/O), see the interface's guide for calibration instructions.

**Delay Compensation Time Mode** This option lets you choose whether information in the Delay Manager is displayed in milliseconds or samples. This option is only available when Delay Compensation is enabled (Options > Delay Compensation).

# Editing Preferences
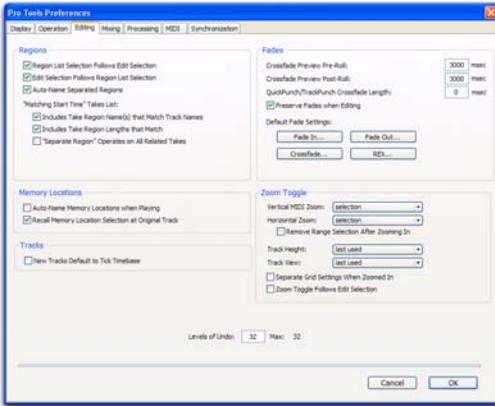


## Regions Section

**Region List Selection Follows Edit
Selection** When selected, selecting a region in a track also selects it in the Region List.

**Edit Selection Follows Region List
Selection** When selected, selecting a region in the Region List causes Pro Tools to highlight that region's occurrence in a track.

**Auto-Name Separated Regions** When selected, Pro Tools automatically names newly separated regions by appending a number to the region's name.

### "Matching Start Time" Takes List

When you Right-click, Control-click (Windows), or Command-click (Mac) a region in a track, Pro Tools displays a list of regions (either in the Matches Right-click submenu or the Alternates pop-up menu) whose time stamp matches the current Cursor location.

The following preferences determine which regions, or *takes*, appear in this list:

**Includes Take Region Names That Match Track
Names** When selected, only regions that share the same root name with the track and playlist appear in the Matches Right-click submenu or the Alternates pop-up menu.

**Includes Take Region Lengths That Match** When selected, only regions that match the length of the current selection appear in the Matches Right-click submenu or the Alternates pop-up menu.

**"Separate Region" Operates On All Related
Takes** When selected, editing a region with the Separate Region command also affects all other related takes (recording passes) with the same User Time Stamp. This option helps you compare different sections from a group of related takes.

## Memory Locations Section

**Auto-Name Memory Locations When
Playing** When selected, Pro Tools gives new Memory Locations default names based on their time location in the session. The time units currently chosen in the View menu determine the units for the names.

**Recall Memory Location at Original Track** When selected, Memory Locations that recall a selection also recall the track in which the selection was made.

## Tracks Section

**New Tracks Default To Tick Timebase** When selected, all new tracks default to ticks. When deselected, audio, Auxiliary Input, Master Fader, and VCA (Pro Tools HD only) tracks default to samples.

## Fades Section

**Crossfade Preview Pre-Roll** This option specifies the amount of pre-roll to be added when you are auditioning crossfades in the Fades dialog.

**Crossfade Preview Post-Roll** This option specifies the amount of post-roll to be added when you are auditioning crossfades in the Fades dialog.

**QuickPunch/TrackPunch Crossfade Length** Specifies a default length for crossfades created by QuickPunch or TrackPunch (Pro Tools HD only) recordings. Crossfades occur before the punch in and after the punch out.

**Preserve Fades when Editing** This option preserves fade-ins and fade outs, and converts separated crossfades into corresponding fade-ins and fade-outs.

### Default Fade Settings

**Fade In** Selects the default envelope shape for fade-ins.

**Fade Out** Selects the default envelope shape for fade-outs.

**Crossfade** Selects the default envelope shape for crossfades.

**REX** Selects the default envelope shape for fades and crossfades between regions ("slices") in imported REX files.

## Zoom Toggle Section

**Vertical Zoom** Selects either Selection or Last Used for the Zoom Toggle Vertical Zoom.

**Horizontal Zoom** Selects either Selection or Last Used for the Zoom Toggle Horizontal Zoom.

**Remove Range Selection After Zooming In** When selected, the current Edit selection collapses into an insertion point after zoom toggling in. Zoom toggling back out reverts to the previous selection.

**Track Height** Selects Last Used, Medium, Large, Extreme, or Fit To Window for the Zoom Toggle Track Height.

**Track View** Selects Waveform/Notes, Warp/Notes, Last Used, or No Change for the Zoom Toggle Track View.

**Separate Grid Settings When Zoomed In** When selected, this option retains the same (current) grid setting when zoom toggling in or out. When this option is deselected, the grid setting stored with Zoom toggle is recalled when zoom toggling in.

**Zoom Toggle Follows Edit Selection** When selected, zoom toggle automatically follows the current Edit selection. When disabled, changing the Edit selection has no affect on the currently toggled-in track.

## Levels of Undo

This preference sets the maximum number of actions that can be undone with the multiple undo feature. Setting this to a lower number can speed up the performance of slower computers. Pro Tools supports up to 32 Levels of Undo.

# Mixing Preferences
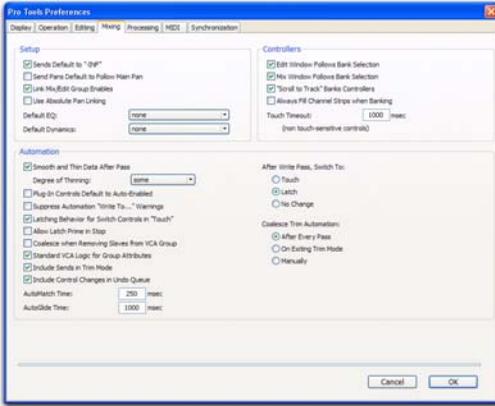


## Setup Section

**Sends Default to –INF** When selected, the initial fader level of newly-created sends is set to –∞ (no audible signal level). When not selected, the initial fader level of newly-created sends is set to 0 dB.

**Send Pans Default to Follow Main Pan** When selected, newly created sends have Follow Main Pan turned on, so the Send Pan controls follow the pan controls of the track. When not selected, newly created sends have Follow Main Pan turned off.

**Link Mix and Edit Group Enables** When selected, this option links enabling and disabling of Mix and Edit Groups. For example, enabling Group A in the Mix Window automatically enables Group A in the Edit window.

**Use Absolute Pan Linking (Pro Tools HD Only)** This option affects behavior of grouped pan controls.

- When selected, grouped pan controls do not maintain relative offsets when any of the grouped pan controls is adjusted. All grouped pan controls snap to the absolute value of the adjusted control.

- When not selected, grouped pan controls maintain relative offsets when any of the linked controls is adjusted.

## Default EQ

This preference lets you choose any installed EQ plug-in as the default, which makes it available for quick assignment, both on-screen and on ICON worksurfaces (Pro Tools HD only). On-screen, the plug-in appears at the top of the Insert selector pop-up menu. On ICON worksurfaces, the plug-in appears first in the list of menu choices on the rotary encoders.

## Default Dynamics

This preference lets you choose any installed Dynamics plug-in as the default, which makes it available for quick assignment, both on-screen and on ICON worksurfaces (Pro Tools HD only). On-screen, the plug-in appears at the top of the Insert selector pop-up menu. On ICON worksurfaces, the plug-in appears first in the list of menu choices on the rotary encoders.

## Controllers

**Edit Window Follows Bank Selection** If you are using a supported control surface with Pro Tools, this option scrolls the Edit window to display the selected bank of tracks when you switch banks on the control surface, ensuring that the current bank is viewable on-screen.

**Mix Window Follows Bank Selection** If you are using a supported control surface with Pro Tools, this option scrolls the Mix window to display the selected bank of tracks when you switch banks on the control surface, ensuring that the current bank is viewable on-screen.

**"Scroll to Track" Banks Controllers** When using a control surface (such as D-Control or Pro-Control) you can select this option to bank control surface faders to a numbered track when using the Track > Scroll to Track command.

**Always Fill Channel Strips When Banking** If you are using an ICON worksurface (Pro Tools HD only), or other supported Digidesign control surface, you can select this option to maximize the number of channels displayed when banking. This setting optimizes the Bank commands to prevent the display of a small number of channels at the extremes of the surface.

**Touch Timeout** If you are writing automation in Touch mode and you stop moving a non-touch sensitive fader or encoder, Pro Tools continues to write automation for the Touch Timeout value.

After the Touch Timeout period, writing of automation stops and the automation data returns to its previous automation value at the rate specified in the *AutoMatch Time* setting.

## Automation Section

**Smooth and Thin Data After Pass** When selected, Pro Tools automatically smooths and then applies the specified amount of thinning to the automation data created in an automation pass.

**Degree of Thinning** Specifies the amount of thinning performed on automation data when you using the Thin Automation command, or if you have selected the Smooth and Thin Data After Pass option.

**Plug-in Controls Default to Auto-Enabled** When selected, all applicable controls of newly added plug-ins are enabled for automation. When not selected, the controls of newly added plug-ins must be manually enabled for automation.

**Suppress Automation "Write To" Warnings (Pro Tools HD Only)** When selected, Pro Tools suppresses the warnings that appear after invoking any of the Write Automation To Start, Selection, End, or Punch commands and then stopping the transport.

**Latching Behavior for Switch Controls in "Touch"** This option determines the behavior of switch-type controls (such as mute or plug-in bypass) when writing automation in Touch mode.

- When selected, controls in Touch mode will latch in their current state. If an existing breakpoint is encountered, writing of automation stops. If the transport is stopped while writing, the control will AutoMatch to the underlying value.

- When not selected, controls in Touch mode will not latch.

**Allow Latch Prime in Stop (Pro Tools HD Only)** When selected and any tracks are in Latch mode, any automation-enabled controls on those tracks can be set to new values while the transport is stopped by touching or moving controls, to prepare for the next automation pass.

**Coalesce when Removing Slaves from VCA Group (Pro Tools HD Only)** This option determines the behavior when removing slave tracks from a VCA-controlled group.

- When selected, any automation on the VCA Master is automatically coalesced (without confirmation) to its slave tracks when the tracks are removed from the group.
- When not selected, a confirmation dialog lets you choose whether or not to coalesce the VCA Master automation to the slave tracks.

**Standard VCA Logic for Group Attributes (Pro Tools HD Only)** This option determines which Mix group attributes may be selected in the Group dialog when the group is assigned to a VCA Master.

- When selected, Main Volume, Mute, Solo, Record Enable, and Input Monitoring controls on slave tracks follow the VCA Master only and are not available to be independently linked. (This emulates the behavior of analog console VCA masters.)
- When deselected, Main Volume, Mute, Solo, Record Enable, and Input Monitoring controls follow the VCA Master, but also remain available for independent linking with groups.

**Include Sends in Trim Mode (Pro Tools HD Only)** This option determines the Trim status of Send faders when a track is put in Trim mode.

- When selected, Send faders go into Trim mode along with the Main Volume fader.
- When deselected, the Main Volume fader goes into Trim mode, but the Send fader stays in the corresponding standard Automation mode.

**Include Control Changes in Undo Queue** This option determines whether certain mixer control changes, such as moving a fader or pan control, are entered into the Undo queue.

- When selected, mixer control changes appear in the Undo queue, and are undone if any prior operation is undone.
- When deselected, mixer control changes will not appear in the undo queue, allowing you to undo other types of operations without losing the current mixer settings.

Any set to default operations that affect mixer controls will be entered into the Undo queue.

**AutoMatch Time** If you are writing automation in Touch mode, when you release a fader or control, writing of automation stops and the automation data returns to its previous value. The rate of return to the previous value is the Auto-Match Time.

**AutoGlide Time (Pro Tools HD Only)** Specifies how quickly Pro Tools transitions (glides) from one automation value to another, when Auto-Glide mode is used.

**After Write Pass, Switch To** Selects the Automation mode that Pro Tools tracks automatically switch to after an automation pass in Write (or Write Trim) mode. You can choose to switch to Touch or Latch mode, or stay in Write mode by selecting No Change. After an automation pass in Write Trim mode, tracks automatically switch to the Trim version of the specified setting.

### Coalesce Trim Automation Options

### (Pro Tools HD Only)

These options determine when Trim automation is committed to the main automation playlist on a track.

**After Every Pass** Sets Trim automation to coalesce when the transport is stopped at the end of each Trim automation pass. No Composite Playlist is indicated.

**On Exiting Trim Mode** Sets Trim Automation to coalesce on a track when the track is taken out of Trim mode. A Composite Playlist can be viewed before committing Trim moves.

**Manually** Trim Automation can be coalesced only with the Coalesce Trim Automation command. A Composite Playlist can be viewed before committing Trim moves.

# Processing Preferences
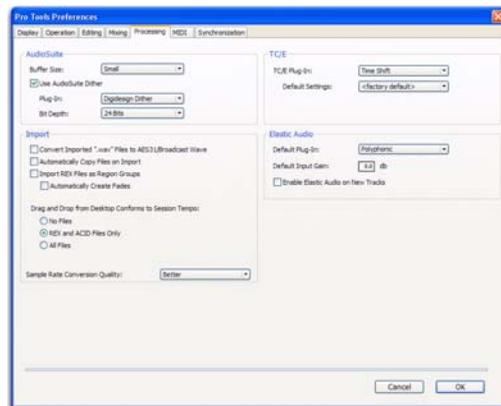


## AudioSuite Section

### Buffer Size

AudioSuite Buffer Size sets the size of the memory buffer used for audio processing and previewing with AudioSuite plug-ins. If AudioSuite preview stutters, set the buffer to Mini or Small.

**Use AudioSuite Dither** When selected, certain AudioSuite plug-ins automatically apply dither when processing. AudioSuite plug-ins that support automatic dithering include: Gain, Normalize, Smack!, and Sonic NoNOISE.

**Plug-in** Specifies the plug-in used for dither processing when the Use AudioSuite Dither option is selected.

**Bit Depth** Lets you select a bit depth for the dithered audio (24-bit, 20-bit, 18-bit, or 16-bit).

## Import Section

**Convert Imported "WAV" Files To AES31/BroadcastWave** When selected, this option applies to all newly imported WAV files, making them compliant with the AES31/EBU Broadcast standard.

**Automatically Copy Files on Import** When selected, all audio files that are imported by dragging and dropping are copied to the current session's Audio Files folder, regardless of whether the files need to be converted to the current session's file type, bit depth or sample rate. Additionally, when selected, the Import Session Data dialog defaults to "Copy from Source Media." The Automatically Copy Files on Import preference does not affect the Import Audio command.

**Import REX Files as Region Groups** When selected, REX flies are imported as region groups, all the underlying slices are imported as individual regions contained within the region group. When this option is not selected, importing REX files into a session converts them to the session's audio file format, the individual slices are consolidated, and the slice information is used for Elastic Audio analysis. These files remain tick-based after import and conversion.

**Automatically Create Fades** When selected, crossfades are applied automatically to the sliced regions within region groups created by importing REX files. If the Import REX Files as Region Groups option is not selected, the Automatically Create Fades option is not available.

To change the default fade settings for REX files, click the REX button in the Default Fade Settings section on the Editing Preferences page.

### Drag and Drop From Desktop Conforms to Session Tempo

The Drag and Drop From Desktop Conforms to Session Tempo options determine whether or not REX, ACID, and audio files are imported as tick-based Elastic Audio and conformed to the session tempo.

**None** When enabled, REX and ACID files, and all other audio files are not conformed to the session tempo when imported by drag and drop from Windows Explorer or the Mac Finder. They are imported as sample-based files and converted to the sessions audio file format.

**REX and ACID Files Only** When enabled, only REX and ACID files are conformed to the session tempo when imported by drag and drop from Windows Explorer or the Mac Finder. REX files are imported either as tick-based Elastic Audio or, if the Import REX Files as Region Groups option is enabled, as tick-based region groups.

**All Files** When enabled, all audio files imported imported by drag and drop from Windows Explorer or the Mac Finder are imported as tick-based Elastic Audio and conform to the session tempo.

### Sample Rate Conversion Quality

The Sample Rate Conversion Quality preference lets you select the default sample rate conversion quality for importing audio files by drag and drop from any DigiBase browser, or Windows Explorer, or Mac Finder. The higher the quality of sample rate conversion you choose, the longer Pro Tools will take to process the audio file.

## TC/E (Time Compression/Expansion) Section

**TC/E Plug-in** Lets you choose the plug-in used for Time Compression and Expansion when you edit audio with the Time Compression/Expansion Trim tool. This Trim tool works by using Time Compression/Expansion to match an audio region to the length of another region, a tempo grid, a video scene, or other reference point.

**Default Settings** Specifies the default settings used by the chosen Time Compression/Expansion plug-in.

## Elastic Audio Section

These preferences determine Elastic Audio usage and settings on new tracks, as well as for previewing and importing tick-based audio.

**Default Plug-in** Lets you select any Real-Time Elastic Audio plug-in as the default for previewing and importing Elastic Audio. The selected Default Elastic Audio plug-in is also used when new tracks are created with the Enable Elastic Audio on New Tracks option enabled.

**Default Input Gain** Lets you attenuate the signal input to Elastic Audio plug-ins by 0 to –6 dB for preview and import. If you experience clipping due to Elastic Audio processing during preview or after import, you may want to set the Default Input Gain to slightly attenuate the audio signal input for Elastic Audio processing. This preference also applies to any audio imported to an Elastic Audio–enabled track.

The Elastic Properties window inherits the Default Input Gain preference. To apply further region-based Input Gain for Elastic Audio processing, select the region and adjust the Input Gain setting in the Elastic Properties window (see "Elastic Properties Window" on page 522).

**Enable Elastic Audio on New Tracks** When selected, new tracks are created with Elastic Audio enabled. The selected Default Plug-in is used.

*If the Enable Elastic Audio on New Tracks option is selected, you may want to also select the New Tracks Default to Tick Timebase option in the Editing Preferences page.*

# MIDI Preferences
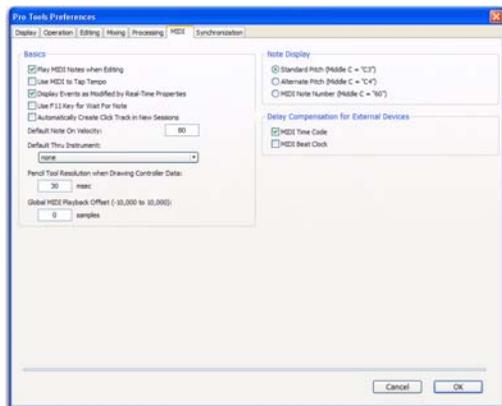


## Basics Section

**Play MIDI Notes When Editing** When selected, causes MIDI notes to sound when you insert them with the Pencil tool or drag them with any of the Grabber tools.

**Use MIDI to Tap Tempo** When selected, you can tap a MIDI keyboard to enter a new tempo value into a tempo field.

**Display Events as Modified by Real-Time Properties** When selected, Pro Tools displays the effects of Real-Time Properties in both the Edit window and the MIDI Event List.

**Use F11 Key for Wait for Note** When selected, pressing the F11 Function key puts MIDI recording in Wait for Note mode.

**Automatically Create Click Track in New Sessions** When enabled, Pro Tools automatically creates a new click track in new sessions.

**Default Note On Velocity** Sets the default Note On velocity for MIDI notes inserted in the Edit window and the MIDI Event List.

**Default Thru Instrument** Sets the default MIDI Thru instrument. You can select a predefined device from your available MIDI instruments, or select "First Selected MIDI Track" to use the assigned MIDI output of the first selected MIDI or Instrument track. When multiple MIDI or Instrument tracks are selected, the instrument in the selected track that is closest to the top of the Edit window (or closest to the left edge of the Mix window) is used.

**Pencil Tool Resolution When Drawing Controller Data** Sets the default resolution for MIDI controller data created with the Pencil tool. Setting this to a lower resolution helps avoid creating controller data that is unnecessarily dense. The value range is from 1 to 100 milliseconds.

**Global MIDI Playback Offset** Sets an offset in samples to compensate for MIDI latency. Entering a value here has the same effect as setting an offset with the MIDI Track Offsets command. Offset values can be positive (later) or negative (earlier).

## Note Display Options

These options set the reference for middle C as C3, C4, or MIDI note number 60.

## Delay for External Devices Section

### (Pro Tools HD Only)

These options only apply when a Delay Compensation Engine is chosen in the Playback Engine dialog and Delay Compensation is enabled in Pro Tools. These options are distinct from the hardware offsets available for hardware inserts in the I/O Setup.

**MIDI Time Code** When selected, Pro Tools applies Delay Compensation to Pro Tools-generated MIDI Time Code.

**MIDI Beat Clock** When selected, Pro Tools applies Delay Compensation to Pro Tools-generated MIDI Beat Clock.

# Synchronization Preferences
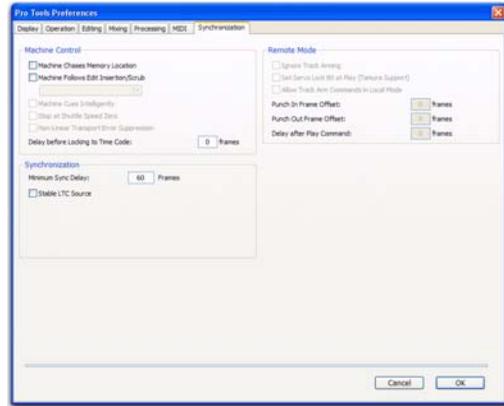


These preferences determine how a connected transport responds to Pro Tools.

## Machine Control Section

**Machine Chases Memory Location** When selected, navigating to a specific location in a session with a Memory Location causes a connected transport to chase to that location.

**Machine Follows Edit Insertion/Scrub** When selected, navigating to a specific location in a session by moving the selection point or by scrubbing a track will cause a connected transport to chase to that location.

When the connected device is a linear device (such as a tape deck), choose "Linear Devices (jog)" to set Pro Tools to send jog commands.

When the connected device is a non-linear device (such as a random-access video recorder or another Pro Tools system), choose "Non-Linear Devices (cue)" to set Pro Tools to send cue commands.

**Machine Cues Intelligently (Pro Tools HD Only)** When selected, if you navigate to a cue point that is more than 10 seconds from the current location, Pro Tools will command a connected transport to fast wind to the new location at full speed to within 10 seconds of the cue point. Cueing will then slow to normal speed until the point is reached. This can significantly speed up tape cueing with certain video transports.

**Stop at Shuttle Speed Zero (Pro Tools HD Only)** Causes Pro Tools to send a Stop command whenever you stop shuttling. This is useful if you have a machine that requires an explicit stop command to park correctly.

**Non-Linear Transport Error Suppression (Pro Tools HD Only)** When Transport = Pro Tools, keeps Pro Tools from sending a Stop command when taken offline. This prevents Pro Tools from stopping any other 9-pin devices connected to the system.

**Delay Before Locking to Time Code (Pro Tools HD Only)** Sets the amount of time (in frames) for Pro Tools to wait before attempting to lock to machines that issue servo lock messages. This setting allows time for the servo mechanisms to achieve stable lock.

## Remote Mode Section

### (Pro Tools HD Only)

**Ignore Track Arming** Sets Pro Tools to ignore incoming track arming (record enable) commands. This is useful if you are using a master controller to arm tracks on other machines, but you do not want to arm tracks in Pro Tools.

**Set Servo Lock Bit at Play (Tamura Support)** Enable this option when using a Tamura synchronizer to control Pro Tools in Remote mode to minimize lock-up times during recording.

**Allow Track Arm Commands in Local Mode** Sets Pro Tools to respond to incoming track arming (record enable) commands even when the system is not in Remote Mode. This is useful if you are using a paddle device to control Pro Tools track arming or punching.

**Punch In Frame Offset** Sets an offset (in frames) to compensate for punch in timing advances or delays.

**Punch Out Frame Offset** Sets an offset (in frames) to compensate for punch out timing advances or delays.

**Delay After Play Command** Sets the amount of time (in frames) for Pro Tools to wait after receiving a Play command before starting the audio engine. This can prevent false starts when locking to synchronizers that are not fully supported by Pro Tools.

## Synchronization Section

**Minimum Sync Delay** Sets the initial amount of prime time (in frames) your system's devices need to achieve synchronization "lock." This amount varies for each device. Pro Tools lock up delay is set by entering a value for Minimum Sync Delay in the Synchronization page of the Preferences dialog. The lowest value available is 15 frames. Find the shortest possible lock-up time that your equipment can operate at consistently, and set this as the Minimum Sync Delay. On systems utilizing Digidesign Machine-Control, enabling the Use Serial Time Code setting will make machines lock up much faster. (Serial time code requires both a Digidesign-qualified synchronization peripheral and external devices to be locked to house video reference.)

**Stable LTC Source (Pro Tools HD Only)** When selected, this option suppresses the normal 1-second wait time before Pro Tools attempts to lock to incoming LTC. Enable this option when locking Pro Tools to a stable time code source (such as a non-linear tape machine or LTC generator) and not a linear tape machine.

# Part III: Sessions & Tracks

# Chapter 8: Sessions

This chapter covers the basics of starting a project in Pro Tools, including how to create and save a Pro Tools session.

## Creating a New Session

The first step in beginning a Pro Tools project is creating a new session.

**To create a new session:**

**1** Choose File > New Session.



*New Session dialog*

**2** Select the drive where you want to save the session. The session should be saved on a dedicated audio drive.

**3** Select the audio file format for the session.

*For optimum compatibility between Windows and Mac, set the file type to BWF (.WAV).*

*Sound Designer II (SD II) files are not supported on Windows systems or at sample rates above 48 kHz. Also, sessions that use the SD II file format do not support Elastic Audio.*

**4** Select the bit depth (16 bit or 24 bit) and the sample rate.

**5** Select the I/O Settings to use for the session. Several pre-configured I/O Settings are included with your system, or you can select a custom I/O Setting. For more information, see Chapter 6, "I/O Setup."

**6** Name the Session.

**7** Click Save.

### Selecting Bit Depth and Sample Rate

When selecting a bit depth or sample rate for your session, consider fidelity, any compatibility issues with others systems, and storage space.

Bit depth and sample rate also have an effect on the amount of mixing power available in a session. Fewer mixer channels are available with 24-bit sessions and with sessions at higher sample rates. (For more information, see your *Getting Started Guide*.)

It is not possible to combine different bit depths within a single Pro Tools session; files of different bit depths must be converted and imported into the session.

## Session Files and Folders

When you create a new session, Pro Tools automatically creates a new folder named for your session. Within this folder is the session file, a WaveCache.wfm file, and several subfolders (including (but not limited to) an Audio Files folder, a Fade Files folder, and a Region Group folder).
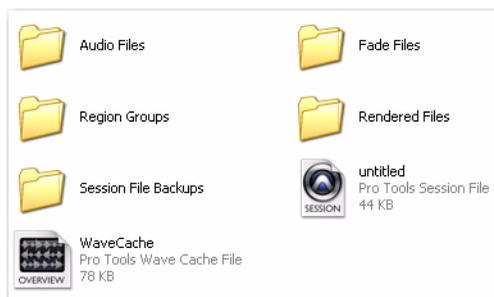


*Typical session folder contents*

### Session File

The session file is the document that Pro Tools creates when you start a new project. Pro Tools can open only one session file at a time. The session file is appended with the extension .ptf (Pro Tools file).

### Audio Files Folder

The Audio Files folder contains all audio recorded or converted during the session.

When you record a new audio track, the track is saved as a new audio file to the Audio Files folder. You can also import other audio files into the session, and work with them as well.

📖 *For details on allocating audio tracks to different hard drive locations, including shared media volumes, see "Recording with Multiple Hard Drives (Optional)" on page 335.*

### Fade Files Folder

The Fade Files folder contains any crossfaded audio data generated by the session.

### Rendered Files Folder

The Rendered Files folder contains any temporary files created by Rendered Elastic Audio processing in the session.

### Region Groups Folder

The Region Groups folder is the default directory for any region groups that you export from your Pro Tools session.

### WaveCache File

The WaveCache.wfm file stores all of the waveform display data for the session. If you delete the WaveCache.wfm file, Pro Tools creates a new one the next time you open the session.

By storing waveform data in the WaveCache file, sessions open more quickly. The session WaveCache file can be included whenever a session is transferred to another Pro Tools 7.x system.

Pro Tools also maintains a distinct WaveCache file inside the local Digidesign Databases folder (C:\\Digidesign Databases), which retains waveform data for all files used on the system. Additional WaveCache files are created on each hard drive attached to your system, and stored in the Digidesign Databases folder on each drive.

Deleting or trashing a WaveCache file does not harm the session or your system. However, each session takes longer to open because it has to recalculate waveform data for any associated audio files and store that data in a new WaveCache file.

### Session File Backups Folder

The Session File Backups folder contains automatically-generated backups of your Pro Tools sessions. These files are created when working on a session and the Operations preference for Enable Session File Auto Backup is enabled. (See "Enable Session File Auto Backup" on page 78.)

### Renamed Audio Files Folder

This folder includes file names that have been renamed when you open a session that contains audio file names with incompatible characters, or, in certain situations, save a copy of a session to a Pro Tools version that does not support long file names.

📖 *For more information, see "Renamed Audio Files and the Renamed Audio Files Folder" on page 287.*
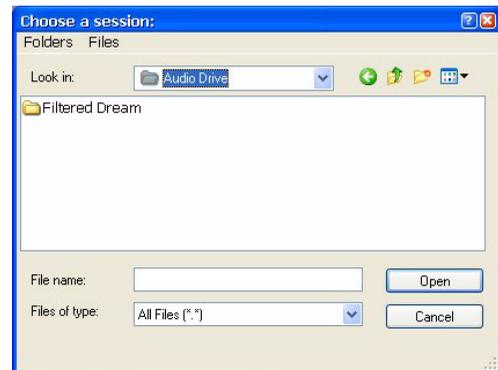
# Opening a Session

When you open a session, Pro Tools looks in the session folder for audio and fade files linked to the session.

📖 *For more information on opening sessions created on different platforms, Pro Tools systems, or versions of Pro Tools software, see Chapter 15, "File and Session Management and Compatibility."*

**To open an existing session:**

**1** Choose File > Open Session.

**2** Locate the session you want to open and click Open.



*Open Session dialog*

💡 *You can also open a session from a Digi-Base browser by double-clicking it.*

## Opening a Session that Contains Unavailable Files

DigiBase notifies you if files are located but reside on Transfer volumes (such as CD or DVD discs), or if any required files cannot be found. For more information, see "Locating Audio Files" on page 285.

## Opening a Session from a Transfer Volume

When opening a session from a Transfer volume (such as a CD or DVD disc), DigiBase prompts you to save the session on a Performance volume, and copy and convert any referenced media files. For more information, see "Locating Audio Files" on page 285.

## Opening a Session that Contains Unavailable Resources

Pro Tools prompts you when opening a session that contains unavailable voices, I/O paths, DSP resources, or plug-ins. This is common when transferring sessions between systems with different Digidesign hardware.

The Unavailable Resources dialog provides an initial report of the missing session components. To save a text (.txt) file containing a more detailed Notes report, along with the resulting action, click Yes. The Notes report is named with the session name, followed by Notes.txt. You can choose to save this file in your Session folder, or in another location.

The following occurs when opening a session with unavailable items:

### With all Pro Tools Systems:

◆ Inserts assigned to unavailable plug-ins are made inactive.

◆ Inputs, outputs, and sends that are assigned to unavailable paths are made inactive.

### With Pro Tools HD Only:

◆ Any tracks beyond the maximum number of available voices on the current system are made inactive.

### With Pro Tools LE Only:

◆ Any tracks beyond the maximum number of available voices on the current system are set to *voice off*.

## Opening a Session with Audio File Names that Contain Illegal Characters

Pro Tools 7.x does not support audio file names that contain the following ASCII characters:

/ (Forward Slash)

\ (Backslash)

: (Colon)

* (Asterisk)

? (Question mark)

" (Quotation marks)

< (Less-than symbol)

> (Greater-than symbol)

| (vertical line or pipe)

Any "high order" ASCII character (created with a key combination)

When opening sessions that contain audio files with illegal characters, Pro Tools automatically creates a renamed copy of each file (replacing these characters with an underscore "_"). Renamed files are copied to the Renamed Audio Files folder. The original files are left intact in the Audio Files folder.

Before the session opens, you are prompted to save a detailed report of the renamed files and their original file names to a Notes text file. Follow the on-screen instructions. By default, the Notes text file is saved to the Session folder.

## Opening a Session that Was Saved with +6 dB Fader Gain

All Pro Tools 7.x sessions have a +12 dB fader gain level. However, when saving a Pro Tools 7.x session to a lower version of Pro Tools that supports +6 dB and +12 dB fader gain, the new session can be saved with either a +6 dB or a +12 dB maximum fader gain.

When saving a +12 dB session as a +6 dB session, Pro Tools alerts you that any automation settings over +6 dB will be lowered to +6 dB. See "Saving a Copy of the Session" on page 101.

In Pro Tools 7.x, when opening a session that was saved with a +6 dB maximum gain level, the session will update to a +12 dB range.

# Opening Recent Sessions

The Open Recent submenu in the File menu lets you open any of the 10 most recently opened Pro Tools sessions.

**To open a recent session:**

▪ Choose File > Open Recent and choose the session you want to open.

If a session is open when choosing a recent session, you are prompted to save it before Pro Tools closes the session and opens the chosen recent session.

**To open the most recent session:**

▪ Control+Shift+O (Windows) or Command+Shift+O (Mac).

## Saving a Session

You should save regularly while working on your session to ensure that your work is preserved on your hard drive.

### Saving the Session File

The Save command saves the changes you have made to your session and writes them over the previously saved version of the session file. The Save command cannot be undone.

**To save a session:**

■ Choose File > Save.

### Revert to Saved Command

If you have made changes to a session since you last saved it, you can discard those changes and revert to its previously saved state.

**To revert to the last saved version of a session:**

■ Choose File > Revert to Saved.

📄 *If you have enabled the Operation preference for Auto Backup, you can also open up a backup copy of your session. This feature lets you specify the total number of incremental backups that are kept and how often the session is saved. See "Auto Backup Section" on page 78.*

## Saving the Session File with a New Name

To save a copy of the current session with a new name or to a different hard drive location, use the Save As command. The Save As command closes the current session and lets you keep working on the renamed copy. This is useful if you are experimenting and want to save successive versions of the session.

By working this way, you can quickly retrace your steps if you want to go back to an earlier version of your session. The Save As command saves a new version of the *session file* only, and does not duplicate versions of the audio or fade files.

**To save a session with a new name:**

**1** Choose File > Save As.

**2** Enter a new name for your session.

💡 *Pro Tools 7.x lets you name files with as many characters as your operating system supports.*

**3** Click Save.

The renamed session file is saved in the session folder along with the original session (unless you specify a different destination). Any new audio files that you record in your renamed session will be placed into the same Audio Files folder that was created for your original session.

## Saving a Copy of the Session

To save a copy of the current session with or without its audio files and fade files, use the Save Copy In command. In addition, you can specify the session file format, audio file format, bit depth, and sample rate for the session copy.

📖 *For information on sharing sessions between different platforms, Pro Tools systems, or Pro Tools software versions, see Chapter 15, "File and Session Management and Compatibility."*
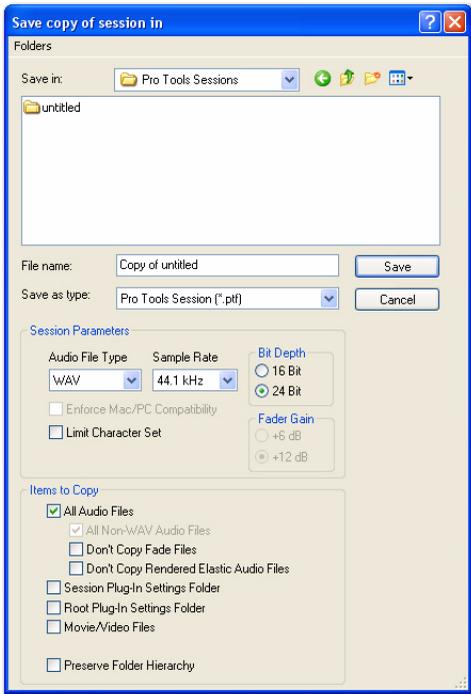


*Save Copy In dialog*

Unlike the Save As command, Save Copy In does not close the original session, so subsequent edits are made to the original session. Session copies can be used to archive important sessions, for versioning, or as a means to prepare sessions for transfer to another Pro Tools system.

Save Copy In can save only the audio being used in the session. Any audio that was recorded or imported and then later removed from the session, but not deleted from disk, is not included in the new session copy.

⚠ *To include all audio with the session copy, All Audio Files must be selected in the Items to Copy section.*

Using the Save Copy In command is the only way to change the sample rate of a session. The sample rate of each of the session's copied audio files is converted to the selected sample rate.

When you save a copy of the session to a lower bit depth, Dither (and Noise Shaping) are applied. See the following table:

*Dither and Noise Shaping with Save Copy In*

| Session Bit Depth | Dither | Noise Shaping |
| --- | --- | --- |
| 24-bit to 24-bit | No | No |
| 16-bit to 24-bit | No | No |
| 24-bit to 16-bit | Yes | Yes |
| 16-bit to 16-bit | No | No |

The Dither setting used for any conversion is the Digidesign Dither plug-in with Noise Shaping enabled.

📖 *For more information about using Dither, see "Dither" on page 746.*

**To save a session copy in a new location:**

**1** Choose File > Save Copy In.

**2** In the Save Copy In dialog, choose a destination and enter a name for the new session file.

**3** Choose a session file format for the copied session.

**4** Set the Audio File Type for the copied session. If the audio files need to be compatible with either Windows or Mac, select BWF (.WAV) or AIFF.

**5** Set the session Sample Rate and Bit Depth for the copied session.

**6** If applicable, select a Fader Gain level for the copied session.

**7** If applicable, select "Enforce Mac/PC Compatibility" to create session and audio files that can be used on both Windows and Mac Pro Tools systems (see "Saving Copies of Mac Sessions to be Compatible with Windows" on page 290).

**8** Select the Items to Copy for the copied session.

⚠ *To include audio with the session copy, All Audio Files must be selected.*

**9** Click Save.

## Session Format

You can save the session copy in the following formats, depending on your platform:

Windows:
- Pro Tools Session (.ptf); supports Pro Tools 7.x
- Pro Tools 5.1 -> 6.9 Session (.pts);
- Pro Tools 5.0 Session (.pt5)
- Pro Tools 4 24-Bit Session (.p24)
- Pro Tools 4 16-Bit Session (.pt4)

Mac:
- Latest; supports Pro Tools 7.x
- Pro Tools 5.1 -> 6.9 Session
- Pro Tools 5.0 Session
- Pro Tools 4 24-Bit Session
- Pro Tools 4 16-Bit Session
- Pro Tools 3.2 Session

⚠ *When saving sessions to versions lower than Pro Tools 5.1, multichannel tracks (including stereo) and multi-mono plug-ins are lost. In this case, separate the tracks and plug-ins to individual mono tracks before saving as a Pro Tools 5.0 session or lower.*

## Session Parameters

### Audio File Type

You can save the session to reference BWF (.WAV) or AIFF audio files. On the Mac, you can also save the session to reference SD II audio files (at sample rates up to 48 kHz).

⚠ *SD II sessions are not supported with Pro Tools on Windows, or with sample rates higher than 48 kHz. Also, SD II sessions do not support Elastic Audio. For optimal compatibility, convert SD II sessions to BWF (.WAV).*

### *Using Mixed File Types*

A session can use mixed audio file types. If your original session has mixed file types, they are not converted to a different file type unless you specify that they be converted. However, when using mixed file types, audio performance will be reduced (due to additional file handling required for some file formats).

### Bit Depth

You can save the session at 16-bit or 24-bit depth. If your session is in a different bit depth, audio files are converted to the new session bit depth, and copied to the specified location.

📖 *For information on bouncing to disk and dither, see "Dithering" on page 834.*

### Sample Rate

You can save the session at sample rates of 44.1 kHz or 48 kHz (on Mbox 2, Mbox 2 Mini, and Mbox) and at sample rates up to 96 kHz (on 003, 003 Rack, Digi 002, Digi 002 Rack, Mbox 2 Pro, and Pro Tools|HD systems with a 96 I/O or 96i I/O) or up to 192 kHz (on Pro Tools|HD systems with a 192 I/O or 192 Digital I/O). If your session is at a different sample rate, audio files are converted to the new session sample rate, and copied to the specified location.

### Fader Gain

When saving a Pro Tools 7.x session to a lower version of Pro Tools that supports +6 dB and +12 dB fader gain, you can save the new session with either a +6 dB or a +12 dB maximum fader gain. When saving a +12 dB session as a +6 dB session, Pro Tools alerts you that any automation settings over +6 dB will be lowered to +6 dB.

### Enforce Mac/PC Compatibility

When saving a Pro Tools 7.x session to a lower version of Pro Tools, this setting forces Windows or Mac versions of Pro Tools to create sessions and audio files that are usable on both platforms.

*For more information, see "Saving Copies of Mac Sessions to be Compatible with Windows" on page 290.*
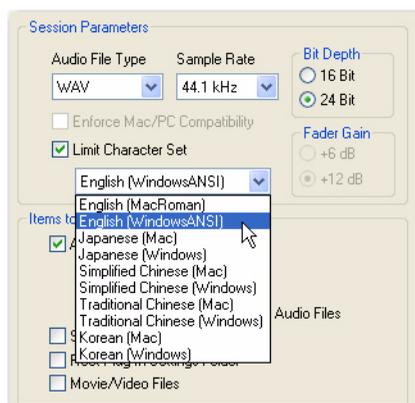
### Limit Character Set

When saving a copy of a session to the current session format, you can choose to limit the character set to a single language by selecting the Limit Character Set option.

When saving a copy of a session to a lower session format, the Limit Character Set option is automatically selected. Select a language from the Limit Character Set pop-up menu.

**To choose the language encoding when saving a copy of a session:**

**1** Choose File > Save Copy In.

**2** Select the Limit Character Set option.

**3** Choose the language you want to use from the Limit Character Set pop-up menu.



*Limit Character Set options in the Save Copy In dialog*

### Items to Copy

### All Audio Files

When this option is selected, all audio files are copied to the new location.

This setting is automatically selected if you change the bit depth or sample rate of the session.

### All "Non-Native" Audio Files

The name of this option varies depending on the audio file type you select. If you change the audio file type of the session, this option ensures that all files in the copied session are converted to the selected file type. Use this option to avoid the reduced performance of a session with mixed file types.

This option is automatically selected if you do any of the following:

- Change bit depth or sample rate.
- Copy a session on the Mac from SD II format to AIFF or BWF (.WAV) format.
- Select Enforce Mac/PC Compatibility.

### Don't Copy Fade Files

When this option is selected, Fade Files are not copied to the new session Fade Files folder.

Pro Tools opens the session with all available media, then shows you how many files are missing (if any) and asks how you want to proceed. You can choose to locate the existing fades, using Manually Find Relink or Automatically Find Relink, or choose to Skip All to let Pro Tools recreate the fades from the session document. You can also select Regenerate Missing Fades to exclude fade files from the relink process and regenerate them instead.

### Don't Copy Elastic Audio Rendered Files

When this option is selected, Elastic Audio Rendered files are not copied to the new session's Rendered Files folder.

Pro Tools opens the session with all available media, then shows you how many files are missing (if any) and asks how you want to proceed. You can choose to locate the existing rendered files, using Manually Find Relink or Automatically Find Relink, or choose to Skip All to let

Pro Tools recreate the rendered files from the session document. You can also select the "Regenerate missing rendered files without searching" option to exclude rendered files from the relink process and regenerate them instead. (See "Missing Files" on page 232.)

### Session Plug-in Settings Folder

When this option is selected, the session's Plug-in Settings folder is copied to the new location. The references to these plug-in settings in the session are redirected to the copied settings files.

### Root Plug-in Settings Folder

When this option is selected, the contents of the root-level Plug-in Settings Folder are copied into a folder named *Place in Root Settings Folder*, indicating that these files will need to be moved to the root level plug-in settings folder on the destination system before you can use them. The references to these settings files in the session are *not* redirected to point to the copied files.

### Movie/Video Files

When this option is selected, session video files (Avid or QuickTime) are copied to the new location, and session references are updated to point to the copied video files.

**Preserve Folder Hierarchy** When selected, the relative arrangement of session audio files located across different drives or folders is maintained. The main folder for the session copy will include subfolders for each drive or folder in the original session and the destination subfolders will use the same names as the source drives and folders.

When this option is not selected, the Save Copy In command copies all files of the same type, regardless of their location, into a single destination folder.

# Creating Custom Session Templates

You can create custom session documents that are pre-configured to the track setups, mixer setups, window arrangements, and zoom level Memory Locations that you use most frequently. Doing this will save you the trouble of having to create your studio setup from scratch every time you start a new session.

*You can also install and use the factory Pro Tools Session Templates included on the Pro Tools Installer disc in the Additional Files folder.*

## Creating Windows Templates

In Windows, you can create a session template by making a session file a Read Only document.

**To create a custom session template in Windows:**

**1** Create a session and arrange its elements as you want them to appear in the template. You can also define elements such as signal routing, insert and send configurations, Track Views, ruler settings, and Preference settings.

**2** Choose File > Save As.

**3** Name the session and click Save.

**4** Close the session.

**5** In Windows Explorer, locate the session file that you just saved.

**6** Right-click the file and choose Properties.

**7** Under Attributes, select Read Only.
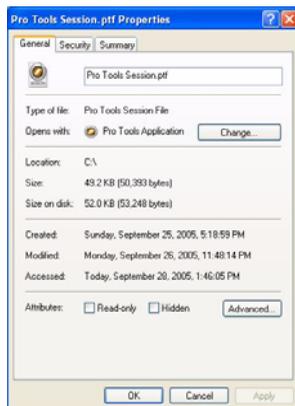


*Making a session a Read Only file (Windows)*

**8** Click OK.

**To use a session template in Windows:**

**1** Do one of the following:
- Double-click the session template in Windows Explorer.

– or –

- In Pro Tools, open the session template using the File > Open Session command.

**2** Choose File > Save As.

**3** In the Save Session As dialog, create a new folder where you want to save your session.

**4** Name the session and click Save.

**5** Start working in the session.

**To modify the session template in Windows:**

**1** In Windows Explorer, open the session's Properties.

**2** Deselect the Read Only option and click Apply.

**3** Open the session in Pro Tools and make your changes.

**4** Save the session and quit Pro Tools.

**5** In Windows Explorer, reopen its Properties, and change it back to a Read Only file.

## Creating Mac Templates

On Mac, create a session template by saving a session file as a *Stationery Pad* document. Once a session is saved as a Stationery Pad, it acts as a template that can be opened and saved as a new session, or opened as the original stationery pad for editing.

**To create a custom session template on Mac:**

**1** Create a session and arrange its elements as you want them to appear in the template. In addition to track setup, you can also define elements such as signal routing, insert and send configurations, Mix and Edit window views, ruler settings, and Preference settings.

**2** Choose File > Save As.

**3** Name the session and click Save.

**4** Close the session.

**5** In the Mac Finder, locate the session file that you just saved.

**6** Click once on the file to select it.

**7** Choose File > Get Info.



*Saving a session as a Stationery Pad (Mac)*

**8** If necessary, click the General expand/collapse triangle to display the General information and options.

**9** Select the Stationery Pad option.

**10** Select the Locked option.

**11** Close the information window.

**To use a session template on Mac:**

**1** Do one of the following:

- Double-click the session template in the Mac Finder.

– or –

- In Pro Tools, open the session template using the File > Open Session command.

When you open a session saved as a Stationery Pad, Pro Tools gives you the option of editing the template or starting a new session using the template settings.



**2** Click one of the following:

**Edit Stationery** Lets you edit the session, but the session remains a template. After you save your changes, close the session, and re-open the session, you are again prompted to either edit the stationery pad or save a copy of the template as a new session.

**New Session** Prompts you to save a copy of the template as a new session. You can then work in the new session normally.

# Closing a Session

Pro Tools only lets you work on just one session at a time. The Close Session command closes your current Pro Tools session but leaves the Pro Tools application running. Pro Tools prompts you to save a session when closing it, but it is recommended that you save your work using the Save or Save As command before closing a session regardless.

**To close a session:**

- Choose File > Close Session.

# Exiting or Quitting Pro Tools

When you exit (Windows) or quit (Mac) the Pro Tools application, Pro Tools prompts you to save any open session before exiting or closing the application.

**To exit Pro Tools in Windows:**

- Choose File > Exit.

**To quit Pro Tools on the Mac:**

- Choose Pro Tools > Quit Pro Tools.

# Chapter 9: Pro Tools Main Windows

Pro Tools provides two complementary ways of viewing tracks in a session: the Mix window and the Edit window. Pro Tools lets you control the transport and transport-related functions using the Transport window. Individual Plug-in windows let you control plug-in parameters (such as Frequency and Q for an EQ). Additionally, Digi-Base browsers let you manage, audition, and import media for Pro Tools sessions.

SHIFT  *To toggle between the Mix and Edit windows, press Control+Equals (=) (Windows), or press Command+Equals (=) (Mac).*



*Figure 3.  Pro Tools windows*

# Mix Window

In the Mix window (see Figure 4 on page 111), tracks appear as channel strips just like a mixing console, with controls for:

- Inserts
- Sends
- Input and output assignments
- Volume
- Panning
- Record enable
- Track Input monitoring
- Automation mode
- Solo and Mute
- Instrument controls
- Mic preamps (Pro Tools HD only)

**To display the Mix window:**

■ Choose Window > Mix.

**To display all Mix window view options:**

■ Select View > Mix Window > All.

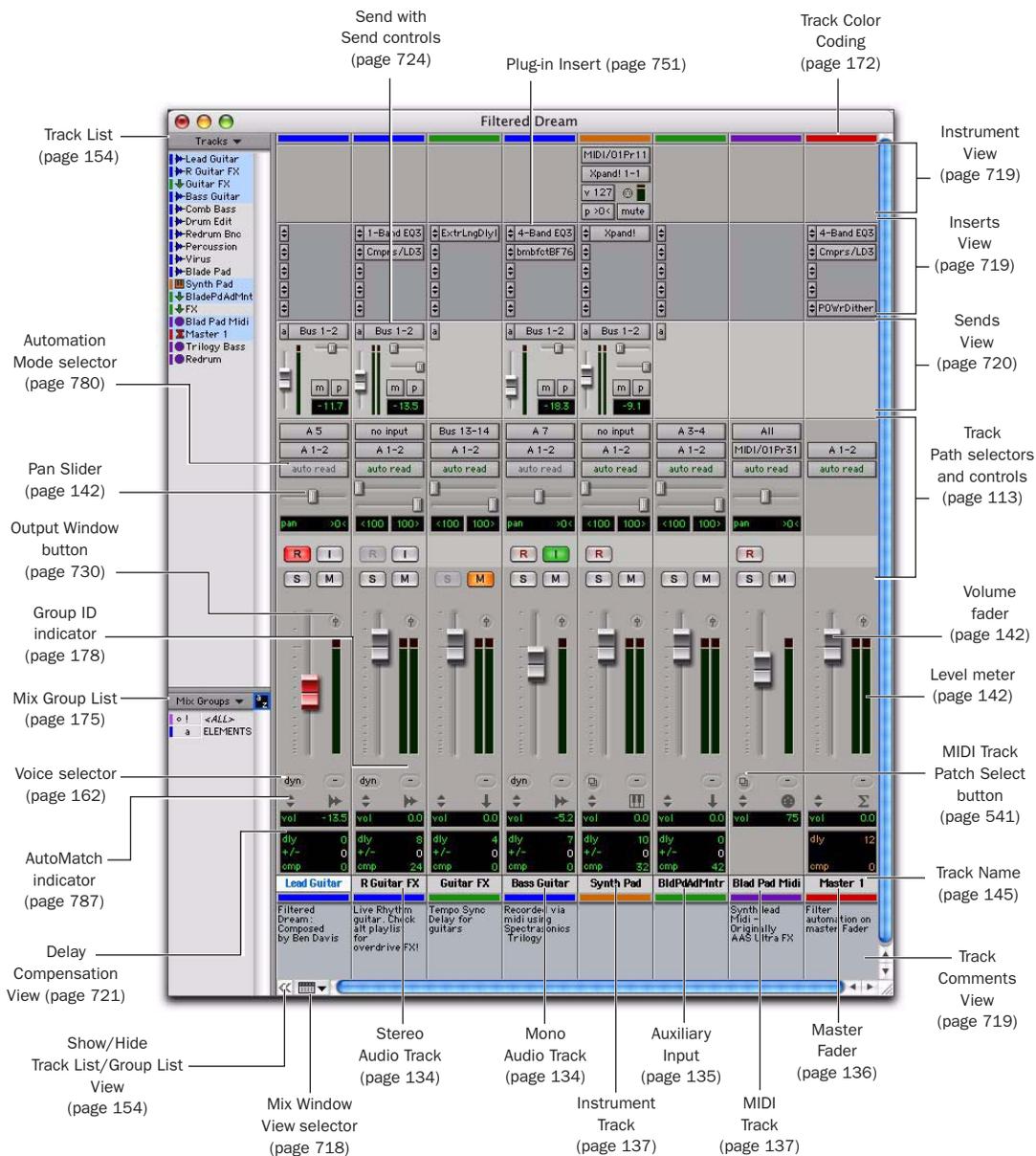📑 *For information on selecting individual view options, see "Views in the Mix and Edit Windows" on page 718.*

# Edit Window

The Edit window (see Figure 5 on page 112) provides a Timeline display of audio, video, MIDI notes, as well as other MIDI data and mixer automation for recording, editing, and arranging on tracks. As in the Mix window, each track has controls for record enable, solo, mute, and automation mode.

**To display the Edit window:**

■ Choose Window > Edit.

**To display all Edit window view options:**

■ Select View > Edit Window > All.

📑 *For information on selecting individual view options, see "Views in the Mix and Edit Windows" on page 718.*
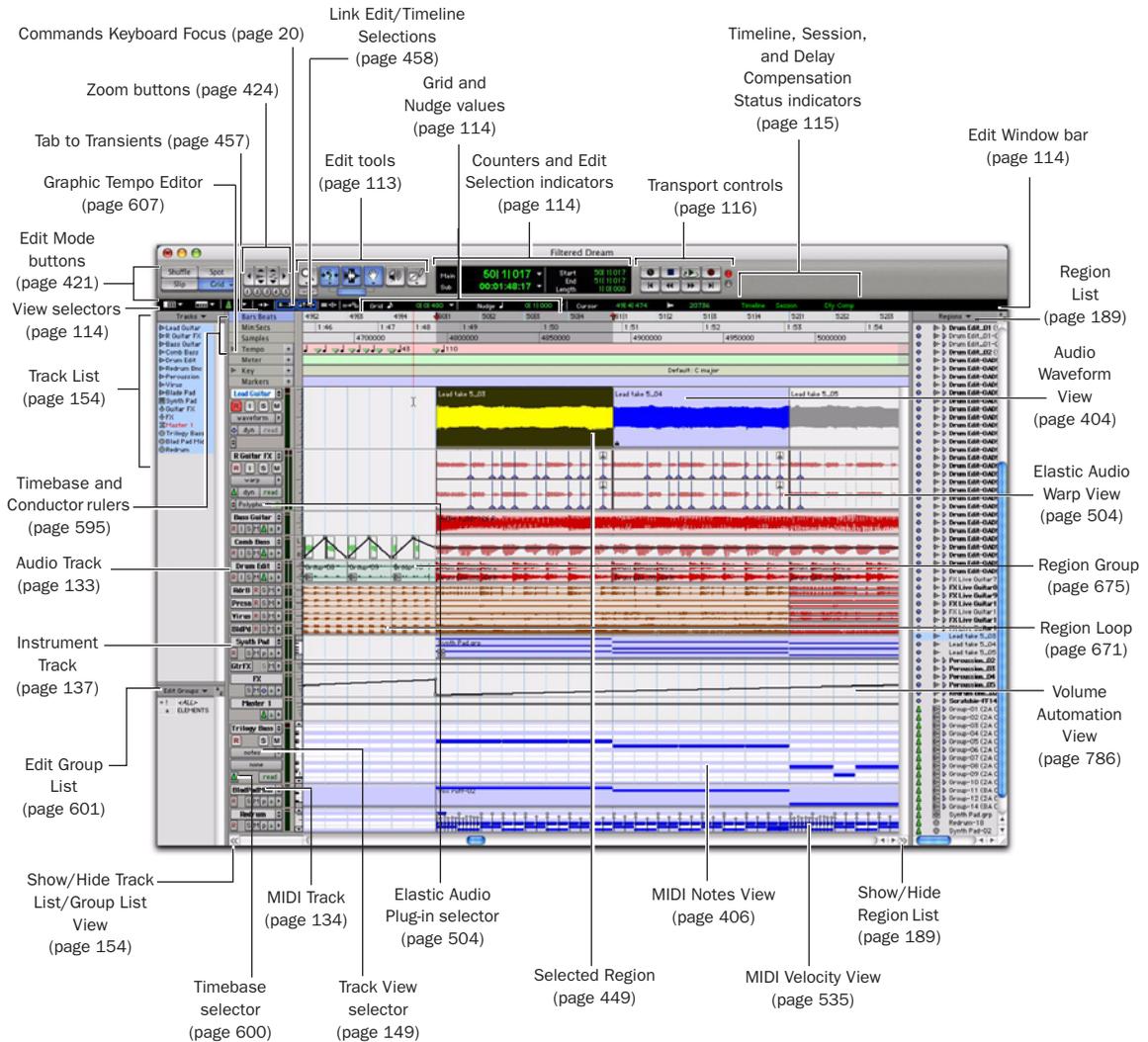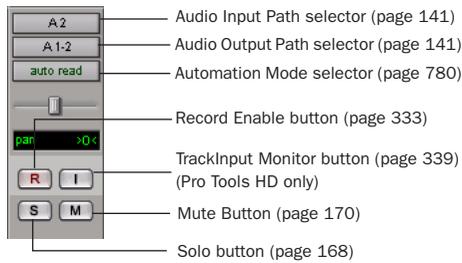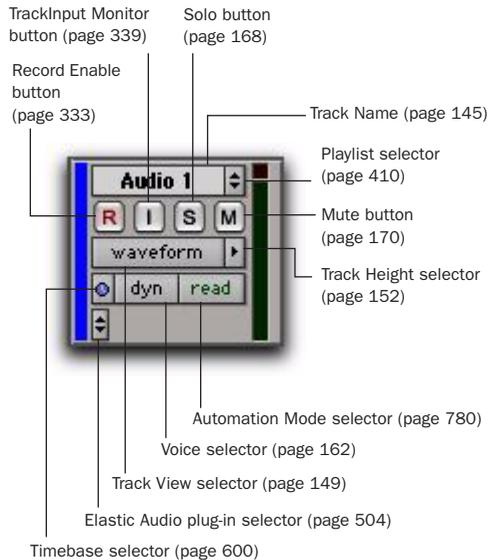
*Figure 4. Pro Tools Mix window*

Commands Keyboard Focus (page 20)

Zoom buttons (page 424)

Tab to Transients (page 457)

Graphic Tempo Editor (page 607)

Edit Mode buttons (page 421)

View selectors (page 114)

Track List (page 154)

Timebase and Conductor rulers (page 595)

Audio Track (page 133)

Instrument Track (page 137)

Edit Group List (page 601)

Show/Hide Track List/Group List View (page 154)

Link Edit/Timeline Selections (page 458)

Grid and Nudge values (page 114)

Edit tools (page 113)

Counters and Edit Selection indicators (page 114)

Timeline, Session, and Delay Compensation Status indicators (page 115)

Transport controls (page 116)

Edit Window bar (page 114)

Region List (page 189)

Audio Waveform View (page 404)

Elastic Audio Warp View (page 504)

Region Group (page 675)

Region Loop (page 671)

Volume Automation View (page 786)

MIDI Track (page 134)

Elastic Audio Plug-in selector (page 504)

MIDI Notes View (page 406)

Show/Hide Region List (page 189)

Timebase selector (page 600)

Track View selector (page 149)

Selected Region (page 449)

MIDI Velocity View (page 535)



*Figure 5. Pro Tools Edit window*

## Track Path Selectors and Controls

Audio Input Path selector (page 141)
Audio Output Path selector (page 141)
Automation Mode selector (page 780)
Record Enable button (page 333)
TrackInput Monitor button (page 339)
(Pro Tools HD only)
Mute Button (page 170)
Solo button (page 168)

*Mix window track controls for mono audio track (Wide View)*

TrackInput Monitor button (page 339)
Solo button (page 168)
Record Enable button (page 333)
Track Name (page 145)
Playlist selector (page 410)
Mute button (page 170)
Track Height selector (page 152)
Automation Mode selector (page 780)
Voice selector (page 162)
Track View selector (page 149)
Elastic Audio plug-in selector (page 504)
Timebase selector (page 600)

*Edit window track controls for a mono audio track (medium track height)*

## Edit Tools

Trimmer tools (page 433)
Selector tool (page 303)
Grabber tools (page 451)
Scrubber tool (page 441)
Zoomer tool (page 424)
Pencil tool (page 528)
Zoom Toggle (page 424)
Smart Tool (page 439)
Custom Note Duration button (page 529)

*Edit tools in Edit window*

## Edit Window Counters and Selection Indicators

### Main and Sub Counters

Main and Sub Counters (page 460)
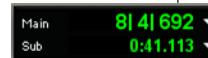
*Edit window display showing counters*

The Main and Sub Counters can be set for different Time Scale formats (such as Samples, Bars:Beats, or Minutes:Seconds). For more information, see "Main Time Scale" on page 597. These counters are also displayed in the Transport window.

## Edit Selection Indicators



Edit Selection indicators (page 460)

*Edit Selection indicators in the Edit window*

The Edit Selection Start, End, and Length indicators display can be set for different Time Scale formats (such as Samples, Bars:Beats, or Minutes:Seconds). For more information, see "Main Time Scale" on page 597.

## Event Edit Area

The Event Edit Area provides time, pitch, and other information for the currently selected audio or MIDI data. It also lets you define selections using the computer keyboard.



Note Attributes (page 536)
Pitch
Attack Velocity
Release Velocity

*Event Edit Area showing MIDI track information*

## Edit Window Bar

The Edit Window bar contain various selectors, commands, indicators, and pop-up menus for working in the Pro Tools Edit window.

## View Selectors



Ruler View selector (page 718)

Edit window View selector (page 718)

*View selectors in the Edit Window bar*

## Commands



Linearity Display Mode (page 613)

Tab to Transients (page 457)

Commands Keyboard Focus (page 20)

Mirrored MIDI Editing (page 527)

Link Track and Edit Selection (page 448)

Link Timeline and Edit Selection (page 447)

*Commands in the Edit Window bar*

## Grid/Nudge Value Indicators and Pop-Up Menus



Grid Value indicator (page 656)

Grid Value pop-up menu (page 656)

Nudge Value pop-up menu (page 472)

Nudge Value indicator (page 472))

*Grid/Nudge Value indicators and pop-up menus in the Edit Window bar*

## Cursor Location Indicators



Cursor Location indicator (page 303)

Cursor Location Value indicator (page 303)

*Cursor Location indicators in the Edit Window bar*

## Timeline, Session, and Delay Compensation Status Indicators



Timeline, Session, and Delay Compensation indicators in the Edit Window bar

**Timeline Data Online Status Indicator** Is green when all files in use in track playlists are available for playback. If files are offline, being processed, or otherwise unavailable for playback, this indicator is red.

**Session Data Online Status Indicator** Is green when all audio and fade files referenced by the session are available for playback. If files are offline, being processed, or otherwise unavailable for playback, this indicator is red.

**Delay Compensation Status Indicator (Pro Tools HD Only)** Is displayed when Delay Compensation is enabled. When Delay Compensation is disabled, this indicator is not displayed.

## Edit Window Default Length

Pro Tools lets you set a default length for the Edit window in hours, minutes, seconds, and frames (Pro Tools HD or Pro Tools LE with DV Toolkit 2 only). This is useful if you want to assemble a session of a particular length or leave extra room to expand the Edit window's work area in your session. The maximum length is 12 hours and 25 seconds at 48 kHz, and proportionally less at higher sampling rates. For best scrollbar sensitivity, set the length to slightly longer (a minute or more) than the total session or song length.

**To set the default length for the Edit window:**

**1** Choose Setup > Preferences.

**2** On the Display page, type the value in hours, minutes, seconds, and frames in the Edit Window Default Length field.

**3** Click OK.

## Transport Window

The Transport window can be set to show basic transport controls, counters, MIDI controls, and expanded features. The counters in the Transport window mirror the controls and counters at the top of the Edit window.

**To display the Transport window:**

- Choose Window > Transport.

## Basic Transport Controls and Counters
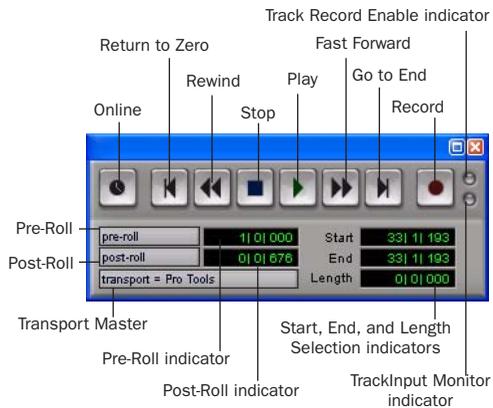


*Transport window showing basic transport controls and counters (Main and Sub Counters and MIDI not shown)*

**Online** Puts Pro Tools online so that playback and recording is triggered by an external time code source.

**Return to Zero** Locates to the beginning of the session.

🔲 *Press Enter (Windows) or Return (Mac) to Return to Zero.*

Right-clicking the Return to Zero button accesses the Write to Start and Write to All automation commands.

**Rewind** Rewinds from the current play location. You can also click repeatedly to rewind incrementally, by an amount based on the Main Time Scale, as follows:

*Rewind Increments*

| Main Time Scale Format | Increment Amount |
|---|---|
| Min:Sec | 1 second |
| Time Code (Pro Tools HD or Pro Tools LE with DV Toolkit 2) | 1 frame |
| Bars:Beats | 1 bar |
| Feet+Frame (Pro Tools HD or Pro Tools LE with DV Toolkit 2) | 1 foot |
| Sample | 1 second |

🔲 *With the Numeric Keypad mode set to Transport, you can rewind by pressing 1.*

**Stop** Stops playback or recording.

*SHIFT* *You can also stop the transport by pressing the Spacebar, or with the Numeric Keypad mode set to Transport, pressing 0.*

**Play** Starts playback or (if the Record button was clicked first) recording from the Timeline insertion point or the Play Start Marker location if Dynamic Transport mode is enabled.

*SHIFT* *You can also begin playback by pressing the Spacebar, or with the Numeric Keypad mode set to Transport, pressing 0.*

Right-clicking the Play button lets you select the playback mode from a pop-up menu:

- Half-Speed
- Prime for Playback
- Loop
- Dynamic Transport

*SHIFT* *To initiate playback at half-speed, you can also press Shift+Spacebar (Windows or Mac) or Shift-click (Mac) the Play button.*

With the Transport stopped, Start-click Play (Windows) or Control-click Play (Mac) to toggle Loop Playback mode. When enabled, a loop symbol appears in the Play button and Pro Tools plays continuously from the beginning of the selection to the end.

*For more information on loop playback and Dynamic Transport mode, see "Loop Playback Mode" on page 314.*

**Fast Forward** Fast forwards from the Timeline insertion point. You can also click repeatedly to fast forward incrementally (by an amount based on the Main Time Scale).

*Fast-Forward Increments*

| Main Time Scale Format | Increment Amount |
|---|---|
| Min:Sec | 1 second |
| Time Code<br><br>(Pro Tools HD or Pro Tools LE with DV Toolkit 2) | 1 frame |
| Bars:Beats | 1 bar |
| Feet+Frame<br><br>(Pro Tools HD or Pro Tools LE with DV Toolkit 2) | 1 foot |
| Sample | 1 second |

*SHIFT* *With Numeric Keypad mode set to Transport, you can fast forward by pressing 2.*

**Go to End** Locates to the end of the session.

*SHIFT* *You can press Control+Enter (Windows) or Option+Return (Mac) on the QWERTY keyboard to locate to the end of the session.*

*SHIFT* *You can also Right-click the Go to End button to access automation commands Write to End and Write to All.*

**Record** Arms Pro Tools for recording (the button flashes). Clicking Play then starts recording on record-enabled tracks only.

> SHIFT *You can also begin recording immediately by pressing F12, pressing Control+Spacebar (Windows) or Command+Spacebar (Mac), or with the Numeric Keypad mode set to Transport, pressing 3.*

Right-clicking the Record button lets you select the record mode from a pop-up menu:

- Normal
- Loop
- Destructive
- QuickPunch
- TrackPunch (Pro Tools HD only)
- Destructive Punch (Pro Tools HD only)

You can also cycle through the Pro Tools record modes with the Transport stopped, by Start-clicking (Windows) or Control-clicking (Mac) the Record button.

The Record button changes to indicate the currently selected mode: blank for Nondestructive, "D" for Destructive, a loop symbol for Loop Record, "P" for QuickPunch, "T" for Track-Punch, and "DP" for DestructivePunch.

> SHIFT *To initiate recording at half-speed, you can press Control+Shift+Spacebar (Windows) or Command+Shift+Spacebar (Mac).*

**Track Record Enable Indicator** When lit (red), indicates that at least one audio track is currently record-enabled. When off (gray), no tracks are currently record-enabled.

**TrackInput Monitor Indicator** When lit (green), indicates that at least one audio track is currently set to Input Only monitoring (regardless of record enable status). When off (gray), all tracks are in Auto Input monitoring.

**Pre-Roll** During playback or record, specifies the amount of audio that plays before the Play (Timeline) Cursor or Play Start Marker location, or beginning of the Timeline selection. Pre-roll is particularly useful with punch recording since it provides you with time to "catch the beat" before reaching the punch-in point. To set the pre-roll amount, enter a new value in this field, or drag the Pre-Roll flag in the Main Timebase ruler.

**To enable pre-roll:**

- Click the Pre-Roll button to the left of the pre-roll field so it becomes highlighted.

**Post-Roll** During playback or record, specifies the amount that plays after the end of a Timeline selection. Post-roll is useful in punch recording since playback continues after the punch-out point so you can check for a smooth transition to previously recorded material. To set the post-roll amount, enter a new value in this field, or drag the Post-Roll flag in the Main Timebase ruler.

**To enable post-roll:**

- Click the Post-Roll button to the left of the post-roll field so it becomes highlighted.

**Start** Specifies the beginning of the play or record range. You can set the start point by entering a location in this field, or by dragging the corresponding Timeline Selection or Play Start Marker in the Main Timebase ruler. For more information, see "Timeline Selection Markers" on page 354.

**End** Specifies the end of the play or record range. You can set the end point by entering a location in this field, or by dragging the corresponding Timeline Selection Marker in the Main Timebase ruler. For more information, see "Timeline Selection Markers" on page 354.

**Length** Specifies the length for the play or record range. You can set the length by entering a location in this field, or by selecting a range in any Timebase ruler.

💡 *When the Timeline and Edit selections are linked, you can make an Edit selection in a track's playlist to set the play and record range. See "Linking or Unlinking Timeline and Edit Selections" on page 447*

**Transport Master Selector** Specifies the "master" for transport functions and provides a control to take enabled devices offline.

**To set a Transport Master:**

■ Click the Transport Master selector, from the Transport submenu, select a Transport Master: Pro Tools, Machine, MMC (MIDI Machine Control), or Remote.

**To take a device offline:**

■ Click the Transport Master selector, from the Online submenu, deselect the device (MIDI or Machine). Device options depend on the current Transport Master, and which devices have been set up in Pro Tools.

To bring the device back online, select it in the Online submenu.

📖 *If you using an MMC device, see Chapter 42, "Working with Synchronization."*

*If you are using the Digidesign Machine-Control option, see the MachineControl Guide.*

## MIDI Controls
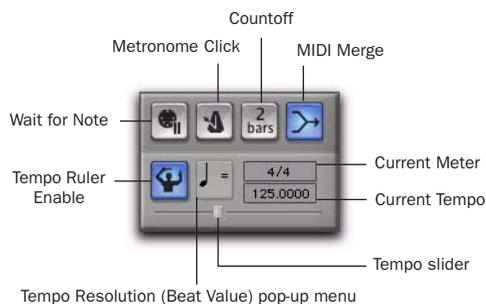


*Transport window showing MIDI controls*

**To view the MIDI controls in the Transport, do one of the following:**

■ Select View > Transport > MIDI Controls.

– or –

■ Control-click (Windows) or Command-click (Mac) the Expand/Collapse "+" button in the Transport window to display the MIDI controls.



*Transport Window with MIDI controls*

**Wait for Note** When selected, recording does not begin until a MIDI event is received. This ensures that you begin recording when you're ready to play, and that the first note, or other MIDI data, is recorded precisely at the beginning of the record range.

> ⇧ *You can press F11 to turn on Wait for Note, unless the MIDI preference for "Disable F11 for Wait for Note" is enabled.*

> ⚠ *On Mac, the Desktop Keyboard Shortcut uses the same key command that Pro Tools uses for Wait For Note (F11). To use F11 for Wait For Note in Pro Tools, be sure to disable the Desktop Keyboard Shortcut in the Apple System Preferences.*

**Metronome Click** When selected, Pro Tools generates a metronome pulse that can be set to trigger built-in sounds or MIDI instruments during playback and recording.

The Pro Tools metronome is configured in the Click/Countoff Options dialog. Double-click the Metronome Click button to open the Click/Countoff Options dialog.

> ⇧ *With the Numeric Keypad mode set to Transport, press 7 to enable the Metronome Click.*

**Countoff** When selected, Pro Tools counts off a specified number of measures (indicated in the button) before playback or recording begins.

Double-click the Countoff button, to open the Click/Countoff Options dialog.

> ⇧ *With the Numeric Keypad mode set to Transport, press 8 to enable the Countoff.*

**MIDI Merge** When selected (Merge mode), recorded MIDI data is merged with existing track material. When deselected (Replace mode), recorded MIDI data replaces existing track material.

> ⇧ *With the Numeric Keypad mode set to Transport, press 9 to enable MIDI Merge.*

**Tempo Ruler Enable (Conductor)** When selected, Pro Tools uses the tempo map defined in the Tempo ruler. When deselected, Pro Tools switches to Manual Tempo mode and ignores the Tempo ruler.

In Manual Tempo mode, you can enter a BPM value in the tempo field, or tap in the tempo with the T key on your QWERTY keyboard.

**Tempo Slider** When the Tempo Ruler Enable (Conductor) is disabled, Pro Tools ignores the tempo events in the Tempo track and instead plays back the specified Manual Tempo. This tempo can be set with the Tempo slider.

**Current Meter** Displays the session's current meter based on the play location. Double-click the Current Meter indicator to open the Change Meter window.

**Current Tempo** Displays the session's current tempo based on the play location. In Manual Tempo mode, you can enter a BPM value into this field, or manually tap in a tempo with a computer keyboard or an external MIDI keyboard.

# DigiBase Browsers

DigiBase databases are accessed through Digi-Base *browsers*. Browsers provide an intuitive user interface to DigiBase databases with many convenient features for various file management tasks (such as search and sort functions).

Browsers in Pro Tools are analogous to windows in your computer's operating system (such as Windows Explorer or the Mac Finder), but are designed for Pro Tools workflow. Multiple browsers can be displayed simultaneously, and arranged independently with custom display settings for each.

Browsers let you search and sort audio files, video files, and sessions. These files are displayed in browsers and can be dragged directly into the current Pro Tools session.

When offline items are needed, Pro Tools lets you find the correct matching files, then relink to online media.

☞ *To open the Workspace browser, press Alt+; (Windows) or Option+; (Mac). To bring all DigiBase browsers to the front, press Alt+J (Windows) or Option+J (Mac). To send all DigiBase browsers to the back, press Alt+Shift+J (Windows) or Option+Shift+J (Mac)*

The main elements of a DigiBase browser (see Figure 6 on page 122) include the following:

**Title Bar** Shows the browser type (Workspace, Volume, Project, or Catalog), and the name of its associated volume, session or catalog.

**Toolbar** Provides the Browser menu, Search icon, View Presets (numbered 1–5), and browser navigation tools.

**Column Headers** Display the type of metadata displayed in the Items List. Column Headers can be:

- Resized by dragging the column border, or rearranged by dragging the Column headers.
- Dragged to either of two available panes, the Fixed or Scrolling panes.

**Items List** Displays the contents of a volume, folder, session, or Catalog database. Each column in the items list displays metadata (such as file name and format) for volumes, folders, and files in the Items List.

There are three types of Pro Tools browsers available on all supported systems:

- The Workspace browser
- Volume browsers
- The Project browser

DigiBase Pro (Pro Tools HD or Pro Tools LE with DV Toolkit 2 only) provides one additional type of browser:

- Catalogs
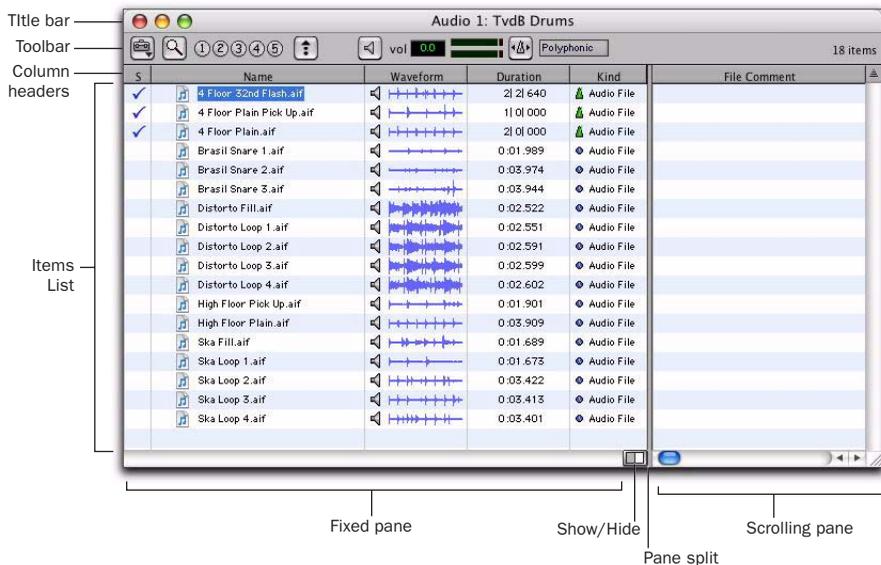
Figure 6. Main elements of a DigiBase browser (Volume browser shown).

## Workspace Browser

The Workspace browser provides access to all your mounted volumes, as well as the folders and files they contain.

Using the Workspace browser, you can:

- Access all mounted volumes.
- Access all Catalogs.
- Search across multiple volumes and Catalogs simultaneously.
- Designate volumes for Record and Playback, Playback Only, or Transfer.
- Unmount volumes.
- View, manage, audition, and import individual items in any catalog or mounted volume.
- Update databases for entire volumes.

📄 *For more information about the Workspace browser, see "Workspace Browser" on page 238.*

## Volume Browsers

Volume browsers provide file management for local and network *volumes*. Volumes are formatted partitions on a physical drive (hard drive). Open a Volume browser by double-clicking a volume in the Workspace browser. Any changes made in Volume browsers (such as copying, deleting, or moving files and folders) is mirrored on the volumes themselves. Volumes include mounted hard drives, network storage, and CD/DVD-ROMs.

Using Volume browsers you can:

- View, manage, audition, and import individual items on the volume.
- Update a database for contents of the volume.

### Project Browser

The Project browser provides powerful search and management tools for the files referenced in your current session, regardless of where they are stored. Using the Project browser, you can:

- Show all the media files associated with the current session, including any missing files.
- View, manage, audition, and spot individual items.

📄 *For detailed information about the Project browser, see "Project Browser" on page 241.*

### DigiBase Pro Catalogs

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

Catalogs provide the highest level of Pro Tools file management. Catalogs make it easy to organize files from multiple sources into libraries of favorite files. Catalogs can be sorted and searched, even when the files they reference are offline. Catalogs can also be shared.

Using Catalogs, you can:

- Collect and organize files from any combination of volumes.
- Create catalogs of complete volumes to view and search even if a volume is offline.
- View, manage, audition, and import individual items in the catalog.
- Update a database for contents of catalog.

📄 *For detailed information about Catalogs, see "DigiBase Pro Catalogs" on page 243.*

### Task Window

The Task window is a utility for viewing and managing all of the background tasks that you initiate with Pro Tools. Use the Task window to monitor, pause, or cancel background tasks such as file copies, searches, indexing, and fade creation.

📄 *For detailed information about the Task window, see "Task Window" on page 247.*

### Relink Window

The Relink window provides tools and features for relinking sessions and catalogs to media files. Use Relink tools to search and reacquire missing files for use in the current session.

📄 *For detailed information about the Relink window, see "Relink Window" on page 234.*

## Window Configurations

Pro Tools provides a powerful means of managing the configuration of windows in your session, as well as the internal window configurations of the Edit, Mix, and Transport windows. Use the Window Configuration List to create (or delete) and manage stored Window Configurations. Pro Tools lets you store up to 99 Window Configurations. Window Configurations are saved with the session.

💡 *Create a session template with your favorite Window Configurations. You can then use the template when you start a new session, or you can use Import Session Data to import Window Configurations into your current session.*

A Window Configuration can store the location and size of all open windows, including:

- Edit window
- Mix window
- Workspace browser
- Project browser
- DigiBase browsers
- Session Setup window
- Time, Tempo, and Event Operations windows
- MIDI Event List
- Real-time MIDI Properties window
- Beat Detective window
- Plug-in windows
- Panner windows
- Mic Pre windows
- All floating windows listed in the Window menu:
  - Task Manager window
  - Transport window
  - Big Counter window
  - Automation window
  - Memory Locations window
  - Machine Track Arming window
  - Universe window
  - Video window
  - Color Palette window
  - Undo History window
  - Disk Space window
  - System Usage window

⚠ *The location and size of the Window Configuration List is not stored with Window Configurations.*

A Window Configuration can also store the Window Display Settings for the Edit, Mix, and Transport windows.

## Window Configuration List

The Window Configuration List lets you recall and manage stored Window Configurations, as well as create new Window Configurations.
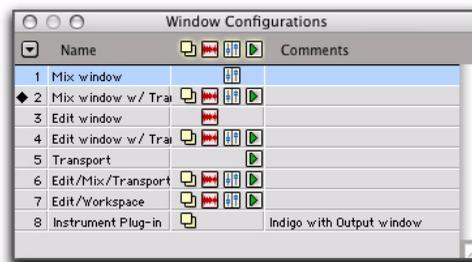


*Window Configuration List*

**To open the Window Configuration List:**

■ Select Window > Configurations > Window Configuration List.

[SHIFT] *Press Control+Alt+J (Windows) or Command+Option+J (Mac) to show or hide the Window Configuration List.*

## Window Configuration Properties

Window Configurations can be stored and recalled with the layout of windows in your Pro Tools session, as well as with the settings for the Edit, Mix, and Transport windows. You can specify which of these properties are stored for each Window Configuration either in the New Window Configuration dialog or the Edit Window Configuration dialog.

*Edit Window Configuration dialog*

**Number** Is the number of the slot in which the Window Configuration is stored (1–99). You can type Period (.), the number of the Window Configuration, and then Asterisk (*) on the numeric keypad on your computer keyboard to recall the Window Configuration stored in that slot.

**Name** Is the name of the stored Window Configuration.

**Window Layout** When enabled, stores the size and location of all open windows.

**Include Edit, Mix, and Transport Display Settings** When enabled, stores all window display settings for the Edit, Mix, and Transport windows with the Window Configuration (such as whether or not the Region List is shown in the Edit window). The Include Edit, Mix, and Transport Display Settings option is only available when the Window Layout option is enabled.

**Window Display Settings** Stores only the window display settings for the selected window (Edit, Mix, or Transport):

- Edit Window Display Settings
  - Width of the Track List and Group List
  - Height of the Track List
  - Width of the Region List
  - What rulers are shown (the main ruler is always shown)
  - What track columns are shown (such as Inserts, Sends, or Comments)
  - Tempo editor display
  - Whether Transport controls are shown in the Edit window
- Mix Window Display Settings
  - Width of the Track List and Group List
  - Height of the Track List
  - What track rows are shown (such as Inserts, Sends, or Comments)
  - Narrow/wide mixer view
- Transport Window Display Settings
  - Counters display
  - MIDI controls display
  - Expanded view

**Comments** Lets you type comments for the Window Configuration.

## Window Configuration Commands and Options

### View Filter Icons

Using the View Filter icons, the Window Configuration List lets you show or hide Window Configurations based on whether or not they are stored with Window Layout, Edit Window settings, Mix Window settings, or Transport Window settings.
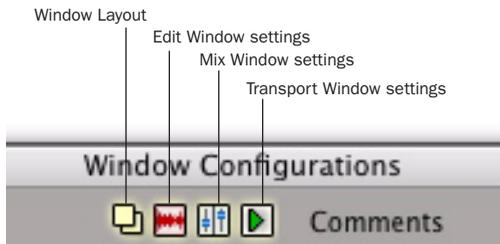


*Window Configuration List view filter icons*

### To show or hide Window Configurations in the Window Configuration List, do one of the following:

■ Click the View Filter icon to show or hide Window Configurations that include that property (Window Layout, Edit Window Settings, Mix Window Settings, or Transport Window Settings).

– or –

■ Select or deselect the View Filter item in the Window Configuration List pop-up menu.

### Window Configuration List Pop-Up Menu

You can select viewing and sorting options, along with commands for creating and removing Window Configurations, from the pop-up menu in the Window Configuration List.
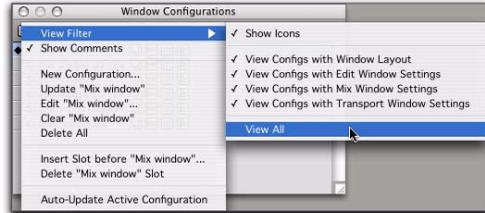


*Window Configuration List pop-up menu*

**View Filter** Lets you show or hide Window Configuration filter icons in the Window Configuration List as well as show or hide Window Configurations with Window Layout, Edit Window Settings, Mix Window Settings, or Transport Window Settings.

**Show Comments** Lets you show or hide Comments in the Window Configuration List.

**New Configuration** Creates a new Window Configuration. This command is also available from Window > Configurations.

**Update <Name>** Updates the selected Window Configuration with any changes to the layout and settings of windows depending on the Window Configuration's properties. This command is also available from Window > Configurations.

**Edit <Name>** Opens the Edit Window Configuration dialog where you can edit the properties of the selected Window Configuration.

**Clear <Name>** Clears the selected Window Configuration without deleting the slot (number).

**Delete All** Deletes all Window Configurations.

**Insert Slot Before <Name>** Inserts a new slot before the selected Window Configuration and, if necessary, increments the number of each following slot.

**Delete <Name> Slot** Deletes the selected Window Configuration and its slot (number), and renumbers each subsequent slot.

**Auto-Update Active Configuration** Automatically updates the active Window Configuration as you make changes to the layout and settings of windows. If Auto-Update Active Configuration is enabled, the number of the active configuration is also displayed in the Window menu. This command is also available from Window > Configurations.
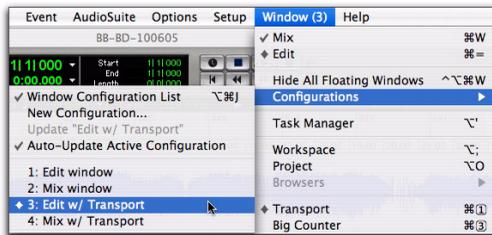


*Number of active Window Configuration displayed in Window menu*

### Active Window Configuration

The active Window Configuration is indicated by a diamond to the left of the Window Configuration Number in the Window Configuration List and in the Configurations submenu (Window > Configuration). If Auto-Update Active Configuration is enabled, the number of the active configuration is also displayed in the Window menu. Only Window Configurations that include Window Layout can be made active.
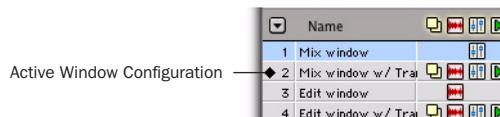


*Active Window Configuration*

## Creating New Window Configurations

**To create a new Window Configuration:**

**1** Open the windows you want to include in the Window Configuration and position them where you want on the screen.

**2** Do one of the following:

- Choose Window > Configurations > New Configuration.

– or –

- If the Window Configuration List is open, Choose New Configuration from the Window Configuration List pop-up menu.



*New Window Configuration dialog*

**3** In the New Window Configuration dialog, do one of the following:

- Select Window Layout and whether or not to include the Edit, Mix, and Transport window display settings.

– or –

- Select a Window Display Settings option from the pop-up menu (Edit Window Display Settings, Mix Window Display Settings, or Transport Window Display Settings)

**4** Name the Window Configuration.

**5** You can type a different number for the new Window Configuration. If the number you type is already used by another Window Configuration, you are prompted to replace it or Cancel. Otherwise, Pro Tools automatically fills in the first available number (1–99) for the Window Configuration.

**6** Type any comments for the new Window Configuration.

**7** Click OK to store the new Window Configuration, or cancel.

The new Window Configuration is added to the Window Configuration List.

**To create a new Window Configuration at a specific numbered slot:**

■ On the numeric keypad, type Period (.), a number (1–99), and then Plus (+) to add a new Window Configuration at that number slot.

⚠ *If a Window Configuration already exists at that numbered slot, the new Window Configuration overwrites it.*

### Recalling Window Configurations

You can use the Window Configuration List to recall stored Window Configurations. You can also use the Number Keypad on your computer keyboard to recall a specific Window Configuration.

**To recall a Window Configuration, do one of the following:**

■ Select the Window Configuration from Window > Configurations.

■ In the Window Configuration List, click the Window Configuration to recall it.

■ On the numeric keypad, press Period (.), the number of the Window Configuration (1–99), and then Asterisk (*).

The Pro Tools session's screen layout updates with the stored Window Configuration.

### Undoing Window Configurations

Pro Tools lets you revert to the previous Window Layout and Window Settings with a single level of undo. This is useful, for example, if you recall a Window Configuration, but then decide you want to revert to the previous screen state.

**To undo a Window Configuration:**

■ On the numeric keypad, press Period (.), 0, and then Asterisk (*).

**To redo a Window Configuration:**

■ On the numeric keypad, press Period (.), 0, and then Asterisk (*).

If Auto-Update Active Configuration is enabled, undoing the Window Configuration reverts to the previously stored Window Configuration without automatically saving changes (see "Updating Window Configurations" on page 129).

### Editing Window Configurations

You can change which properties are stored with Window Configurations, as well as the number, name, or comments.

**To edit a Window Configuration:**

**1** In the Window Configuration List, select the Window Configuration you want to edit.

**2** From the Window Configuration List pop-up menu, select Edit <Name>.

**3** In the Edit Window Configuration dialog, make the desired changes and click OK.

## Updating Window Configurations

After you recall a stored Window Configuration, you can make changes to the window layout and window settings, and then update the stored Window Configuration with your changes. You can do this manually, or you can have Pro Tools automatically update the active configuration.

**To manually update a Window Configuration, do one of the following:**

■ Choose Window > Configurations > Update Active Configuration.

The active Window Configuration updates to include any changes to its included properties (Window Layout and Window Display Settings).

– or –

■ From the Window Configuration List pop-up menu, choose Update <Name>.

The selected Window Configuration updates with any changes to its included properties.

**To have Pro Tools automatically update the active Window Configuration, do one of the following:**

■ Select Window > Configurations > Auto-Update Active Configuration.

– or –

■ From the Window Configuration List pop-up menu, select Auto-Update Active Configuration.

When Auto-Update Active Configuration is selected, the active Window Configuration updates with every change to the Window Layout and Window Display Settings.

Window Configurations that do not include Window Layout and only store Window Display Settings cannot be made active and thus won't automatically update. If you want to update a Window Configuration with changes to the Window Display Settings (such as the width of the Region List in the Edit window), use the Update command in the Window Configuration List.

## Clearing Window Configurations

Clearing a window configuration removes it and its associated slot number while keeping the slot numbers of other window configurations unchanged. The Clear command is useful if you want to insert another configuration it the same slot.

**To clear a Window Configuration:**

**1** In the Window Configuration List, select the Window Configuration you want to clear.

**2** From the Window Configuration List pop-up menu, select Clear <Name>.

## Deleting Window Configurations

Deleting a Window Configuration removes the it and its slot number, and renumbers any subsequent Window Configurations.

**To delete a Window Configuration:**

**1** In the Window Configuration List, select the Window Configuration you want to delete.

**2** From the Window Configuration List pop-up menu, select Delete <Name>.

**To delete all Window Configurations:**

■ From the Window Configuration List pop-up menu, select Delete All.

## Importing Window Configurations

You can import Window Configurations from another session using Import Session Data.

**To import Window Configurations:**

**1** Choose File > Import > Session Data.

**2** Select the Window Configurations option.
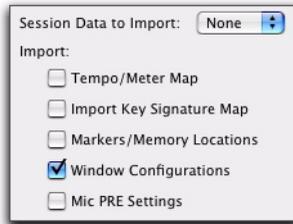


*Import Window Configurations*

**3** If you only want to import Window Configurations, click the Session Data to Import pop-up menu and select None.

**4** Click OK.

## Hiding All Floating Windows

The Hide All Floating Windows command hides or shows all floating windows. This is useful for quickly clearing the screen of all floating windows so that you can work in the Edit or Mix windows.

**To hide or show all floating windows:**

■ Select or deselect Window > Hide All Floating Windows.

📝 *Press Control+Alt+Start+W (Windows) or Command+Option+Control+W (Mac) to hide or show all floating windows.*

## Menus

Pro Tools menus provide commands and options for configuring and working with Pro Tools, sessions, and session material.

📖 *For detailed information on Pro Tools main menus and Region List pop-up menus, see the Pro Tools Menus Guide.*

### Pro Tools Main Menus

Pro Tools includes the following main menus:

**File** Provides commands that are used to create and maintain Pro Tools sessions.

**Edit** Provides commands that are used to edit and manipulate the current selection and affect data in the Timeline or the clipboard.

**View** Provides options and commands to customize what is shown in various windows.

**Track** Provides commands that are used to create, manage, and edit tracks.

**Region** Provides commands that are used to manage and edit regions.

**Event** Provides commands for editing audio and MIDI events.

**AudioSuite** Provides AudioSuite plug-ins.

**Options** Provides commands that let you select several editing, recording, monitoring, playback, and display options.

**Setup** Provides commands to open dialogs and windows or configure various Pro Tools hardware and software parameters.

**Window** Provides commands to toggle the display of various Pro Tools windows.

**Help** Provides access to PDF documentation for *Keyboard Shortcuts*, *Digidesign FAQ*, the *DigiRack Plug-ins Guide*, the *Pro Tools Menus Guide*, and the *Pro Tools Reference Guide*.

## Track, Region, and Group List Menus

The Track, Region, and Group Lists provide pop-up menus for managing and working with the contents of each list, as follows:

**Track List Pop-Up Menu** Provides commands to show and hide tracks in the Mix and Edit windows. The Track List pop-up menu also lets you sort the contents of the Track List.

*For more information, see "The Track List" on page 154.*

**Group List Pop-Up Menus (Edit Groups and Mix Groups)** Provides commands to create, display, suspend, and delete Mix and Edit Groups.

*For more information, see "The Group List" on page 177*

**Region List Pop-Up Menu (Edit Window Only)** Provides commands to find, select, sort, clear, rename, time stamp, compact, export, and recalculate waveform overviews of items in the Region List. The pop-up menu also lets you set the drop order for regions dragged from the Region List and dropped in the Timeline.

*For more information, see Chapter 12, "The Region List."*

## Track Name and Region Name Right-Click Pop-Up Menus

Track and region names provide pop-up menus for managing and working with tracks or regions, as follows:

**Track Name Right-Click Pop-Up Menu** Right-clicking a track name in the Edit window, Mix window, or the Track List provides access to various track commands (such as show/hide, make active/inactive, rename, duplicate, and delete tracks).

*For more information, see "Track Name Right-Click Pop-Up Menus" on page 157.*

**Region Name Right-Click Pop-Up Menu (Edit Window Only)** Right-clicking a region name in the Region List provides commands to clear, rename, time stamp, or replace regions. The pop-up menu also lets you export region definitions or selected regions as files, recalculate waveform overviews, select the parent file of selected regions in the DigiBase Workspace Browser, or select a region as an object in the Edit window.

*For more information, see Chapter 12, "The Region List."*

## Group Name and Track Group ID Indicator Pop-Up Menus

When you click and hold on a group name in the Group List, or click on a Group ID indicator in a track, a pop-up menu provides access to various group commands (such as selecting tracks in a group).

*For more information, see "Group Name and Track Group ID Indicator Pop-Up Menus" on page 178.*

# Tool Tips

Pro Tools provides Tool Tips in all main windows. Holding the cursor for a few seconds over an abbreviated name, or unlabeled icon or tool, displays either the function or details of the item (depending on the Tool Tips preferences settings).

**To configure Tool Tips for Pro Tools:**

**1** Choose Setup > Preferences, and click the Display tab.

**2** In the Basics section, enable the Tool Tips options you want displayed.

**Function** Shows the functional name of different Pro Tools items (such as specific buttons, indicators, modes, selectors, and Edit tools).

**Details** Shows abbreviated or hidden Pro Tools names or values for different Pro Tools items (such as insert names, gain levels, settings, and routing assignments).

*Leave both options unchecked to turn off Tool Tips.*

**3** Click OK.

# Chapter 10: Tracks

This chapter covers the different types of tracks in a Pro Tools session and basic track management tasks.

## Track Types

In a Pro Tools session, you can have several different types of tracks. These can include audio, Auxiliary Input, Master Fader, VCA Master (Pro Tools HD only), MIDI, Instrument, and video tracks.

📄 *Video track features are described in Chapter 43, "Working with Video in Pro Tools"*

### Audio, Auxiliary Input, Master Fader, and VCA Master Tracks

Pro Tools provides mono, stereo, and multichannel format audio, Auxiliary Input, Master Fader, and VCA Master tracks.

### Audio Tracks

Audio tracks let you record to disk and play back from disk recorded or imported audio files.

### Auxiliary Input Tracks

Auxiliary Input tracks can be used as effects sends, destinations for submixes, as a bounce destination, as inputs to monitor or process audio (such as audio from external MIDI instruments), and for many other audio routing tasks.

### Master Fader Tracks

Master Fader tracks control the overall level of audio paths that are routed to physical output paths. For example, you could have 24 tracks in a session with channels 1–8 routed to Analog Output 1–2, channels 9–16 to Analog Output 3–4, and channels 17–24 to Analog Output 5–6. You could then create three master faders, one to control each of these output pairs.

Master Fader tracks have additional uses (such as controlling submix levels). For more information, see "Master Fader Tracks" on page 712.

## VCA Master Tracks

### (Pro Tools HD Only)

VCA Master tracks (or VCA Masters) emulate the operation of voltage-controlled amplifier channels on analog consoles, where a VCA channel fader would be used to control, group, or offset the signal levels of other channels on the console.

VCA Master tracks do not pass audio, so they do not have inputs, outputs, inserts, or sends. A Mix Group is assigned to a VCA Master track, which appears in the VCA track's Assignment selector.

The controls of the tracks in that Mix Group, called the *slave* tracks, are modified by the controls on the VCA Master.

📰 *For more information, see "VCA Master Tracks" on page 714.*

### MIDI Tracks

MIDI tracks record, store, and playback MIDI data. You cannot select a track format when you create a MIDI track, because audio does not pass through it.

### Instrument Tracks

Instrument tracks are a special type of track that provide both MIDI and audio capabilities in a single channel strip. Instrument tracks simplify using software and hardware instruments to record and monitor MIDI instruments.

## Track Formats

### Mono Tracks

A mono audio, Auxiliary Input, Master Fader, or Instrument track controls volume, and, in some cases, panning, for a single channel of audio. A mono audio track uses a single voice. A mono track can also be routed to a multichannel output.

### Stereo Tracks

A stereo audio, Auxiliary Input, Master Fader, or Instrument track is a single channel strip for two channels of audio as a stereo pair. Stereo audio tracks use two voices.

### Multichannel Tracks (Pro Tools HD Only)

A multichannel track is a single channel strip that plays multiple channels of audio (from 3 to 8 channels at a time). This allows Pro Tools to support multichannel mixing formats including LCRS, 5.1, 6.1, and others. Audio, Auxiliary Input, Master Fader, and Instrument tracks can all use any supported multichannel format.

For more information on surround mixing with Pro Tools, see the following chapters:

- Chapter 39, "Pro Tools Setup for Surround (Pro Tools HD Only)"
- Chapter 40, "Multichannel Tracks and Signal Routing (Pro Tools HD Only)"
- Chapter 41, "Surround Panning and Mixing (Pro Tools HD Only)"

# Track Channel Strips

## (Mix Window)

### Audio Track Channel Strips

Each audio track has its own set of channel strip controls, including volume, pan, record enable, input monitoring (Pro Tools HD only), automation mode, solo, mute, and voice assignment. Audio tracks also have a Comments View to enter and display comments.



- Inserts
- Sends (A–E shown)
- Audio Input/Output Path selectors
- Automation Mode selector
- Pan slider
- Pan indicator
- Track Record Enable button
- TrackInput Monitor button (Pro Tools HD only)
- Solo/Mute buttons
- Output Window button
- Volume fader
- Level meter
- Voice selector
- Group ID
- Track Type indicator
- Volume/Peak/Delay indicator
- Delay Compensation View (Pro Tools HD only)
- Track Name button
- Track Color Coding
- Track Comments

*Mono audio track channel strip*

## Auxiliary Input Track Channel Strips

Each Auxiliary Input track has its own set of channel strip controls, including volume, pan, automation mode, solo, and mute. Auxiliary Input tracks also have a Comments View to enter and display comments.



- Inserts
- Sends (only A–E shown)
- Audio Input/Output Path selectors
- Automation Mode selector
- Pan sliders
- Pan indicators
- Solo/Mute buttons
- Output Window button
- Volume fader
- Level meters
- Group ID
- Track Type indicator
- Volume/Peak/Delay indicator
- Delay Compensation View (Pro Tools HD only)
- Track Name button
- Track Color Coding
- Track Comments
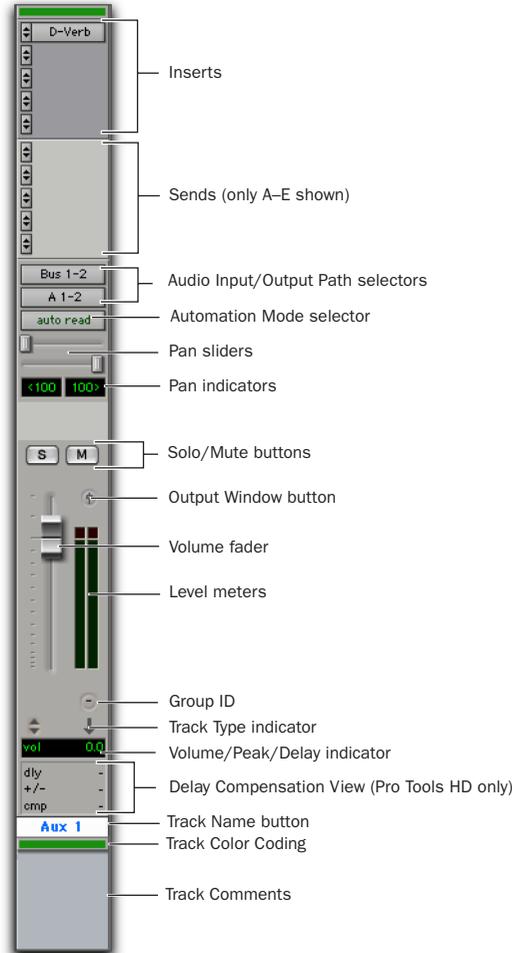
*Stereo Auxiliary Input track channel strip*

## Master Fader Track Channel Strips

Each Master Fader track has its own set of channel strip controls, including volume and automation mode. Master Fader tracks also have a Comments View to enter and display comments.
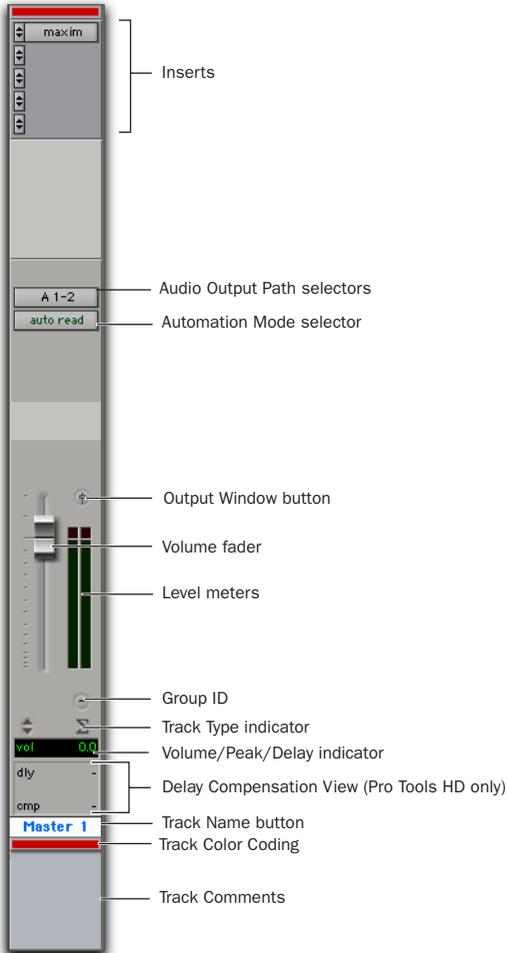


*Stereo Master Fader track channel strip*

## VCA Master Track Channel Strips

### (Pro Tools HD Only)

Each VCA Master track has its own set of channel strip controls, including volume, record enable, input monitoring, automation mode, solo, and mute. VCA Master tracks also have a Comments View to enter and display comments.

📖 *For more information, see "VCA Master Tracks" on page 714.*
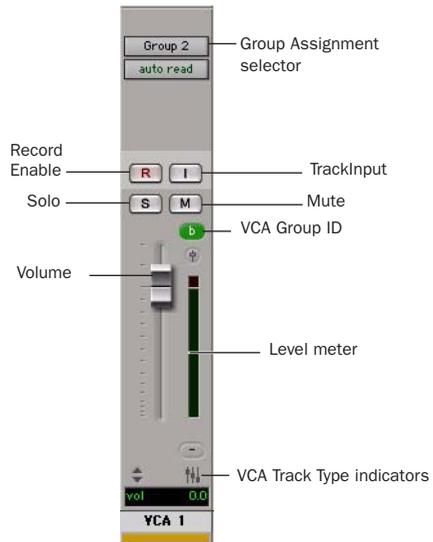


*VCA Master track*

## MIDI Track Channel Strips

Each MIDI track has its own set of channel strip controls, including MIDI volume, pan, record enable, automation mode, solo, mute, patch assignment, and channel assignment. MIDI tracks also have a Comments View to enter and display comments.
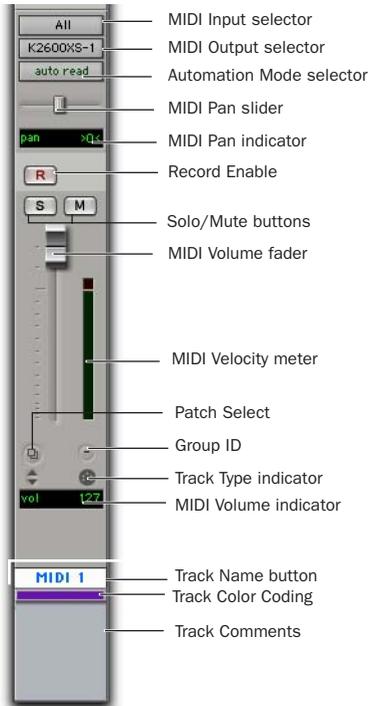


*MIDI channel strip*

## Instrument Track Channel Strips

Each Instrument track has its own set of channel strip controls, including audio (like an Auxiliary Input track) volume, pan, automation mode, solo, and mute, and MIDI (like a MIDI track) record enable. Instrument tracks have an additional Instruments View that provides controls for MIDI input, output, mute, volume, and pan (like on a MIDI track). Instrument tracks also have a Comments View to enter and display comments.
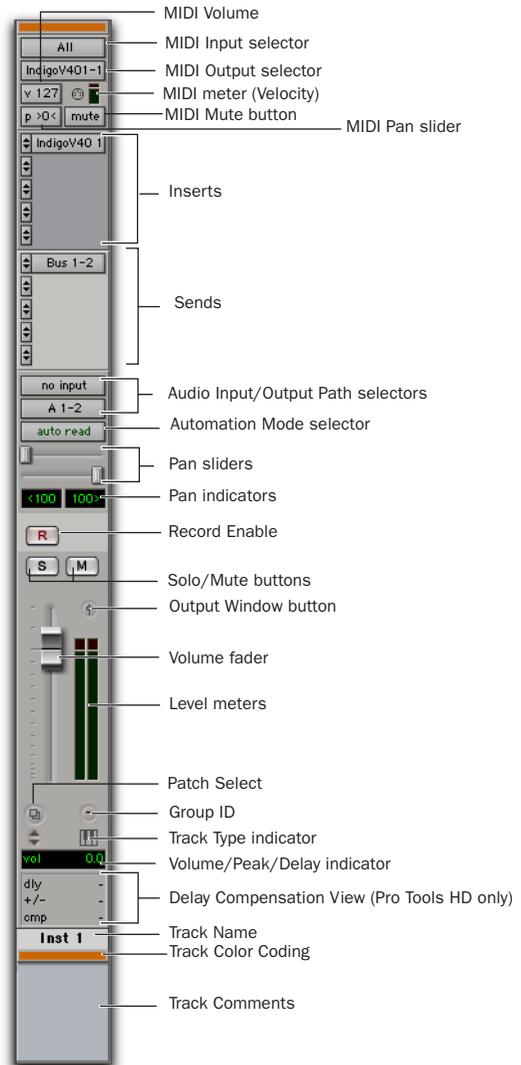


*Stereo Instrument track channel strip, Instruments view shown*

# Track Controls and Indicators

**(Edit Window)**

## Audio Track Controls

Each audio track has its own set of track controls, including Track Name, Playlist, Record Enable, Input Monitoring (Pro Tools HD only), Solo, Mute, Track View, Track Height, Timebase, Elastic Audio, Voice Assignment, and Automation mode.
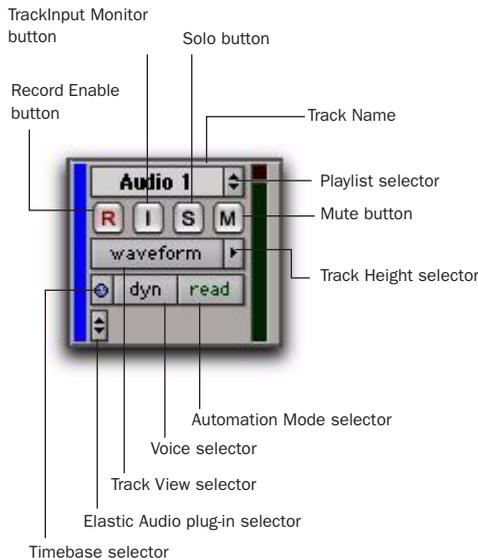


*Edit window track controls for a mono audio track (medium track height)*

## Auxiliary Input Track Controls

Each Auxiliary Input track has its own set of track controls, including Track Name, Solo, Mute, Track View, Track Height, Timebase, and Automation mode.
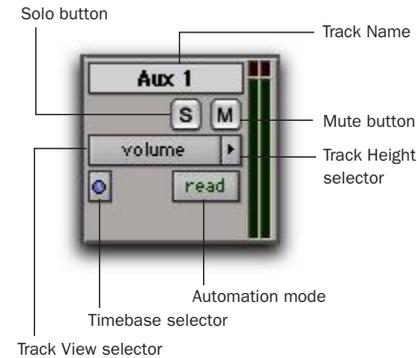


*Edit window track controls for a stereo Auxiliary Input track (medium track height)*

## Master Fader Track Controls

Each Master Fader track has its own set of track controls, including Track Name, Track View, Track Height, Timebase, and Automation mode.
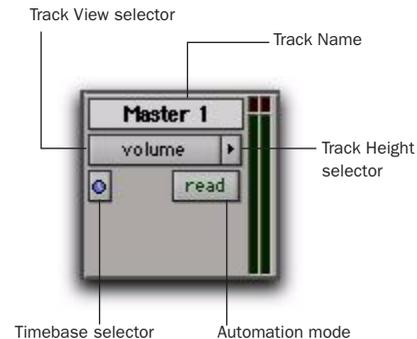


*Edit window track controls for a stereo Master Fader track (medium track height)*

## VCA Master Track Controls

### (Pro Tools HD only)

Each VCA Master track has its own set of track controls, including Track Name, Playlist, Record Enable, Input Monitoring, Solo, Mute, Track View, Track Height, Timebase, and Automation mode.
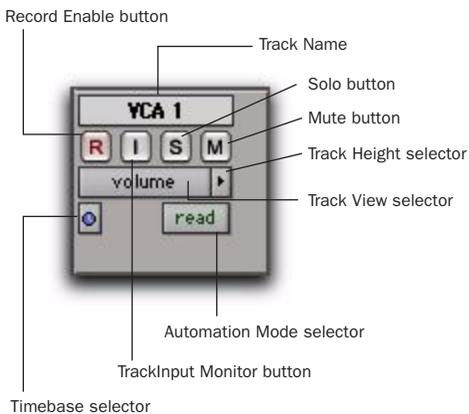


*Edit window track controls for a VCA Master track (medium track height)*

## MIDI Track Controls

Each MIDI track has its own set of track controls, including Track Name, Playlist, Record Enable, Solo, Mute, Track View, Track Height, Patch, Timebase, and Automation mode.
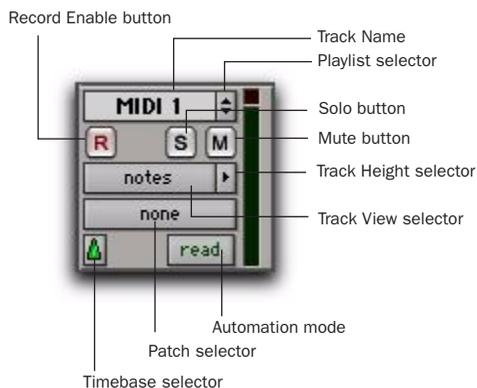


*Edit window track controls for a MIDI track (medium track height)*

## Instrument Track Controls

Each Instrument track has its own set of track controls, including Track Name, Playlist, Record Enable, Solo, Mute, Track View, Track Height, Patch, Timebase, and Automation mode.
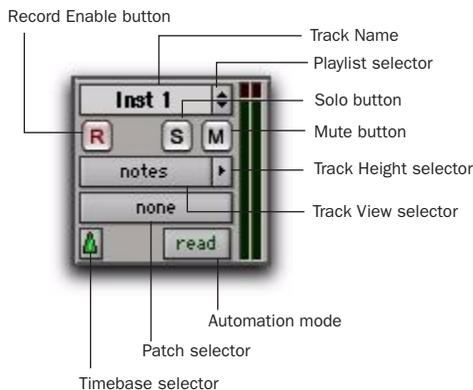


*Edit window track controls for a stereo Instrument track (medium track height)*

## Video Track Controls

Each video track has its own set of track controls, including Track Name, Playlist, Online, Track View, and Track Height.
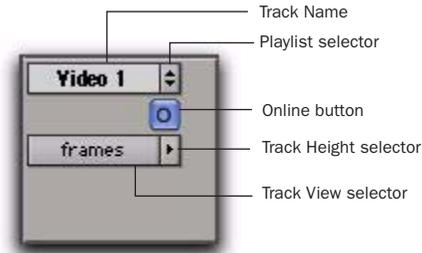


*Edit window track controls for a video track (medium track height)*

## Edit Window Views

In addition to track controls and playlists (of regions of events on the Timeline), the Edit window provides the following views that correspond to channel strip controls in the Mix window:

- Comments
- Mic Preamps (Pro Tools HD only)
- Instruments
- Inserts
- Sends (A–E and F–J)
- I/O

📖 *See also "Views in the Mix and Edit Windows" on page 718.*

### Comments View

Comments view lets you type and view comments for a specific track.

📖 *For more information on Comments view, see "Adding Comments to Tracks" on page 145.*

### Mic Preamps View

#### (Pro Tools HD Only)

The Mic Preamps view shows controls for tracks with physical audio inputs routed through the Digidesign PRE.

📖 *For more information, see the PRE Guide.*

### Instruments View

Instruments view provides MIDI controls for Instrument tracks: MIDI Input selector, MIDI Output selector, MIDI Volume, MIDI Pan, and MIDI Mute.

📖 *For more information, see "Assigning MIDI Input and Output for Instrument Tracks" on page 166.*

### Inserts View

Inserts view provides up to five inserts (software plug-ins and hardware I/O inserts for generating and processing audio) on each audio, Auxiliary Input, Master Fader, and Instrument track.

📖 *For more information on inserts, see Chapter 36, "Plug-in and Hardware Inserts."*

### Sends View (Sends A–E and Sends F–J)

Sends view shows send assignments in each audio, Auxiliary Input, and Instrument track.

📖 *For more information, see "Configuring Sends View in the Mix and Edit Windows" on page 725.*

## I/O View

In the Edit window, I/O view provides Input and Output selectors on audio, Auxiliary Input, Master Fader (output only), MIDI, and Instrument tracks (corresponding to the controls of the same name in the Mix window).
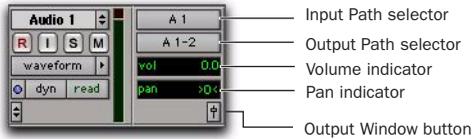


*Edit window I/O View (audio track)*

### To show the I/O View in the Edit window:

■ Select View > Edit Window > I/O.

💡 *Channel strips in the Mix window always display Input and Output selectors as well as volume and pan values, so there is no I/O View display option for the Mix window.*

📖 *For details on Input and Output selectors, see "Assigning Audio Inputs and Outputs to Tracks" on page 158.*

### Volume/Peak/Channel Delay Indicator

The Volume indicator on an audio track has three display modes: Volume, Peak, and Channel Delay.

### To toggle the Volume indicator display:

■ Control-click (Windows) or Command-click (Mac) the indicator to toggle it between the following modes:

**Volume Indicator (and Pop-Up Fader)** Shows the current volume, or input level of a track as set by the track Volume fader. In I/O View (Edit window), click the Volume indicator to display the Volume pop-up fader, which can be used to adjust the volume.
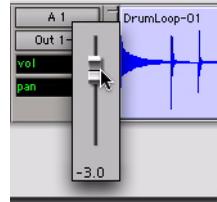


*Edit window I/O View, Volume pop-up fader (audio track)*

**Peak Indicator** Functions as a headroom indicator based on the last peak playback level. To reset the peak counter, click anywhere in the meter. Values range from –∞ (no signal) to 0 dB.

**Channel Delay Indicator (Pro Tools HD Only)** Shows the total delay, in samples, incurred on the track from the use of any TDM plug-ins or hardware inserts on that channel.

### Pan Indicator

The Pan indicator displays the current pan setting of a track. Pan values range from *<100* (full left) to *100>* (full right). Pan controls are only available for stereo tracks or for mono tracks routed to a stereo output.

In I/O view (Edit window), click the Pan indicator to display the Pan pop-up slider, which can be used to adjust panning.



*Edit window I/O View, Pan pop-up slider (audio track)*

## Pan Slider

The Pan slider controls the balance of a track between the assigned output pair. It only appears if you are using stereo tracks or mono tracks routed to a stereo output.

The Pan slider on a MIDI track is effective only if you are controlling a sound module that supports MIDI panning.

☼ *Send Pan controls can be linked to the Main Pan controls of a track by enabling the Follow Main Pan button in Send window.*

## Volume Fader

The Volume fader controls the volume of a track when it is in playback, and the monitor level of the track when it is in record. You can link the record and monitor levels by enabling the Operation preference for "Link Record and Play Faders."

The maximum fader gain for a volume fader is +12 dB.

## MIDI Volume Fader

If your MIDI sound module supports volume, the volume fader on a MIDI or Instrument track can send a value of 0–127 to the MIDI volume controller.

# Track Level Meter

On audio tracks, level meters indicate the level of the signal being recorded or played back from the hard drive. On Auxiliary Input, Master Fader, and Instrument tracks, level meters indicate the level of the signal being played through the channel output. Green indicates nominal levels; Yellow indicates pre-clipping (–6 dB below full scale); and Red indicates clipping. When an audio track is record-enabled, these meters indicate record levels.

On MIDI tracks, and in Instruments view for Instrument tracks, the meter shows the MIDI velocity of the most recent MIDI event.

### Pre- and Post-Fader Metering

You can globally set audio track level meters to indicate pre- or post-fader levels. When pre-fader metering is selected, the level meters show levels independent of fader position. With post-fader metering, the level meters respond to fader position.

**To toggle track level metering between pre- fader and post-fader metering:**

▪ Select Options > Pre-Fader Metering.

### Peak Hold

Pro Tools meters provide a Peak Hold feature with three options: 3 Second, Infinite, or None.

**To choose a Peak Hold setting:**

**1** Choose Setup > Preferences and click the Display tab.

**2** Select a Peak Hold option.

**3** Click OK.

**To clear a meter:**

■ Click anywhere on the meter.

**To clear all meters, do one of the following:**

■ Alt-click (Windows) or Option-click (Mac) any meter.

■ Choose Track > Clear All Clip Indicators.

■ Press Alt+C (Windows) or Option+C (Mac).

### Clip Indication

Pro Tools meters provide Clip Indication with three options: 3 Second, Infinite, or None. If clipping occurs, the topmost LED will stay lit (red).

💡 *Clip indicators appear in plug-in, send, and track windows.*

**To choose a Clip Indication setting:**

**1** Choose Setup > Preferences and click the Display tab.

**2** Select a Clip Indication option.

**3** Click OK.

**To clear a clip indicator:**

■ Click anywhere on the meter.

**To clear all clip indicators, do one of the following:**

■ Alt-click (Windows) or Option-click (Mac) any meter.

■ Choose Track > Clear All Clip Indicators.

■ Press Alt+C (Windows) or Option+C (Mac).

### Wide Meters View

Wide Meters View expands the width of the level meters for tracks in both the Mix and Edit windows, to make the track level meters easier to read. Wide Meters View are also available Narrow Mix View.

**To toggle Wide Meters View on or off:**

■ Control-Alt-Start-click (Windows) or Command-Option-Control-click (Mac) any track level meter in the Mix or Edit window.
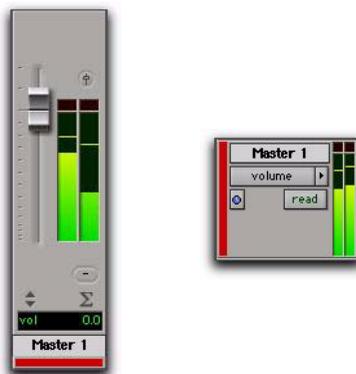


*Wide Meters View, Mix and Edit windows*

## Adjusting Track Width

### Mix Window

The Narrow Mix command lets you view all tracks/channels in the Mix window at a reduced width to conserve screen space in a large session. (See "Track Height" on page 152, to adjust track height in the Edit Window.)

**To reduce the width of tracks in the Mix window:**

■ Select View > Narrow Mix.

**To display tracks at normal width:**

■ Deselect View > Narrow Mix.

[shift] *You can toggle track width by pressing Control+Alt+M (Windows) or Command+Option+M (Mac).*

## Creating Tracks

You can create mono and stereo tracks on all Pro Tools systems. With Pro Tools HD, you can also create multichannel tracks (from LCR to 7.1).

When new tracks are created, they are given a default name that can be changed at any time.

◆ To insert new tracks next to a specific track in a session, select that track by clicking the track's name in the Mix or Edit window before opening the New Tracks dialog. The new tracks are added immediately after the selected track.

◆ To insert new tracks after the last tracks in a session, make sure that no track names are selected on-screen before opening the New Tracks dialog.

[note] *You can also add tracks to your session by importing them from preexisting sessions. See "Importing Session Data" on page 266.*

**To create new tracks:**

**1** Choose Track > New.
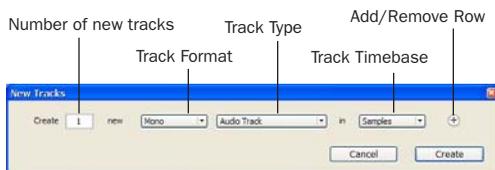


*New Tracks dialog*

**2** Select the type of track you want to add from the Track Type pop-up menu.

[shift] *To auto-scroll the Track Type pop-up menu in the New Tracks dialog, press Control (Windows) or Command (Mac) and use the Up/Down Arrow keys.*

**3** Select the track format (mono, stereo, or one of the multichannel surround formats) from the Track Format pop-up menu. Surround formats are available on Pro Tools|HD systems only.

[shift] *To auto-scroll the Track Format pop-up menu, press Control (Windows) or Command (Mac) and use the Left/Right Arrow keys.*

**4** Select the timebase (samples or ticks) from the Track Timebase pop-up menu.

[shift] *To auto-scroll the Track Timebase pop-up menu, press Control-Alt (Windows) or Command-Option (Mac) and use the Up/Down Arrow keys.*

**5** Enter the number of new tracks.

[shift] *If you are creating various multiple new tracks, you can move to the next or previous row's Number of New Tracks field by pressing Tab or Shift+Tab.*

**6** Do the following, if desired:
• To add more tracks, click the Add Row button.

[shift] *Add a new track by pressing Control+N (Windows) or Command+N (Mac), or by pressing Control+Plus (+) (Windows) or Command+Plus (+) (Mac) on the numeric keypad.*

– or –
• To remove a track, click the Remove Row button.

**SHIFT** *To remove the last track from the New Tracks dialog Control+Minus (–) (Windows) or Command+Minus (–) (Mac).*

**7** To reorder tracks, click a Move Row icon and drag it up or down.



Move Row icon

*Move Row icon in the New Tracks dialog*

**8** Click Create.

## Default Track Names

When creating new audio, Auxiliary Input, Master Fader, VCA Master, MIDI, and Instrument tracks, Pro Tools names them as "Audio," "Aux," "Master," "VCA," "MIDI, or "Inst" accordingly and numbers them consecutively. For example, when you create the first two audio tracks in a new session, their default names are "Audio 1" and "Audio 2." You can rename tracks and also log comments for each track.

## Naming Tracks

Track names are used to auto-name recorded audio files and regions (see "Default Track Names" on page 145).



*Track Name/Comments dialog*

## To rename a track:

**1** Do one of the following:
- In the Mix or Edit window, double-click the Track Name button for the track you want to rename.

– or –

- In the Track List, or Mix or Edit window, Right-click the track name for the track you want to rename.

**2** In the Track Name/Comments dialog, type a new track name.

**3** Click Previous or Next to rename other displayed tracks.

**SHIFT** *To move to the previous or next track in the Track Name/Comments dialog, you can press Control (Windows) or Command (Mac) and use the Up/Down or Left/Right Arrows.*

**4** Click OK.

## Adding Comments to Tracks

### To enter comments for a track, do one of the following:

■ From the track channel strip, click directly in the Comments area, type any comments for the track, and press Enter (Windows) or Return (Mac).

– or –

■ In the Edit or Mix window, double-click the Track Name button for a track. Then click directly in the Comments area, type any comments for the track, and press Enter (Windows) or Return (Mac).

**SHIFT** *To enter a carriage return in the Comments area, press Shift+Enter (Windows) or Shift+Return (Mac) on the QWERTY keyboard.*

## Track Numbering

With Track Number View enabled, each track is assigned a number corresponding to its position in the Mix and Edit Windows. When tracks are reordered, they are renumbered to maintain positional sequence.

**To enable Track Number View:**

■ Choose View > Track Number.

**To navigate directly to any track number:**

**1** Do one of the following:

- Choose Track > Scroll to Track.

– or –

- Press Control+Alt+G (Windows) or Command+Option+G (Mac).
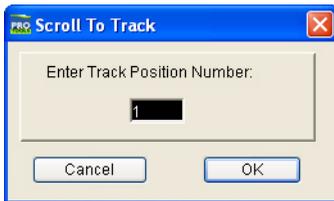


*Scroll To Track dialog*

**2** In the Scroll To Track dialog, enter the Track Position Number.

**3** Click OK.

The track is selected, and the windows scroll as follows:

- The Mix window tracks scroll to bring the selected track as close to the left as possible.
- The Edit window tracks scroll to bring the selected track as close to the top as possible.

## Selecting Tracks

Tracks need to be selected for operations such as duplicating tracks or adding tracks to a group. One or more tracks can be selected at a time.

**To select a track:**

■ Click the name of an unhighlighted track in its track channel strip.

**To select a range of tracks:**

**1** Click the name of an unhighlighted track in its track channel strip.

**2** Shift-click an additional Track Name button.

All tracks between the first track selected and the additional track will also be selected.

**To select or deselect noncontiguous tracks, do one of the following:**

■ Control-click (Windows) or Command-click (Mac) Track Name buttons that are unhighlighted to select them.

– or –

■ Control-click (Windows) or Command-click (Mac) Track Name buttons that are highlighted to deselect them.

**To select all tracks:**

■ Alt-click (Windows) or Option-click (Mac) any Track Name button that is unhighlighted.

**To deselect all tracks:**

■ Alt-click (Windows) or Option-click (Mac) any Track Name button that is highlighted.

### Selecting Tracks when Making Edit Selections

Pro Tools lets you link Track selection with Edit selections. When Track and Edit selections are linked, you can make a selection within a track or across multiple tracks for editing and each associated track is selected (track names automatically highlight).

**To link Track and Edit selections:**

▪ Select Options > Link Track and Edit Selection.

### Scrolling a Track into View

**To scroll a track into view:**

▪ In the Track List, or Mix or Edit window, Right-click the track name and select Scroll into View.

The track is selected, and the windows scroll as follows:

- The Mix window tracks scroll to bring the selected track as close to the left as possible.
- The Edit window tracks scroll to bring the selected track as close to the top as possible.

### Deleting Tracks

When you delete tracks, your audio or MIDI region data remains in the Region List, but your arrangement of the regions on the deleted track (the track's playlist) will be lost.

If the track contains playlists that are not assigned to any track, you are prompted to delete or retain them.

⚠ *The Delete Track command cannot be undone.*

**To delete a track:**

**1** Click the name of the track in its track channel strip to select it.

🔲 *To select multiple tracks, Control-click (Windows) or Command-click (Mac) additional Track Names.*

*To select a range of tracks, Shift-click additional Track Names.*

**2** Do one of the following:
- Choose Track > Delete.

– or –
- In the Track List, or Mix or Edit window, Right-click the track name and select Delete.

**3** Click OK to remove the selected tracks from the session.

### Duplicating Tracks

The Duplicate Track command lets you duplicate one or more tracks, including their audio or MIDI data, playlists, automation, and other attributes.

**To duplicate one or more tracks:**

**1** Select the tracks you want to duplicate.

📖 *For information, see "Selecting Tracks" on page 146.*

**2** Do one of the following:

- Choose Track > Duplicate.
- Press Alt+Shift+D (Windows) or Option+Shift+D (Mac).
- Right-click the name of the track in the Track List, or Mix or Edit window, and select Duplicate.
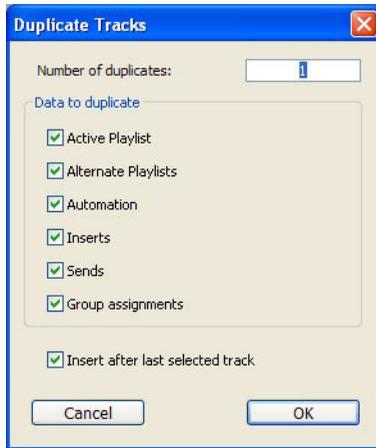


*Duplicate Tracks dialog*

**3** In the Duplicate Tracks dialog, configure the following options as needed:

- Enter how many copies you want to create in the Number of Duplicates filed.
- To copy the currently active (visible) Edit playlist from the source track, enable Active Playlist.
- To copy all Edit playlists on the source track, enable Alternate Playlists
- To copy all automation from the source track, enable Automation.
- To copy all plug-in and insert assignments, enable Inserts.
- To copy all sends and send assignments, enable Sends.
- To maintain all Mix and Edit Group assignments, enable Group Assignments.

**4** If duplicating multiple tracks, do one of the following:

- If you want all the newly created tracks to follow the last selected source track (to the far-right of the Mix window, and at the bottom of the Edit window), enable the Insert after Last Selected Track option.

– or –

- If you want each newly-created track to be inserted directly after its source track, disable the option.

**5** Click OK to duplicate tracks according to the settings in the Duplicate Tracks dialog. Click Cancel to close the dialog and not create duplicate tracks.

In the Mix window, each duplicate track is created to the right of its original track. In the Edit window, each duplicate track is created below its original track. When duplicating multiple tracks, you can also choose to have the new tracks follow the last selected track (or have each new track follow its source track).

### Duplicating VCA Slave Tracks

#### (Pro Tools HD Only)

Duplicating a VCA slave track without duplicating its group assignments will coalesce any automation on the duplicate track. The coalesced duplicate plays back exactly as if it were in the VCA group. For more information, see "VCA Master Tracks" on page 714.

# Track Views

The Track View determines which data is displayed and edited in the track's playlist area. Track View data can be set to Blocks, Waveform, Volume, Pan, Mute, or an automated control or continuous controller, based on the track type.

**Audio Tracks** Can be set to *Blocks*, *Analysis*, *Warp*, *Waveform*, *Volume*, *Volume Trim*, *Pan*, *Mute*, or any plug-in controls that are enabled for automation. By default, audio tracks are set to Waveform view where track material is graphically drawn with amplitude waveforms (a time-domain representation of sound). This Track View provides the necessary detail for important region edits.



*Track View set to Waveform for audio track*

**Auxiliary Input Tracks** Can be set to *Volume*, *Volume Trim*, *Pan*, *Mute*, or any plug-in controls that are enabled for automation.

**Master Fader Tracks** Can be set to *Volume*, *Volume Trim*, or any plug-in controls that are enabled for automation.

**VCA Master Tracks (Pro Tools HD Only)** Can be set to *Volume*, *Volume Trim*, or *Mute*.

**MIDI Tracks** Can be set to *Blocks*, *Regions*, *Notes*, *Volume*, *Pan*, *Mute*, *Velocity*, *Pitch Bend*, *After Touch*, *Program*, *Sysex*, and any continuous controller type. MIDI tracks are commonly set to Notes or Regions, each of which displays notes in a "piano roll" format. Use Notes View for inserting, editing, and copying and pasting MIDI

notes. Use Regions View to arrange, capture, or consolidate regions. Other MIDI track views are useful for editing controller data, program changes, and Sysex events.
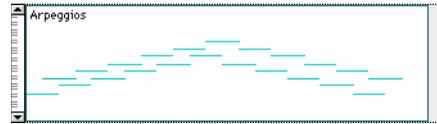


*Track View set to Regions for MIDI track*

**Instrument Tracks** Can be set to *Blocks, Regions, Notes, Volume, Pan, Mute, Velocity, Pitch Bend, After Touch, Program, Sysex*, and any continuous controller type for MIDI, as well as *Volume, Volume Trim*, *Pan, Mute*, or any plug-in controls that enabled for automation. Instrument tracks are commonly set to Notes or Regions, each of which displays notes in a "piano roll" format. Use Notes View for inserting, editing, and copying and pasting MIDI notes. Use Regions View to arrange, capture, or consolidate regions. Other Instrument track views are useful for editing automation, controller data, program changes, and Sysex events.

**Video Tracks** For information on video track views, see "Video Track View" on page 914.

### Blocks Tracks View

With the Track View set to Blocks, audio and MIDI regions are displayed as empty blocks bearing the region's name. This mode is most useful once you have finished capturing and editing regions at the waveform or MIDI event level and are moving and rearranging them. Screen redraws are fastest with this format.

### Automation and Controller Views

When an audio or Instrument track is displayed as Volume, Pan, or another automated control, or when a MIDI or Instrument track is set to one of the continuous controller types (Volume, Pitch Bend, After Touch), the data for that track appears in the form of a line graph with a series of editable breakpoints. The breakpoints can be dragged to modify the automation data, and new breakpoints can be inserted with the Pencil tool or a Grabber tool.
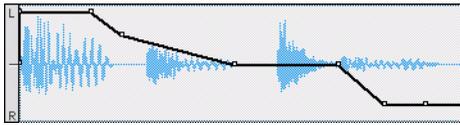


*Track View set to Pan for audio track*

📄 *For details on editing automation data for audio tracks, see Chapter 37, "Automation."*

📄 *For details on inserting and editing controller data for MIDI tracks, see "Continuous Controller Events" on page 539.*

### To set the Track View:

■ Click the Track View selector for the track and select the format from the pop-up menu.

The track displays the new format. If the track is part of an active Edit Group, all tracks in the group are set to the new format.


Click for Track View pop-up menu

*Audio Track View selector*


Click for Track View pop-up menu
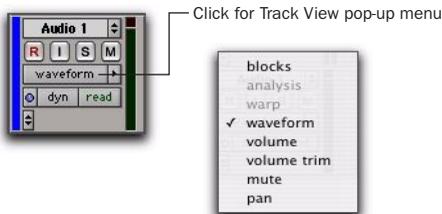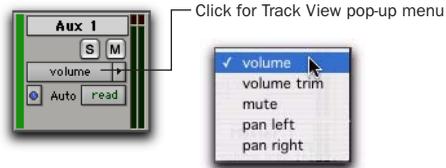
*Auxiliary Track View selector*


Click for Track View pop-up menu
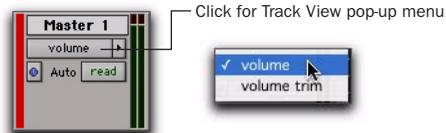
*Master Fader Track View selector*


Click for Track View pop-up menu
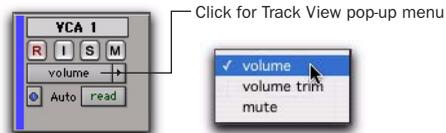
*VCA Master Track View selector (Pro Tools HD only)*


Click for Track View pop-up menu

*MIDI Track View selector*

Click for Track View pop-up menu
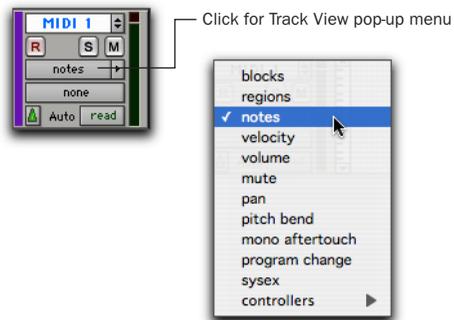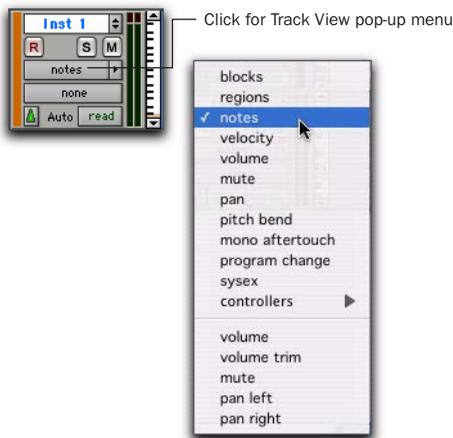
*Instrument Track View selector*

## Changing Track Views

For audio, Auxiliary Input, MIDI, and Instrument tracks, you can change to the next or previous Track View, or toggle between pre-defined common views.

### Changing to Previous or Next Track View

When changing to the next or previous Track View, Track View list ordering is maintained as shown in the Track View selector.

⚠ *Track Views at the beginning of the list (such as Blocks for audio or MIDI tracks) cannot be changed to the previous Track View. Tracks Views at the end of the list (such as a MIDI controllers option) cannot be changed to the next Track View.*

### To change to the previous or next Track View:

**1** Click in the track you want to change. To change views on multiple tracks, Shift-click or drag the Selector tool to select additional tracks, or select a group.

**2** Do one of the following:

- To change to the previous or next Track View on all selected tracks, press Control+Start (Windows) or Control+Command (Mac) and the Left or Right Arrow key.

– or –

- To change to the previous or next Track View on all tracks, press Control+Alt+Start (Windows) or Control+Option+Command (Mac) and the Left or Right Arrow key.

### Toggling Common Track Views

The most common editing view for audio tracks are Waveform and Volume View. The most common editing views for MIDI and Instrument tracks are Notes and Regions View. Pro Tools provides an easy way to toggle these views.

### To toggle Track Views on tracks containing the edit cursor (or an Edit selection):

**1** Click in the track you want to toggle. To toggle multiple tracks, Shift-click or click and drag with the Selector tool to select additional tracks.

**2** Do one of the following:

• Press Start+Minus (Windows) or Control+Minus (Mac) on the QWERTY keyboard.

☰ *To toggle Track Views for all tracks, press Alt+Start+Minus (Windows) or Option+Control+Minus (Mac) on the QWERTY keyboard.*

– or –

• With Commands Keyboard Focus enabled (see "Keyboard Focus" on page 20), press Minus on the QWERTY keyboard.

☰ *To toggle Track Views for all tracks with Command Focus enabled, press Alt+Minus (Windows) or Option+Minus (Mac) on the QWERTY keyboard.*

Audio tracks are toggled between Waveform and Volume View. MIDI and Instrument tracks are toggled between Notes and Regions View.

### Master Views for Tracks

Audio, MIDI, and Instrument tracks have Track Views that act as "master." When a track is displayed in its Master View, any edits performed apply to all data in the track. For instance, when an audio track is set to Waveform, copying and pasting affects not just the waveform information, but all of the automation data as well.

The Master View is based on the type of track, as follows:

• Audio tracks: Waveform and Blocks
• MIDI and Instrument tracks: Regions, Blocks, and Notes (when using the Selector tool)

# Track Height

Tracks can be viewed in the Edit window at any of eight heights: *Micro, Mini, Small, Medium, Large, Jumbo, Extreme* and *Fit To Window.* Larger track heights are particularly useful for precise editing, especially for MIDI. Smaller track heights are useful for conserving screen space in a large session.

You can adjust track heights on an individual track basis or set all tracks to the same height. Track heights can be changed during playback.

**To set the Track Height, do one of the following:**

■ Click the small arrow next to the Track View selector to get the Track Height pop-up menu.
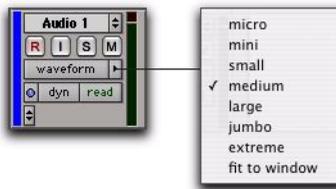


*Track Height pop-up menu*

– or –

■ Right-click on the vertical zoom scale just to the right of the track controls and choose the height from the pop-up menu.

The track is resized to the new height. If the track is part of an Edit Group, all tracks in the group are set to the new height.

☰ *Press Start+Up/Down Arrow key (Windows) or Control+Up/Down Arrow key (Mac) to increase/decrease track height of any track that contains a selection or in which the edit cursor is currently placed.*

## Expanded Track Display

Stereo and multichannel tracks share a single playlist for volume and mute. This shared playlist normally occupies the entire height of the track, extending across all channels.
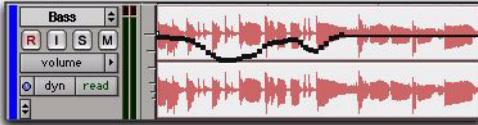


*Volume playlist for stereo track*

With Expanded Track Display, you can display playlists individually for each channel, thereby allowing for more accurate breakpoint editing. This is also useful for editing pan or multi-mono plug-in data, both of which can be different for each channel.
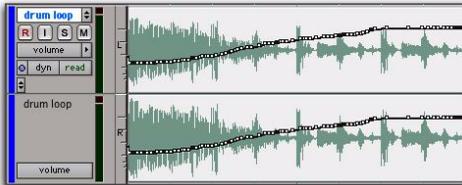


*Stereo track in Expanded Track Display*

Expanded Track Display also provides for a larger waveform display (equal to mono tracks), as well as a separate Track View selector and meter for each channel.

**To turn on Expanded Track Display:**

■ From the Track Height selector, click Expanded Track Display.



*Track Height pop-up menu*

## Track Controls and Track Height

The Track Height affects how the various track controls appear in the Edit window. For instance, when a track's height is set to Small, most of the buttons are reduced in size.



*Track Height set to Small*

When the Track Height is set to Mini or Micro, only controls for Record, Solo, and Mute appear, and the menus for Playlist, Track Timebase, Track Height, and Track View are accessed from the same selector.



*Track Height set to Mini*

When the Track Height is set to Large, Jumbo, or Extreme, all track controls are displayed at their full size.



*Track Height set to Large*

## Continuously Variable Track Height

In the Edit window, you can continuously resize the Track Height of any given track by simply clicking and dragging the lower boundary of the Track Controls column.

**To resize the Track Height of any track in the Edit window:**

■ Click and drag the bottom line of any given track's Track Controls column up or down. The cursor changes to indicate that you can resize the track.

The track's Track Height changes incrementally.



*Adjusting the Track Height of an audio track*

🔲 *Press and hold Control (Windows) or Command (Mac) while adjusting track height for continuous, non-incremental adjustments.*

🔲 *To continuously resize all tracks, Alt-click (Windows) or Option-click (Mac) and drag.*

🔲 *To continuously resize all selected tracks, Alt-Shift-click (Windows) or Option-Shift-click (Mac) and drag.*

# The Track List

The Track List (at the left of both the Mix and Edit windows) shows all tracks in the session. It allows you to show or hide a track in the Mix and Edit windows, by selecting or deselecting its name. Even though a track is hidden, the material on the track will still play as part of the session. Inactive tracks appear in italics in the Track List.

💡 *The Track List can also be used to create new tracks when importing media from DigiBase. See "Importing Files with Drag and Drop" on page 256.*
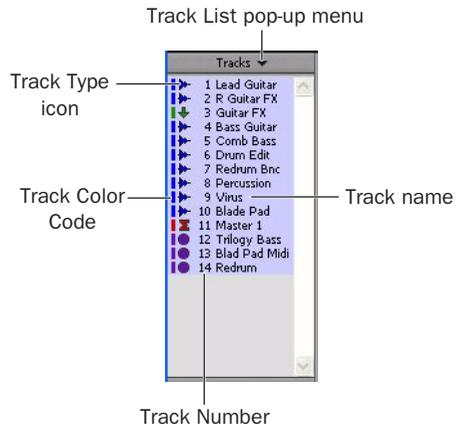


*Track List*

## Show/Hide Track List/Group List View Button

**To show (or hide) the Track List (and Group List):**

■ Click the Show/Hide Track List/Group List View button in the Mix or Edit window.
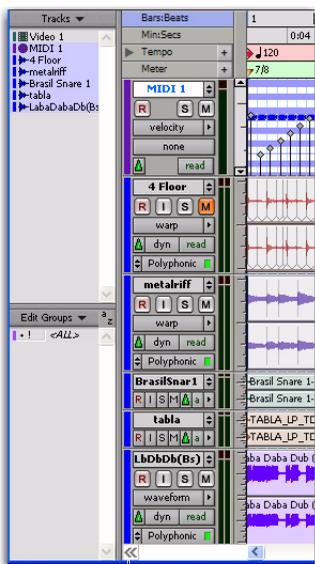
Show/Hide Track List/Group List View

*Track List shown in Edit Window*

## Track List Pop-Up Menu

The pop-up menu at the top of the Track List provides commands that allow you to show or hide all tracks, tracks currently selected on-screen, or specific types of tracks (audio, Auxiliary Input, Master Fader, MIDI, Instrument, VCA Master, or Inactive tracks).



*Show Only option*

The Sort Tracks By command allows you to set the track order according to Name, Type, Edit Group, Mix Group, or Voice. The sort order will be reflected in the Track List in the Mix or Edit Window.



*Sort Tracks By option*

When a track that is a member of an active group is hidden from view, editing operations performed on other members of the group in the Edit window will not affect the hidden track. In the Mix window, however, all operations other than record-enable will affect a hidden track that is a member of an active group.

⚠️ *With Pro Tools HD, even if a track is hidden from view, its position relative to other tracks still affects its voiceable track playback priority (see "Voice Borrowing" on page 164 for details).*

**To hide a track, do one of the following:**

■ Click the highlighted name of the track in the Track List.

– or –

■ In the Track List, or Mix or Edit window, Right-click the track name and select Hide (or Hide and Make Inactive if the track is active and you also want to make the track inactive).

**To show a track that is currently hidden, do one of the following:**

■ Click the unhighlighted name of the track in the Track List.

– or –

■ In the Track List, or Mix or Edit window, Right-click the track name and select Show (or Show and Make Active if the track is active and you also want to make it active).

**To show all tracks:**

■ Click the Track List pop-up menu and choose Show All Tracks.

☒ *You can also show all tracks by Alt-clicking (Windows) or Option-clicking (Mac) the name of any track that is unhighlighted.*

**To hide all tracks:**

■ Click the Track List pop-up menu and choose Hide All Tracks.

☒ *You can also hide all tracks by Alt-clicking (Windows) or Option-clicking (Mac) the name of any track that is highlighted, or by clicking on a track symbol to the left of any highlighted track name.*

🔆 *To reorder tracks on-screen, drag the track names to new positions within the Track List or in the Mix or Edit window.*

**To show a range of tracks:**

**1** Click the name of an unhighlighted track name in the Track List.

**2** Shift-click an additional track name.

All track names that occur between the first track name selected and the additional track name will also be selected.

🔆 *You can also select a range of tracks by moving the cursor to the left of the track names, so the Marquee appears, and dragging around the track names you want to select.*

**To show or hide a range of tracks in the Track List with the Marquee:**

**1** Press and hold Control (Windows) or Command (Mac).

**2** Move the cursor to the left of a track name until the Marquee with a small "+" symbol appears.

- To show tracks, the Marquee should be to the left of an unhighlighted track name.
- To hide tracks, the Marquee should be to the left of a highlighted track name.

**3** Click on the track name and drag up or down (to show or hide the track and the tracks immediately above or below it).

**To show or hide non-contiguous tracks, do one of the following:**

■ Click track names that are unhighlighted to select them.

– or –

■ Click track names that are highlighted to de-select them.

## About Mix/Edit Groups and Hidden Tracks

In the Mix window, if a hidden track is part of an enabled group, all Mix window operations performed on other members of the group *also affect the hidden track*—with the exception of audio or MIDI record-enabling. If you solo, mute, or automation write-enable a grouped track, any group members that are hidden are soloed, muted, or automation write-enabled as well.

In the Edit window, however, editing operations performed on members of an enabled group do *not* affect hidden tracks that are also members of the enabled group.

## About Clipping and the Track List

### (Pro Tools HD Only)

When a track, send, or plug-in clips, the Track List displays the track's name in red. Both shown and hidden tracks display clipping indication.

## About Track Numbering and Hidden Tracks

In the Mix and Edit windows, Track Position Numbers can include hidden tracks in their numbering sequence, or ignore them, as follows:

• Numbers are only assigned to tracks that are shown (when Track Position Numbers Stay with Hidden Tracks is not enabled in the Display Preferences page). In this case, active tracks are then numbered sequentially. Hidden tracks are un-numbered.

– or –

• Tracks keep their Track Position Numbers even when hidden (when Track Position Numbers Stay With Hidden Tracks is enabled in the Display Preferences page).

# Track Name Right-Click Pop-Up Menus

## (Edit Window, Mix Window, or Track List)

When you Right-click a track name in the Edit window, Mix window, or the Track List, a pop-up menu provides access to the following commands:

**Hide/Show** Hides (or shows) the track (or selected tracks if any).

**Hide and Make Inactive** Hides the track and makes it inactive (or selected tracks if any).

**Make Active/Inactive** Toggles the active status of the track (or all selected tracks in the Mix or Edit window only).

**Scroll Into View** Scrolls the track to the top of the Edit window or to the left of the Mix window.

**Send to Sibelius (MIDI and Instrument Tracks Only)** Exports the MIDI data from one or more MIDI or Instrument tracks and automatically imports that MIDI data into Sibelius (or G7). For more information, see "Send to Sibelius" on page 281.

**Export MIDI (MIDI and Instrument Tracks Only)** Exports the MIDI data from one or more MIDI or Instrument tracks to a standard MIDI file. For more information, see "Exporting MIDI Files" on page 279.

**Coalesce VCA Master Automation (Pro Tools HD Only)** Coalesces the VCA automation to the slave tracks of the VCA.

**Coalesce Trim Automation (Pro Tools HD Only)** Coalesces Trim automation on the track (or selected tracks if any).

**Clear Trim Automation (Pro Tools HD Only)** Clears Trim automation on the track (or selected tracks if any).

**Locked (Video Track Only)** Toggles the locked/unlocked status of the video track (or selected video tracks if any).

**Rename** Opens the Track Name dialog.

**Duplicate** Duplicates the track (or selected tracks if any).

**Split Into Mono (Multichannel Tracks Only)** Splits a multichannel track (or selected multichannel tracks if any) into their mono component tracks.

**Delete** Deletes the track (or selected tracks if any).

**Expand to New Tracks** Expands multichannel audio files imported from a field recorder to new tracks, such that every channel resides on its own mono audio track. Pro Tools also automatically conforms all expanded tracks to the edits in the guide (expanded) track. You can expand multichannel files to new tracks ordered by channel name, by channel number, or by channel name and number.

# Assigning Audio Inputs and Outputs to Tracks

Inputs for audio, Auxiliary Input, and Instrument tracks can be assigned to audio interface channels or busses. Outputs for audio, Auxiliary Input, Master Fader, and Instrument tracks can also be assigned to audio interface channels or busses.
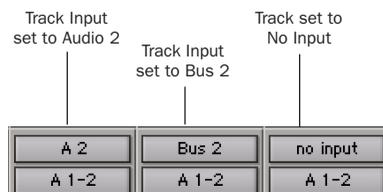


*Input/output assignments for three mono audio tracks*

For stereo and multichannel surround tracks, inputs and outputs appear as stereo pairs and multichannel groups. The available inputs, outputs, and busses are defined as *paths* in the I/O Setup dialog (see Chapter 6, "I/O Setup").

## Automatic Input and Output Assignments

When adding tracks to a new session, inputs are automatically assigned in ascending order. For example, if you have an audio interface with eight inputs, creating four new mono audio tracks will automatically add four audio tracks with inputs assigned to the first four paths defined in the I/O Setup dialog. When creating stereo tracks, inputs are automatically assigned to subsequent input pairs.

The outputs automatically assigned to new tracks are determined by the New Track Default Output specified in the I/O Setup dialog.

## Assigning Audio Inputs

**(Audio Tracks, Auxiliary Inputs, Instrument Tracks)**

⚠ *Instrument tracks route their input automatically to any inserted Instrument plug-in.*

**To assign an audio track input:**

**1** In order to assign audio track inputs in the Edit window, select View > Edit Window > I/O.

**2** In the Mix or Edit window, click the track's Input Path selector and choose from the available audio interface channels and busses. Stereo and multichannel surround tracks have inputs available as pairs and multichannel groups.

The Input Path selector allows you to route any audio input or any of the Pro Tools internal busses to an audio track or an Auxiliary Input track. The choices available in this pop-up menu are determined by the I/O Setup configuration. Inputs in use by another track appear as bold in the selector.
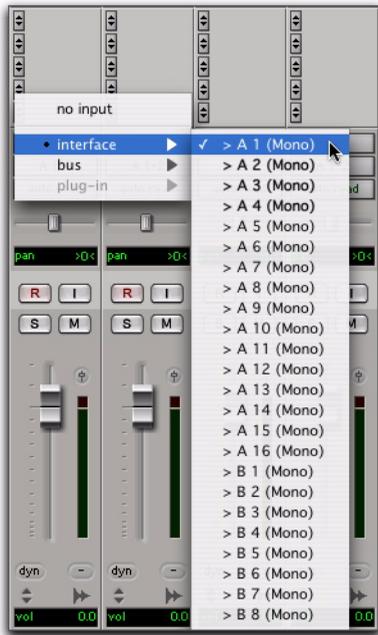


*Input Path selector*

### To remove an input assignment:

▪ Select No Input from the Input Path selector.

## Assigning Audio Outputs

### (Audio Tracks, Auxiliary Inputs, Instrument Tracks, Master Faders)

### To assign an audio track output:

**1** In order to assign audio track outputs in the Edit window, select View > Edit Window > I/O.

**2** In the Mix or Edit window, click the track's Output Path selector and choose from the available audio interface channels and busses. Stereo and multichannel surround tracks have outputs available as pairs and multichannel paths.
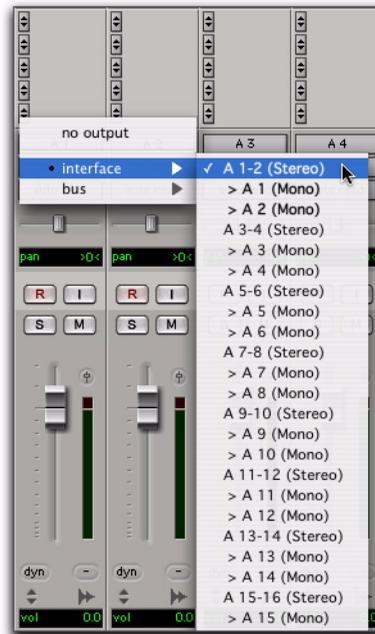


*Output Path selector*

The Output Path selector lets you route a track to any configured audio output or internal bus. The choices available in this pop-up menu are determined by the I/O Setup configuration. Outputs in use by another track appear as bold in the selector.

**To auto-assign all visible tracks to unique mono sub-path outputs in ascending order:**

**1** Make sure you have enough mono sub-paths defined in I/O Setup (see Chapter 6, "I/O Setup").

**2** Control-Alt-click (Windows) or Command-Option-click (Mac) the Output Path selector of the left-most track and assign it to the sub-path for Output #1. All visible tracks will be auto-assigned to unique mono sub-path outputs in ascending order.

**To remove an output assignment:**

▪ Select No Output from the Output Path selector. Playlists become dimmed for tracks with no output assignment.

⚠ *Assigning an audio track, Auxiliary Input, Master Fader, or Instrument track to "No Output" will cause its automation data for pan and plug-in controls to be lost.*

## Renaming Track Inputs and Outputs from the Edit or Mix Window

I/O path names can be renamed in the Edit or Mix windows, or in the I/O Setup dialog.

**To rename an I/O path in the Edit or Mix window:**

**1** In the Edit or Mix window, Right-click the Input selector or Output selector for a track, and choose Rename from the pop-up menu.

**2** In the Rename I/O dialog, enter a name for the I/O Path, and click OK.



*Rename I/O dialog*

## Making Track Inputs and Outputs Inactive from the Edit or Mix Window

Track input, output, and bus path assignments can be made inactive using the corresponding selector on the track. Making a track input or output inactive silences the input or output, while retaining all automation and playlist data. Inactive inputs and outputs do not consume resources for TDM mixer connections, but any assigned plug-ins on the track continue to use their required DSP resources. RTAS plug-ins require CPU resources, and TDM plug-ins use the DSP available on Pro Tools|HD cards.

You can make track inputs and outputs inactive (or active) directly from the Edit or Mix windows. Inactive I/O paths are grayed out.

📖 *You can also make a path globally inactive (or active) in the I/O Setup dialog. See "Making Paths Active or Inactive" on page 61.*

**To make a track's input or output path inactive (or active), do one of the following:**

▪ In the Edit or Mix window, Right-click the Input selector or Output selector for a track, and choose Make Inactive (or Make Active) from the pop-up menu.

– or –

▪ Control-Start-click (Windows) or Command-Control-click (Mac) the Input or Output selector in the Mix or Edit window.

**To make all track inputs or outputs assigned to the same path inactive (or active), do one of the following:**

■ In the Edit or Mix window, Alt-Right-click (Windows) or Option-Right-click (Mac) the Input selector or Output selector for a track, and choose Make Inactive (or Make Active) from the pop-up menu.

– or –

■ Control-Alt-Start-click (Windows) or Command-Option-Control-click (Mac) the Input or Output selector in the Mix or Edit window.

**To make all selected track inputs or outputs assigned to the same path inactive (or active), do one of the following:**

■ In the Edit or Mix window, Alt-Shift-Right-click (Windows) or Option-Shift-Right-click (Mac) the Input selector or Output selector for a track, and choose Make Inactive (or Make Active) from the pop-up menu.

– or –

■ Control-Alt-Start-Shift-click (Windows) or Command-Option-Control-Shift-click (Mac) the Input or Output selector in the Mix or Edit window.

### Toggling Multiple Paths

If a track has only one main output assignment, Control-Start-click (Windows) or Command-Control-click (Mac) the track's Output Path selector to toggle the main output to inactive. When there are multiple assignments, the track selector will be displayed for you to specify the input, output, insert, or bus path.

⚠ *If a Send (A–J) has multiple output assignments and one of those is toggled active or inactive, then all of the output assignments for that Send (A–J) are toggled active or inactive.*

# Track Priority and Voice Assignment

Pro Tools LE systems provide up to 32 voices of simultaneous audio playback and recording, depending on the system. For details on LE system capabilities, see Table 7 on page 30.

Pro Tools|HD systems provide a certain number of voices (simultaneous channels of audio playback and recording), depending on the system. For example, a Pro Tools|HD 1 system can provide up to 96 voices of audio playback and recording, at 44.1 or 48 kHz. For details on Pro Tools system capabilities, see Table 5 on page 27.

Pro Tools LE systems with the DV Toolkit 2 option or the Music Production Toolkit option let you play or record up to 48 simultaneous stereo or mono tracks. For details on system capabilities with these options, see "DV Toolkit 2 and Music Production Toolkit" on page 31.

## Track Priority

While your Pro Tools hardware allows a fixed number of voices, Pro Tools software allows for additional audio tracks beyond that fixed number of voices. While all of these tracks can be recorded to or imported, arranged, and cued for playback, not all of them can be played back simultaneously.

When the number of tracks exceeds the number of available voices, tracks with lower priority may not be heard. For these situations, Pro Tools assigns priorities to tracks that compete for the available voices. Because there can be more tracks than available voices, Pro Tools provides multiple ways of adjusting the playback priority of audio tracks. See "Changing a Track's Playback Priority" on page 162 and "Freeing up Voices on a Track" on page 162.

With Pro Tools|HD systems, you can assign specific voices to multiple tracks such that those voices are shared by more than one track. This feature is called *voice borrowing*. The combination of playback/record tracks and shared voiced tracks comprises the total number of *voiceable tracks* on a Pro Tools|HD system.

To set multiple tracks to the same voice, see "Setting Voice Assignment" on page 162. For additional information on voice borrowing, see"Voice Borrowing" on page 164).

## Changing a Track's Playback Priority

Tracks with higher positions (leftmost in the Mix window or topmost in the Edit window) have priority over tracks in lower positions in a session.

**To increase a track's priority, do any of the following:**

■ In the Mix window, drag the Track Name button to the left of other tracks in the session. Tracks at the left of the Mix window have higher priority than those on the right.

■ In the Edit window, drag the Track Name button above other tracks in the session. Tracks at the top of the Edit window have higher priority than those below.

■ In the Track List, drag the Track Name button to a higher position in the list. Tracks at the top of this list have higher priority than those below.

## Freeing up Voices on a Track

You can also adjust the relative priority of tracks by freeing up the voices of individual tracks, making them available to other tracks in the session.

**To free up the voice of a track, do one of the following:**

■ Click the Voice selector of the track and set it to Off. See "Setting Voice Assignment" on page 162.

■ Deactivate the track by Control-Start-clicking (Windows) or Command-Control-clicking (Mac) its track type icon in the Mix window.

■ Make sure the track does not have an output or send assignment.

■ With Pro Tools HD, you can temporarily free a track's voice during playback by muting it (see "Mute Frees Assigned Voice" on page 171).

## Setting Voice Assignment

A track's voice assignment can be turned off or set to be dynamically allocated, and with Pro Tools HD, can also be explicitly assigned to a specific voice number.

On all Pro Tools systems, you can use Dynamically Allocated Voicing to automatically take care of voice management in the background, assigning voices not in use by other tracks.

▲ *Pro Tools LE supports Dynamically Allocated Voicing only; it does not support explicit voice assignments.*

With Pro Tools HD, tracks assigned to a specific voice number take priority over dynamically allocated tracks and support voice borrowing (see "Voice Borrowing" on page 164). To ensure a track is heard, or that it is available for Quick-Punch, TrackPunch, or DestructivePunch recording, assign an explicit voice to that track.

⚠ *With Pro Tools HD, QuickPunch, Track-Punch, and DestructivePunch require additional voices. For more information, see Chapter 20, "Advanced Punch Recording."*

⚠ *With Pro Tools HD, the initial insert of an RTAS plug-in uses additional voices in certain situations. See "Voice Usage and Total Latency for RTAS Plug-ins" on page 753.*

For stereo and multichannel tracks, voices appear in pairs and multichannel groups. Voices already explicitly assigned to another track appear in bold in the Voice selector pop-up menu.

⚠ *With Pro Tools HD, you can preview audio files in DigiBase browsers during session playback. This requires additional playback voices. For more information, see "Reserve Voices for Preview in Context" on page 230.*

**To set the voice assignment for a track:**

■ Click the Voice selector and set the track to Dyn, Off, or select a voice number (Pro Tools HD only).
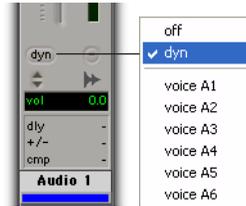


*Voice selector for stereo audio track (Pro Tools HD shown)*

⚠ *Elastic Audio and RTAS plug-ins are disallowed on explicitly voiced tracks (Pro Tools HD only). Use Dynamically Allocated Voicing for tracks on which you want to use Elastic Audio or RTAS plug-ins.*

**Voice Assignment with Toolkit Options**

**(Pro Tools LE with DV Toolkit 2 or Music Production Toolkit)**

Pro Tools LE systems with the DV Toolkit 2 option or the Music Production Toolkit option let you play or record up to 48 simultaneous stereo or mono tracks. Higher track counts are only supported with multiple hard drives and faster Digidesign-qualified systems.

The first 48 audio tracks that are active *and* have their voice assignment set to DYN (Dynamically Allocated Voicing) play back. Tracks which occur after these 48 tracks do not play back and cannot be recorded on. Their Dynamically Allocated Voicing button will be blue to indicate they are unavailable for playback or record.

⚠ *Tracks do not play back when they are inactive or their voice assignment is set to Off.*

When working with more than 48 audio tracks, you can play back audio in tracks 49 and higher by changing the higher track's priority, as follows:

- Make a lower track inactive (click the Track Name and select Track > Make Inactive).
- Set the voice assignment in a lower track to Off (click the Voice selector and select Off).
- Drag the Track Name button of the higher track to the left (Mix window) or upwards (in the Edit window or Track List) until it is one of the first 48 audio tracks. The previous 48th audio track will become the 49th audio track and its voice assignment will change to Off.

If the original track 49 (or higher) had its voice assignment set to Off, it automatically resets to DYN when you do any of the above steps.

### Automatic Assignment of Ascending Voices (Pro Tools HD Only)

You can automatically assign all tracks or all selected tracks to successive voices. For example, you may want to select eight audio tracks and reassign them to voices 9–16.

#### To assign all audio tracks to successive voices:

■ While pressing Control+Alt (Windows) or Command+Option (Mac), select the starting voice number from the Voice selector for the track at the far left of the Mix window, or at the top of the Edit window.

The voice is assigned to the first track, with successive voices assigned to tracks (with the same format) of lower priority.

#### To assign all selected audio tracks to successive voices:

1 Select the audio tracks by Control-clicking (Windows) or Command-clicking (Mac) their names.

☐ *To select multiple tracks, Control-click (Windows) or Command-click (Mac) additional Track Names.*

*To select a range of tracks, Shift-click additional Track Names.*

2 While pressing Control+Alt+Shift (Windows) or Command+Option+Shift (Mac), select the starting voice number from the Voice selector for the left (Mix window) or top (Edit window) selected track.

The voice is assigned to the starting track, with successive voices assigned to currently selected tracks (with the same format) of lower priority.

### Voice Borrowing (Pro Tools HD Only)

Pro Tools HD features *voice borrowing*, which lets you assign more than one track to the same voice. The track with the highest priority takes over that voice, but when a hole opens up in the higher-priority track, its shared voice is temporarily available, and the track with the next highest priority "pops through" and begins to play. When the original track returns, the track that had popped through relinquishes the shared voice to the higher priority track.

The following example demonstrates the concept of voice borrowing:
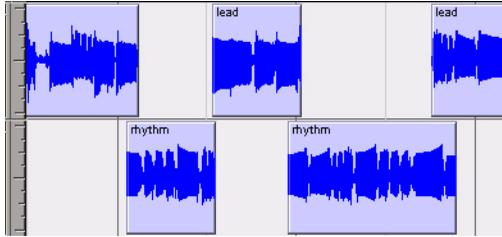


*Figure 7. "Rhythm" regions play only when there is no "Lead" region*

In Figure 7 above, the two visible tracks are assigned to the same voice. There is an open area in the top track where no region appears. At this point, the voice is free since it is not being used, and the next highest priority track assigned to that voice (the bottom track) pops through the open area and plays.

By experimenting with track priority, voice assignment, and arranging regions so that they are positioned to "pop through" holes in higher priority tracks, you can find many useful ways to maximize voiceable tracks with Pro Tools HD.

# Assigning MIDI Inputs and Outputs to Tracks

MIDI recording and playback is supported with MIDI tracks and Instrument tracks.

## Assigning MIDI Track Input

Pro Tools lets you assign specific MIDI ports and channels to a MIDI track input. The default selection of All receives all incoming MIDI data from all ports on all channels. Use the MIDI Input selector to specify a MIDI port and channel for input.

📄 *For information on assigning MIDI input to Instrument tracks, see "Assigning MIDI Input and Output for Instrument Tracks" on page 166.*

**To assign a MIDI track input:**

▪ Click the track's MIDI Input selector and assign a port and channel for MIDI input. Channels already assigned to another track appear in bold.

💡 *In the Edit window, select View > Edit Window > I/O to access any track's Input selector.*
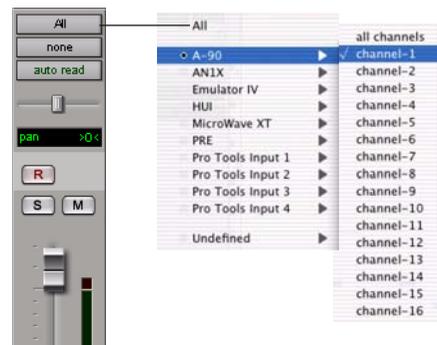


*MIDI Input selector (MIDI Track shown)*

## Assigning MIDI Track Output

Pro Tools lets you assign specific MIDI ports and channels to a MIDI track output. The default selection of none sends MIDI data to no port on any channel. Use the MIDI Output selector to specify a MIDI port and channel for output.

⚠️ *MIDI tracks in Pro Tools cannot contain multiple channels of MIDI data.*

📖 *For information on assigning MIDI output to Instrument tracks, see "Assigning MIDI Input and Output for Instrument Tracks" on page 166.*

**To assign a MIDI track (and all its regions) to a specific MIDI device channel:**

■ Click the track's MIDI Output selector and assign a port and channel for MIDI output. Channels already assigned to another track appear in bold.

💡 *In the Edit window, select View > Edit Window > I/O to access any track's Output selector.*
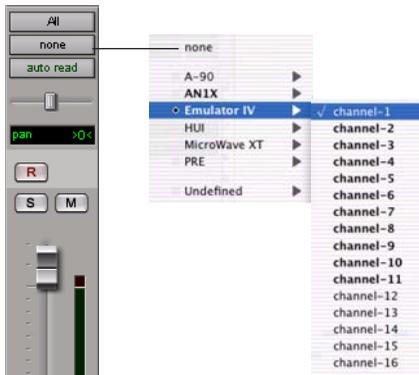


**MIDI Output selector (MIDI track shown)**

**To assign multiple destinations to a single MIDI track:**

■ Right-click (Windows) or Control-click (Mac) the MIDI Output selector and select additional channels from any device.

📖 *For information on recording and importing MIDI data, see Chapter 19, "MIDI Recording."*

## Assigning MIDI Input and Output for Instrument Tracks

Instrument tracks have a specific view for MIDI controls, including MIDI Input and Output selectors.

**To view Instrument track MIDI controls, do one of the following:**

■ Select View > Mix Window > Instruments.

 – or –

■ Select View > Edit Window > Instruments.
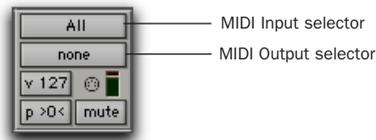


*Instruments View*

## Instrument Track MIDI Input

Pro Tools lets you assign specific MIDI ports and channels to an Instrument tracks' MIDI input. The default selection of All receives all incoming MIDI data from all ports on all channels. Use the MIDI Input selector to specify a MIDI port and channel for input.

Channels in use by another track input appear bold in the MIDI Input pop-up menu.

### To assign an Instrument track MIDI input:

▪ Click the track's MIDI Input selector and assign a port and channel for MIDI input. Channels already assigned to another track appear in bold.

## Instrument Track MIDI Output

Pro Tools lets you assign specific MIDI ports and channels to an Instrument tracks' MIDI output. The default selection of none sends MIDI data to no device, port, or node on any channel. Use the MIDI Output selector to specify a MIDI port and channel for output.

Channels in use by another track input appear as bold in the MIDI Input pop-up menu.

### To assign an Instrument track MIDI output:

▪ Click the track's MIDI Output selector and assign a port and channel for MIDI output. Channels already assigned to another track appear in bold.

## Inserting Instrument Plug-ins on Instrument Tracks

### To insert an instrument plug-in on an Instrument track:

▪ Click the Insert selector on the Instrument track and select the instrument plug-in that you want to use.

A MIDI node (virtual MIDI port) is automatically created and assigned the track's MIDI output.
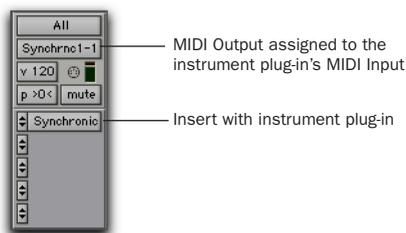


*Instrument track with an instrument plug-in (Digidesign Synchronic shown)*

📖 *For information on monitoring Instrument plug-ins, see the "Monitoring and Mixing Audio with Instrument Tracks" on page 735. Also, refer to the manufacturer's documentation for your instrument plug-in.*

## Soloing and Muting Tracks

The Solo and Mute buttons can be engaged at any time during playback. The Solo and Mute buttons affect MIDI as well as audio tracks. It is possible to have more than one track soloed or muted at the same time in a session.

💡 *Instrument tracks have separate sets of Solo and Mute buttons for MIDI and audio monitoring.*

Track grouping also affects mute and solo behavior. Muting or soloing a track that is a member of an active Mix Group will mute or solo all other tracks that are a member of that active Mix Group as well.

📄 *For information on creating and modifying groups for track soloing and muting, see "Grouping Tracks" on page 175.*

## Solo Button

The Solo button normally mutes other tracks so that the selected track can be auditioned independently.

With Pro Tools HD, this behavior is selected as a Solo mode, called "Solo In Place." Additional Solo modes are provided to change how the Solo button works. See "Solo Modes" on page 168.

**To solo tracks:**

**1** Click the Solo button on a track. The button is highlighted and all other tracks are muted.

**2** Click the Solo button on another track. The buttons for both tracks are highlighted and all other tracks are muted.

**To un-solo tracks:**

▪ Click the Solo button on soloed tracks.

### Solo Modes

#### (Pro Tools HD Only)

With Pro Tools HD, the Solo button can be used to:

- Mute other tracks so that the chosen track can be auditioned alone.

– or –

- Route a chosen track to a separate output.

Solo button behavior is defined by the Solo mode, as follows:

**SIP (Solo In Place)** The Solo button mutes other tracks. When this mode is enabled, tracks can be solo safed (see "Solo Safe Mode" on page 170).

**AFL (After Fader Listen)** The Solo button routes the track's post-fader/post-pan signal to the AFL/PFL Path output. The AFL/PFL Path is configured in the Output page of the I/O Setup dialog (see "AFL/PFL Path" on page 68).

With AFL, the level you hear is dependent on the fader level for that track. Additionally, there is a separate master level setting for AFL that affects the output of any or all tracks you solo in AFL mode (see "AFL/PFL Path" on page 68). This level setting is independent of the PFL level setting.

⚠ *AFL and PFL Solo modes require the Surround Mixer plug-in (see the Pro Tools|HD Getting Started Guide).*

**PFL (Pre Fader Listen)** The Solo button routes the track's pre-fader/pre-pan signal to the AFL/PFL Path output. The AFL/PFL Path is configured in the Output page of the I/O Setup dialog (see "AFL/PFL Path" on page 68).

With PFL, the fader level and pan are ignored, and the level you hear is dependent on the signal's recorded level. Additionally, there is a separate master level setting for PFL that affects the output of any or all tracks you solo in PFL mode (see "AFL/PFL Path" on page 68). This level setting is independent of the AFL level setting.

⚠ *AFL and PFL Solo modes require the Surround Mixer plug-in.*

⚠ *If Mutes Frees Assigned Voice is enabled, muted tracks will not be audible in PFL mode.*

**To select a Solo mode:**

**1** Choose Options > Solo Mode.

**2** Select SIP, AFL, or PFL.

💡 *The Solo mode for all soloed tracks can be changed "on-the-fly" from any Solo mode to either SIP or AFL. Previously soloed tracks will switch their solo behavior to the new mode.*

*Switching the Solo mode for all soloed tracks "on-the-fly" to PFL clears all previously soloed tracks before entering PFL mode. This prevents potentially large boosts in level.*

### DSP Usage when Using AFL or PFL Mode

AFL and PFL are accomplished by Pro Tools creating a "behind the scenes" mixer to route the signal to the chosen AFL/PFL Path. Depending on the size of your main mixer, Pro Tools will devote a substantial portion of its available DSP when using AFL/PFL mode.

Un-declaring the AFL/PFL Path will free up all DSP resources previously used for AFL/PFL mode.

### Using AFL/PFL on Pro Tools Systems with a D-Control or D-Command

AFL/PFL is optimized for Pro Tools systems using a D-Control or D-Command control surface, where the XMON automatically switches its monitor source between the main output and the AFL/PFL output from Pro Tools.

📖 *For more information on using XMON and AFL/PFL, see your control surface guide.*

### Using AFL/PFL on Pro Tools Systems without D-Control or D-Command

If you are not using a D-Control or D-Command control surface, your regular Pro Tools output path is not necessarily muted when you send a signal to the AFL/PFL Path. If you need the main signal to automatically mute when an AFL/PFL signal is invoked, you need to do the following:

**1** Configure the output path for AFL or PFL soloed tracks.

**2** Select the main output path that will mute when you solo a track in AFL or PFL mode (see "AFL/PFL Mutes (Output Path) Selector" on page 69).

**3** Set up your hardware to monitor both the main and AFL/PFL paths simultaneously.

When AFL or PFL is selected as a Solo mode and a track is soloed, the main output path will mute and the AFL/PFL signal will appear at the AFL/PFL Path for monitoring.

### Solo Latch Options

Solos can be *latched* (where pressing subsequent buttons adds them to the soloed mix of tracks), unlatched, or temporarily latched (Pro Tools HD only).

**To select a Solo Latch mode:**

■ Choose Options > Solo Mode and select from the following options:

**Latch** When selected, pressing subsequent Solo buttons adds them to the soloed mix of tracks.

**X–OR (Cancels Previous Solos)** When selected, pressing subsequent Solo buttons cancels previous solos.

💡 *To override X–OR mode and solo more than one track at a time, press and hold the Solo button on the first track. Subsequently pressed Solo buttons will latch.*

**Momentary (Pro Tools HD Only)** When selected, Solo buttons are not sticky. A track is soloed only when its Solo switch is held down.

With a Digidesign-qualified control surface, additional tracks can be soloed by pressing their Solo switches (as long as at least one Solo button is held down). When no Solo switch is held down, all soloed tracks will unsolo.

**Temporarily Latching Solos in Momentary Solo Mode**

**(Pro Tools HD Only)**

**To temporarily latch solos:**

**1** Choose Options > Solo Mode > Momentary.

**2** Press and hold the Solo button on the first track that will be soloed.

**3** While still holding the first Solo button, press additional Solo buttons. Solo buttons will remain soloed as long as one Solo button is held.

💡 *As long as at least one Solo button is held down, all the solos will remain latched.*

## Solo Safe Mode

Pro Tools lets you *solo safe* a track. This prevents the track from being muted even if you solo other tracks. This feature is useful for tracks such as Auxiliary Inputs that are being used as a sub-mix of audio tracks, or effects returns, allowing the audio or effects track to remain in a mix even when other tracks are soloed. It is also useful to solo safe MIDI tracks so that their playback is not affected when you solo audio tracks.

⚠ *AFL or PFL soloed tracks (Pro Tools HD only) cannot be solo safed.*

**To solo safe a track:**

■ Control-click (Windows) or Command-click (Mac) the Solo button on the track. This prevents the track from being muted even if you solo other tracks. The Solo button changes to a transparent color in Solo Safe mode.

**To return a solo safe track to normal:**

■ Control-click (Windows) or Command-click (Mac) the Solo button on the track again.

## Mute Button

The Mute button silences a chosen track. More than one track can be muted at one time. If Options > Mute Frees Assigned Voice (Pro Tools HD only) is enabled, muting a track will allocate its voice to the next highest priority voiceable track (assigned to the same voice).

**To mute a track:**

■ Click the Mute button on the track. The track is grayed-out and muted.

**To unmute a track:**

■ Click the Mute button again.

## Mute Frees Assigned Voice

### (Pro Tools HD Only)

Selecting Options > Mute Frees Assigned Voice and muting a track disables playback of that track, and surrenders control of its voice to the next highest priority track with the same voice assignment.

⚠ *Muting a track with Mute Frees Assigned Voice enabled does not free up the voice for QuickPunch, TrackPunch, or Destructive-Punch recording.*

With this option enabled, there may be a delay (ranging in length from one to several seconds depending on the processing power of your system) between the time you mute or unmute a track and when you hear the effect on playback.

💡 *Larger DAE Playback Buffer Sizes can also increase the time between clicking the Mute button and the onset of muting. See "DAE Playback Buffer Size" on page 40.*

## MIDI Mute

The Mute button on a MIDI track mutes MIDI data, not audio. Muting MIDI results in no MIDI data being passed to the MIDI output. On Instrument tracks, the track's Mute button mutes the audio signal and the MIDI Mute button is only available in Instruments view.


MIDI Mute button

*Instruments View*

## Making Tracks Inactive

Audio, Auxiliary Input, Master Fader, VCA Master (Pro Tools HD only), and Instrument tracks can be made inactive. Inactive tracks use no DSP or voices. Plug-ins, sends, voices, and automation on inactive tracks are all disabled. Tracks may also be automatically made inactive if a session is opened on a system with less DSP power than the system that it was created on.

⚠ *MIDI tracks cannot be made inactive.*

**To toggle a track active/inactive:**

▪ Control-Start-click (Windows) or Command-Control-click (Mac) the Track Type indicator in the Mix window.

Playlists for inactive tracks are dimmed and track controls are grayed out.

**To make one or more tracks inactive or active, do one of the following:**

▪ Select the track and choose Make Inactive/Active.

– or –

▪ Right-click the Track Name in the Track List, or Mix or Edit windows and choose Make Inactive/Active.

🔲 *To select multiple tracks, Control-click (Windows) or Command-click (Mac) additional Track Names.*

*To select a range of tracks, Shift-click the Track Name bounding the range of tracks you want selected.*

# Color Coding for Tracks, Regions, Markers, and Groups

Separate colors can be assigned to audio and MIDI regions, tracks, markers, and groups. Regions shown in Waveform and Block Views in the Edit window are drawn in color. Tracks shown in the Track List, Group List, and Mix and Edit windows have associated color bars.

## Color Bars

Color coding at the track level is displayed using color bars, as follows:

**Mix Window** Track colors are displayed in horizontal color bars that appear above each channel strip, and below the track name.

**Edit Window** Track colors are displayed in vertical color bars that appear to the left of each track.

**Track List** Track colors are displayed in vertical color bars that appear to the left of each track name.

**Group List** Track colors are displayed in vertical color bars that appear to the left of each Group Name.

Default colors are automatically assigned to tracks, but you can override those colors by choosing from a color palette of 96 possible colors. For more information, see "Color Palette" on page 174.

# Display Page Preferences for Color Coding

Color Coding options determine how colors are assigned to the display of tracks and regions.

**To change Color Coding options:**

**1** Choose Setup > Preferences.

**2** Click Display.

**3** Select or deselect the Always Display Marker Colors option.

**4** Select a Default Track Color Coding option.

**5** Select a Default Region Color Coding option.

**6** Click OK.

## Always Display Marker Colors

This setting lets you choose to view Marker colors in the Markers ruler, regardless of the settings you choose for Default Region Color Coding.

## Default Track Color Coding

The Default Track Color Coding options determine how colors are assigned to the display of tracks.



*Default Region Color Coding options*

**None** Turns off default color assignment for tracks.

**Tracks and MIDI Channels** Assigns a color to each track in the Mix or Edit window according to its voice assignment or MIDI channel assignment.

**Tracks and MIDI Devices** Assigns a color to each track in the Mix or Edit window according to its voice assignment or MIDI device assignment.

**Groups** Assigns a color to each track according to its Mix or Edit Group ID. If groups are suspended using the Suspend Groups command, the tracks color bars are not shown.

**Track Type** Assigns a color to each track according to its type (audio, Auxiliary Input, Instrument, MIDI, or Master Fader).

## Default Region Color Coding

The Default Region Color Coding options determine how colors are assigned to the display of tracks, regions in the track playlist and Region List, and Marker Locations.



*Default Region Color Coding options*

**None** Turns off default color assignment for regions. Regions are drawn as black waveforms or black MIDI notes on a light gray background.

**Tracks and MIDI Channels** Assigns a color to each region in the Edit window according to its voice or MIDI channel assignment.

**Tracks and MIDI Devices** Assigns a color to each region in the Edit window according to its voice assignment or MIDI device assignment.

**Groups** Assigns a color to each region according to the Group ID of its track. If groups are suspended (using the Suspend Groups command) all regions display black waveforms or MIDI notes on a light gray background.

**Track Color** Assigns a region color based on the color assigned to the track. (See "Color Palette" on page 174.)

**Marker Locations** Assigns a unique color to each marker area in the Marker ruler, including the area preceding the first marker.

**Region List Color** Assigns a color to each region based on its color in the Region List. When this Default Region Color Coding option is enabled, the assigned region color is maintained even if the region is placed in a track set to a different color coding.

💡 *Enabling any Default Region Color Coding option other than Region List Color will override Region List Color and reassign the parent track color to copies of the region placed in tracks. Copies of the region in the Region List will retain their unique color, if any.*

## Color Palette

The Color Palette lets you make color selections for tracks, regions, groups and markers.
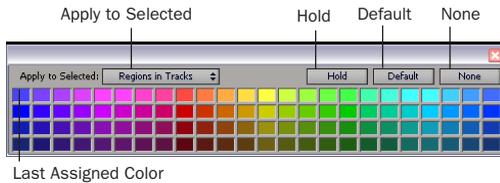


*Color Palette window*

The Color Palette supports independent region color coding in the Region List and in tracks.

**To apply a color from the Color Palette:**

**1** Choose Window > Color Palette.

**2** Do one of the following:

- In the Apply to Selected pop-up menu, select the destination for color coding: Tracks, Marker, Group, Regions in Tracks, or Regions in Region List.

– or –

- Select a track, marker, group, track region, or Region List region in the appropriate Pro Tools window. The Apply to Selected menu will display the type of item you have selected.

*If selecting a marker does not display the Marker option in the Apply to Selected pop-up menu, then the Always Display Marker Colors option in the Display Preferences page is deselected. See "Always Display Marker Colors" on page 172 for more information.*

**3** Select a color from the palette, or select one of the following:

**Default** Removes any custom coloring and restores the color to the default color orientation. See "Display Page Preferences for Color Coding" on page 172 for more information.

**None** Turns off color assignment. Affected regions are drawn with black waveform or MIDI notes on light gray background. Affected tracks and groups no longer show their color bars.

### Using the Hold Button

The Color Palette provides a Hold button to simplify the process of assigning the same colors to multiple items (such as track and regions).

By default, the Hold button is off. When off, the Color Palette automatically highlights the assigned color (if any) of items as you select them.

When the Hold button is enabled, the assigned color selected in the Color Palette persists and does not change when a different track or region is selected.

**To use the Hold button to assign the same color to multiple items:**

**1** Click the Hold button to enable it. The Hold button becomes white, and the currently selected color is now highlighted with a wider white outline.

**2** Select additional tracks or regions to which you want to assign the same color. Because the Hold button is enabled, the Color Palette does not follow item selection; it remains (or "holds") at the last currently assigned color.

**3** Click the assigned color again to assign it to the new selection of tracks or regions. Use the Apply to Selected popup menu to determine which selected elements are affected.

**4** To turn off Hold and return the Color Palette to its default mode, click the Hold button until it turns off.

# Chapter 11: Grouping Tracks

## Grouping Tracks

Pro Tools provides a relative grouping function for linking tracks and their controls.

Groups are useful for editing several tracks in exactly the same way, or for mixing several tracks (such as a pair of stereo tracks or a submix) while keeping them at the same relative volume level.

Pro Tools provides the following grouping features:

- Up to 104 different groups are available, arranged in 4 banks of 26 Group IDs.
- Groups can be nested (subgroups within groups).
- Grouped faders or controllers preserve their levels relative to each other.
- Groups are assignable to an available VCA Master track (Pro Tools HD only).

*You can also group regions into region groups. See "Region Groups" on page 675.*

## Mix Groups, Edit Groups, and Mix/Edit Groups

Mix Groups only affect mixing functions and Edit Groups only affect editing. Mix/Edit Groups link the grouping functions of the Mix Group and the Edit Group.

## Edit Groups

Edit Groups affect the following items in the Edit window:

- Track View
- Track Height
- Track Timebase
- Audio and MIDI editing functions
- Automation editing functions

## Mix Groups in Pro Tools HD

Mix Groups in Pro Tools HD can be set to affect the following items:

- Main Mute
- Solo
- Send Level
- Send Mute
- Main Volume
- Main Pan
- Main LFE Level
- Record Enable
- Input Monitoring
- Automation Mode
- Send Pan
- Send LFE Level
- Plug-in Controls
- Plug-in Bypass

*In Pro Tools HD, when the Main Pan attribute is enabled for groups, grouped behavior applies to the Link, Front inverse, Rear inverse and Front/Rear inverse controls in stereo and multichannel panner windows.*

## Mix Groups in Pro Tools LE

Mix Groups in Pro Tools LE always affect the following:

- Main volume
- Automation mode

Mix Groups in Pro Tools LE can also be set to affect the following:

- Main Mute
- Solo
- Send Level
- Send Mute

## Grouping Limitations

Grouping does not affect these parameters:

- Voice assignment
- Output assignment
- Inserting plug-ins
- Elastic Audio plug-ins

## Selectable Group Attributes

You can select which parameters, or *attributes*, are linked in groups by the following methods:

- By making the group an Edit Group, a Mix Group, or both (Mix/Edit Group)
- With Mix and Mix/Edit Groups, by selecting from a list of attributes for the group
- With Mix Groups in Pro Tools HD only, by choosing whether the selected attributes apply globally to all groups or to individual groups

## Linking Mix and Edit Groupings

The "Link Mix and Edit Group Enables" option links group enabling between the Mix and Edit windows.

Pro Tools allows you to create groups that are *both* Mix and Edit Groups, but in some cases you may prefer not to link enabling of Mix and Edit Groups. For example, when you are using the Mix window for mixing, you may prefer to work with large, nested groups. However, in the Edit window, you may want to perform editing tasks within a smaller group. You could disable the Link Mix and Edit Group Enables preference. This would allow you to work with different groups in the two windows.

### To unlink Mix and Edit Groups:

**1** Choose Setup > Preferences and click the Mixing tab.

**2** Deselect the "Link Mix and Edit Group Enables" option and click OK.

## Mix Groups and VCA Masters
### (Pro Tools HD Only)

An existing Mix Group can be assigned to a VCA Master, or a new Mix Group can be assigned to a VCA Master while it is being created. Only one group can be assigned to a VCA Master at a time. A VCA Master cannot control a group that includes itself.

*For information on assigning groups to VCA Masters, see "Assigning Groups to VCA Masters" on page 717.*

# Group Controls

Menus and commands for creating and modifying groups are accessible in the following:

- Group List
- Group name in the Group List
- Group ID indicator on a track
- Track > Group menu

## The Group List

The Pro Tools track grouping functions are located at the left side of the Mix or Edit window in the Group List. This scrolling window contains the names of all the groups in your session, as well as a pop-up menu for accessing grouping commands. From this menu, you can select and enable groups.

By default, every session has a group named *All*, which includes every track in the session. The *All* group cannot be edited or deleted.
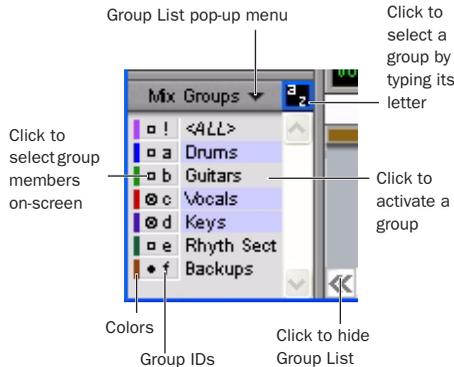


*Group List*

## Show/Hide Track List/Group List View Button

**To show the Group List (and Track List):**

▪ Click the Show/Hide Track List/Group List View button in the Mix or Edit window.
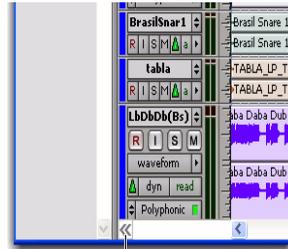


Show/Hide Track List/Group List View
*Edit Group List in Edit Window*

## Group ID

To the left of each name in the Group List is a letter denoting its Group ID ("a" through "z").

## Group Symbols

To the left of each Group ID ("a" through "z") is a symbol indicating whether that group is selected in the current window (either the Mix or Edit window). There are three types of Group symbols, as shown in the following figure:
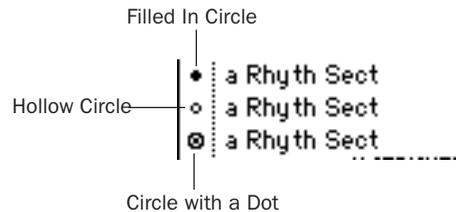


*Groups Symbols*

The Group symbols indicate the following:

**Filled-in Circle** Indicates that all members of the group are currently selected, and no members from outside the group are selected

**Hollow Circle** Indicates that only some members of the group are currently selected

**Circle with a Dot** Indicates that all members of the group are currently selected, plus additional members *outside* the group

### Group List Pop-Up Menu

The pop-up menu at the top of the Group List provides the following commands:

**New Group** Executes Track > Group command

**Display** Provides commands to show Edit groups only, Mix groups only, or all groups (Edit, Mix, and Mix/Edit)

**Suspend All Groups** Suspends group behavior for all Mix and Edit groups

**Modify Groups** Opens Group dialog to modify existing groups only

**Delete Active Groups** Deletes only currently active groups



*Group List pop-up menu*

## Group Name and Track Group ID Indicator Pop-Up Menus

When you click and hold on a group name in the Group List, or click a Group ID indicator in a track, a pop-up menu provides the following commands:

**Tracks** Displays track membership in group

**Attributes** Displays attributes of group

**Modify** Opens Group dialog to modify existing groups only

**Duplicate** Opens Group dialog for duplicated group

**Delete** Deletes a single group

**Select Tracks in Group** Selects tracks in the group

**Show/Hide Tracks in Group** Shows or hides tracks in the current group

**Show Only Tracks in Group** Shows only the tracks in the group and hides all other tracks

**Show All Tracks** Shows all tracks in the session
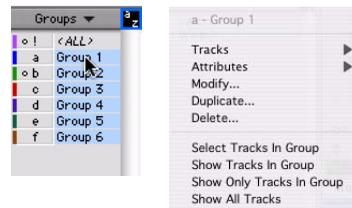


*Group Name pop-up menu*
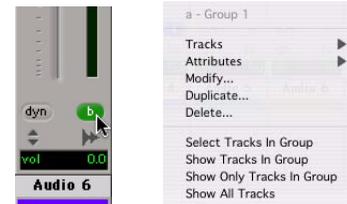


*Group ID indicator pop-up menu*

## Group Dialog

Whether you are creating or modifying groups with the Group List, a tracks's Group ID indicator, or the Track > Group menu command, you will be using the Groups dialog.

The Group dialog lets you create new groups and assign attributes to groups.

### Group Dialog in Pro Tools HD

In Pro Tools HD, the Group dialog has three pages:

**Tracks** Lets you add and remove tracks from the current group.

**Attributes** Lets you select which parameters are linked for the current Mix or Mix/Edit Group.

**Globals** Lets you select parameters to use as a template that can be applied to individual groups by selecting Follow Globals.
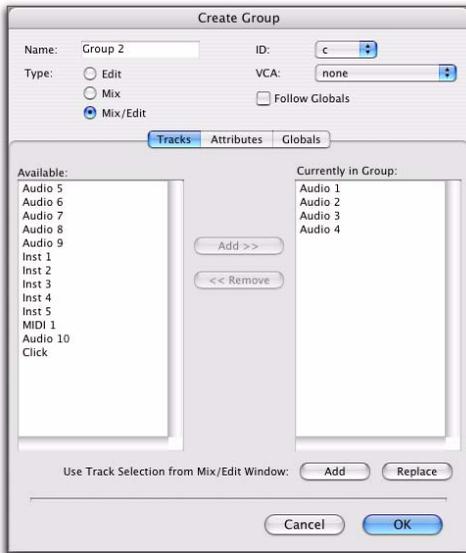


*Group dialog (Pro Tools HD)*

### Group Dialog in Pro Tools LE

In Pro Tools LE, the Group dialog has a single page.
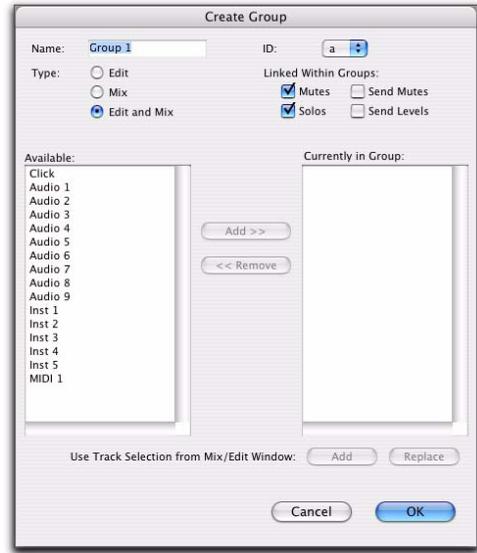


*Group dialog (Pro Tools LE)*

# Working with Groups

## Creating Groups

You can select the tracks you want to add to a group before creating it, or add and remove tracks from a group after it has been created.

### Creating Groups in Pro Tools HD

**To create a group in Pro Tools HD:**

**1** Select the tracks you want to include in the group. (If you do not select tracks at this time, you can add tracks later.)

**2** Do one of the following:

- Choose Track > Group.

– or –

- Choose New Group from the Group List pop-up menu.

**3** Enter a name for the group.

**4** Select the type of group to create: *Edit* Group, *Mix* Group, or *Mix/Edit* Group.



*Selecting a Group Type*

**5** Choose a Group ID from the ID pop-up menu. Four banks of 26 are available: a–z, 2a–z, 3a–z, 4a–z. (If you do not choose a Group ID, Pro Tools automatically assigns the next available ID to a new group.)



*Choosing a Group ID*

**6** Click Tracks in the Group dialog, and do any of the following:

- To add the tracks that are currently selected in the session to the group, click the Add button at the bottom of the Group dialog.
- To add tracks to the group, select the track names in the Available track list, and click Add or press A on the computer keyboard.
- To remove tracks from the group, select the track names in the Currently In Group list, and click Remove or press R on the computer keyboard.
- Double-click track names in either list to move them to the opposite column.
- To replace all tracks in the group with the tracks that are currently selected in the session, click the Replace button at the bottom of the Group dialog.

*Selecting track names to add to a group*

> ⬛ SHIFT  *In either list, Shift-click to select a range of track names. Control-click (Windows) or Command-click (Mac) to select discontiguous track names.*

**7** If the group is a Mix Group or a Mix/Edit Group, do the following:

- Set the Attributes for the Group (see "Setting Group Attributes" on page 185).
- If you want to assign the group to an available VCA, select the VCA track from the VCA pop-up menu.



*Choosing a VCA track to control a group*

**8** Click OK.

## Creating Groups in Pro Tools LE

### To create a group in Pro Tools LE:

**1** Select the tracks you want to include in the group. (If you do not select tracks at this time, you can add tracks later.)

**2** Do one of the following:

- Choose Track > Group.

– or –

- Choose New Group from the Group List pop-up menu.

**3** Enter a name for the group.

**4** Select the type of group to create: *Edit* Group, *Mix* Group, or *Mix/Edit* Group.



*Selecting a Group Type*

**5** Choose a Group ID from the ID pop-up menu. Four banks of 26 are available: a–z, 2a–z, 3a–z, 4a–z. (If you do not choose a Group ID, Pro Tools automatically assigns the next available ID to a new group.)

**6** Do any of the following:

- To add the tracks that are currently selected in the session to the group, click the Add button at the bottom of the Group dialog.

- To add tracks to the group, select the track names in the Available track list, and click Add or press A on the computer keyboard.

- To remove tracks from the group, select the track names in the Currently In Group list, and click Remove or press R on the computer keyboard.

- Double-click track names in either list to move them to the opposite column.

- To replace all tracks in the group with the tracks that are currently selected in the session, click the Replace button at the bottom of the Group dialog.



*Selecting track names to add to a group*

▣ *In either list, Shift-click to select a range of track names. Control-click (Windows) or Command-click (Mac) to select discontiguous track names.*

**7** Select the items to be Linked within Groups (Mutes, Solos, Send Mute, Send Levels).



*Linked Within Groups options (Pro Tools LE)*

**8** Click OK.

## Modifying Groups

**To modify a group:**

**1** Do one of the following:

- Choose Modify Groups from the Group List pop-up menu.

- In the Mix window, click the Group ID indicator on a track and choose Modify from the pop-up menu.

- Right-click the Group name in the Group List and choose Modify from the pop-up menu.
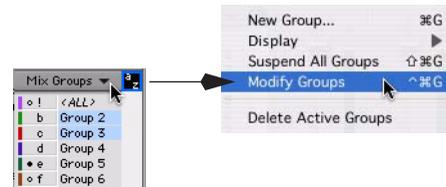


*Group List pop-up menu*

**2** In the Groups dialog, choose the group you want to modify from the ID pop-up menu.

**3** Change any of the following for the current group:

- Group name
- Group type (Edit, Mix or Mix/Edit)
- VCA status (Pro Tools HD only)
- Follows Global status (Pro Tools HD only)
- Track membership
- Attributes (Pro Tools HD only)
- Linked within Group items (Pro Tools LE only)

**4** Click OK.

**To modify the settings for the "All" group in Pro Tools HD:**

**1** Right-click the "All" group name in the Group List and choose Modify from the pop-up menu.
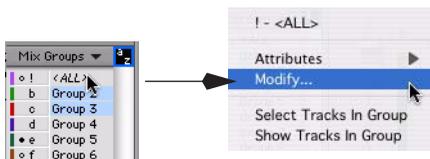


*All Group pop-up menu*

**2** In the Group dialog, select Edit, Mix, or Mix/Edit to change the settings for the ALL group. If you select Edit only or Mix only, the ALL group will apply only to that Group type.
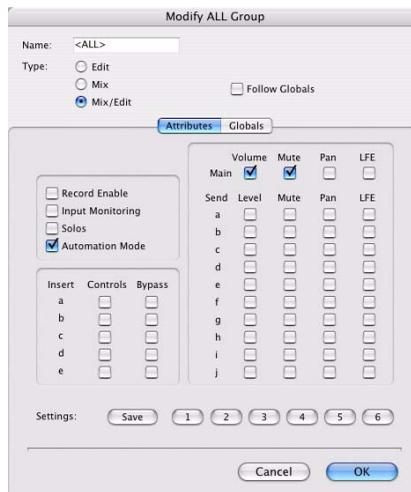


*Modify ALL Group dialog*

**3** For Mix or Mix/Edit Groups, you can change any of the following:

- Follows Global status
- Attributes

**4** Click OK.

**To modify the settings for the "All" group in Pro Tools LE:**

**1** Right-click the "All" group name in the Group List and choose Modify from the pop-up menu.

**2** In the Group dialog, select Edit, Mix, or Mix/Edit to change the settings for the ALL group. If you select Edit only or Mix only, the ALL group will apply only to that Group type.



*Modify ALL Group dialog*

**3** For Mix or Mix/Edit groups, you can change any of the following Linked Within Groups options:

- Mutes
- Solos
- Send Mutes
- Send Levels

**4** Click OK.

## Deleting Groups

One or all groups can be deleted at a time.

⚠ *Deleting a group cannot be undone.*

**To delete a single group, do one of the following:**

▪ In the Mix window, click the Group ID indicator on a track and choose Delete from the pop-up menu.

– or –

▪ Right-click the Group name in the Group List and choose Delete from the pop-up menu.

**To delete all currently active groups**

▪ Choose Delete Active Groups from the Group List pop-up menu.
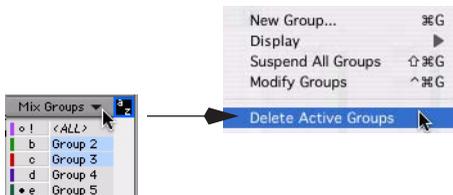


*Group List pop-up menu*

💡 *The ALL group cannot be deleted.*

## Duplicating Groups

You can duplicate a group and modify its settings in order to quickly set up a mix.

**To duplicate a group:**

**1** Do one of the following:

- Click the Group ID indicator on a track and choose Duplicate from the pop-up menu.

– or –

- Right-click the Group name in the Group List and choose Duplicate from the pop-up menu.

**2** Change any of the following for the current group:

- Group name
- Group type (Edit, Mix, or Mix/Edit)
- VCA status (Pro Tools HD only)
- Follows Global status (Pro Tools HD only)
- Track membership
- Attributes (Pro Tools HD only)
- Linked within Group items (Pro Tools LE only)

**3** Click OK.

# Setting Group Attributes

## (Pro Tools HD Only)

When creating a Mix Group or a Mix/Edit Group, you can select the Mix window parameters that will be linked for that group. These linked parameters are the *attributes* of the group.

You can select attributes in the Globals page and then set individual groups to follow the Global settings, or you can select attributes for groups individually.

**To select attributes in the Global page:**

**1** While creating or modifying a group, click Globals in the Group dialog.
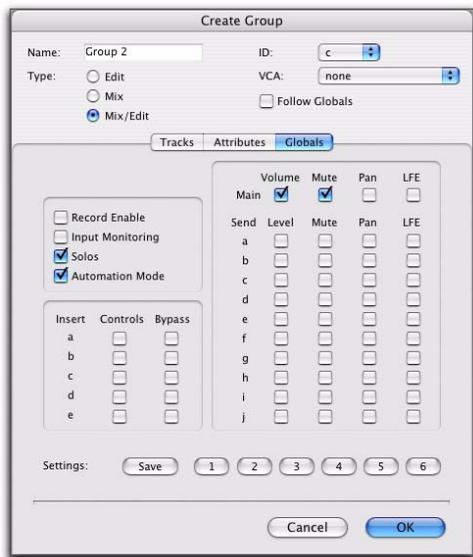


*Globals page of Group dialog*

**2** Select the base set of attributes for groups in your session.

**3** Click OK to save the group and the new Globals settings.

📄 *For information on selecting attributes, see "Selecting Group Attributes" on page 186.*

**To select attributes for an individual group:**

**1** While creating or modifying a Mix Group or a Mix/Edit Group, do one of the following:

- Click Attributes in the Group dialog, and select the attributes you want to link.

– or –

- Click Follow Globals to follow the base set of attributes. The Attributes page grays out to indicate that the group is following the selections in the Globals page.

📄 *For information on selecting attributes, see "Selecting Group Attributes" on page 186.*

**2** Click OK to save the settings.
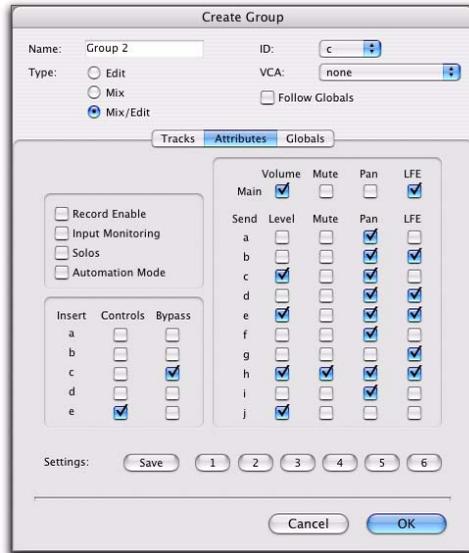


*Attributes page of Group dialog*

## Selecting Group Attributes

The following attributes can be selected for Global settings and for individual groups.

Track controls:

- Main Volume
- Main Mute
- Main Pan
- Main LFE Level
- Record Enable
- Input Monitoring
- Solo
- Automation Mode

Send controls (Sends A–J):

- Send Level
- Send Mute
- Send Pan
- Send LFE Level

Insert controls (Inserts A–E):

- Plug-in Controls
- Insert Bypass

**To select the attributes for a group, do any of the following:**

■ Select individual attributes by clicking their checkboxes.

■ To select or deselect all attributes, Alt-Shift-click (Windows) or Option-Shift-click (Mac) any attribute.

■ To select or deselect all attributes for a single Send or Insert (across a row), Start-click (Windows) or Control-click (Mac) any attribute in that row.

■ To select or deselect attributes for a single control across all Sends, all Inserts, or for the four track controls (down a column), Alt-click (Windows) or Option-click (Mac) any attribute in that column.

## Saving Group Attribute Presets

You can define six Group presets that can be recalled on either the Attributes or Globals page whenever you are creating or modifying a Mix or Mix/Edit Group.

**To save the current attribute settings as a Group preset:**

**1** In the Groups dialog, click Save. (Follow Globals must be unchecked to save a setting from the Attributes page.)
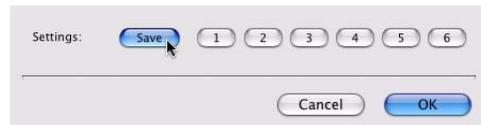


*Saving a Group preset*

**2** Choose one of the six preset locations from the Location pop-up menu, and click Save.

*To save the current attribute settings directly to a preset location, Control-click (Windows) or Command-click (Mac) the preset button.*

**To recall a Group preset:**

■ Click the corresponding Preset button (1–6) in the Groups dialog. (Follow Globals must be unchecked to recall a setting in the Attributes page.)
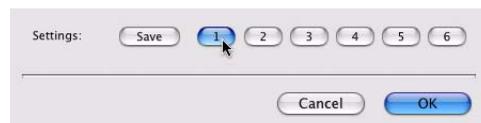


*Recalling a Group preset*

# Enabling Groups

Editing operations are not applied to members of a group that are hidden with the Track List. Mix operations (with the exception of record-enabling of tracks) are applied to hidden tracks.

Pro Tools lets you create separate groups for editing and mixing. You set this option when you use the New Group command. Groups that apply to both editing and mixing can be decoupled.

**To enable a group:**

▪ In the Group List, click the name of the group you want to enable. The Group Name is highlighted to indicate that it is enabled.

To enable additional groups, click their names in the Group List.

Moving a fader of a group member will cause all other group members to move relative to it. If a fader belongs to multiple groups, and the groups conflict when faders are moved, the fader will follow the topmost or "parent" group that it belongs to.

**To disable a group:**

▪ In the Group List, click the name of the group you want to disable. The Group Name is unhighlighted to indicate that it is not enabled.

# Keyboard Selection of Groups

The Group List Keyboard Focus allows you to type a Group ID letter to automatically toggle that group's enable status.

◆ In the Mix window, the Group List Keyboard Focus is always enabled.

◆ In the Edit window, you need to enable the Group List Keyboard Focus to use it.

**To enable the Edit Group List Keyboard Focus, do one of the following:**

▪ Click the Keyboard Focus button in upper right of the Edit Group List.

– or –

▪ Press Control+Alt+3 (Windows) or Command+Option+3 (Mac).
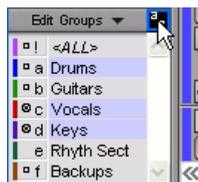


*Group List Keyboard Focus enabled*

**To enable and disable groups using the Edit and Mix Group List Keyboard Focus:**

▪ With Group List Keyboard Focus enabled, type the Group ID letter (a–z) to automatically enable or disable the corresponding group.

## Temporarily Isolating Control of an Item from Group Operation

You can temporarily isolate control of a group item from group operation by Right-clicking on the item.

🔲 *You can also temporarily suspend group behavior for a track by Start-clicking (Windows) or Control-clicking (Mac) the desired group function.*

The following items can be isolated from group operation:

- Pan slider (Pro Tools HD only)
- Channel Record Enable (Pro Tools HD only)
- Channel TrackInput (Pro Tools HD only)
- Send Pan slider
- Channel Volume fader
- Channel Pan slider
- Channel Mute button
- Channel Solo button
- Channel Record Enable button
- Channel TrackInput button
- Send fader
- Send Pan slider

## Grouped Control Offsets

When the following controls are grouped with offsets, and moved to their extremes, relative offsets are preserved when the controls are moved back from their extremes:

- Main Volume
- Main Pan (Pro Tools HD only)
- Send Level
- Send Pan

For example, when a grouped Volume fader is moved to its maximum value, any other faders in that group that had higher values will remember their relative offset whenever the first fader is pulled down again.

In Automation views, this "overflow" is indicated on the automation playlist by blue automation breakpoints at the extremes of the automation playlist.

## Setting Group Pan Controls to Ignore Offsets

By default, offsets are preserved for grouped pan controls. In some workflows, it is desirable to have grouped pan controls match absolute values rather than preserve offsets.

**To set grouped pan controls to ignore offsets:**

**1** Choose Setup > Preferences and click Mixing.

**2** Select "Use Absolute Pan Linking."

When this option is enabled, grouped pan controls will snap to the absolute value of the pan control that is being adjusted.

# Chapter 12: The Region List

The Edit Window displays all audio regions, MIDI regions, and region groups in a single, comprehensive Region List.

All regions of all types that are recorded, imported, or created by editing appear in the Region List. Items can be dragged from the list to tracks and arranged in any order. You can also preview audio and MIDI regions and region groups in the Region List.
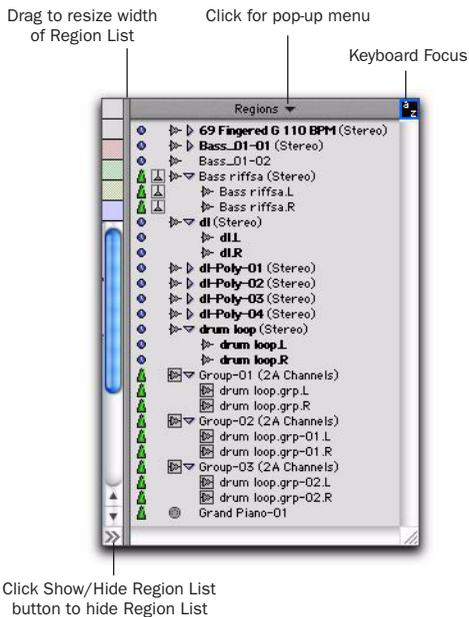


*Figure 8.  Region List*

💡 *Use the Region List as a bin for storing your favorite audio loops and MIDI clips. Save the session as a template and the regions are available for future sessions (see "Creating Custom Session Templates" on page 105).*

## Region List Pop-Up Menu

The Region List pop-up menu provides tools to search, select, sort, export, clear, and manage items in the Region List.

**To access the Region List pop-up menu:**

■ In the Edit window, click the Region List pop-up menu.
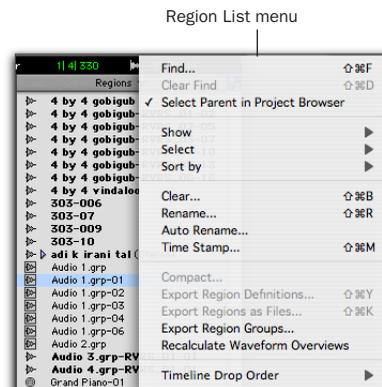


*Region List menu*

## Displaying Regions in the Region List

The Region List can show all region types (audio, MIDI, video, Groups, Auto-Created), or only certain region types. This is useful for isolating the type of regions you want to work with while editing and arranging. For example, when arranging with Region Groups, you may want the Region List to show only Region Groups.

**To show or hide certain types of regions in the Region List:**

■ Click the Region List pop-up menu (at the top of the Region List) > Show and select or deselect the region type you want to show or hide.

**Audio** Shows or hides audio regions in the Region List.

**MIDI** Shows or hides MIDI regions in the Region List.

**Video** Shows or hides video regions in the Region List.

**Groups** Shows or hides region groups in the Region List.

**Auto-Created** Shows or hides automatically-created regions (of all types) in the Region List. These are regions that were created as a by-product of cutting, pasting, and separating other regions. Since these by-product regions can become numerous, hiding them (by deselecting the option) helps you to avoid scrolling through an unnecessarily long Region List.

*Hiding Auto-Created regions can be useful when importing region groups (or REX files as region groups), because these file types can contain so many separate regions that it becomes difficult to read the Region List.*

In the Region List, whole-file audio regions are displayed in bold, and stereo and multichannel audio regions can be expanded to display individual channels.

Because region names can become lengthy, the Region List can be scrolled or resized as necessary (see Figure 8 on page 189).

If the Editing preference for "Region List Selection Follows Edit Selection" is enabled, selecting a region or region group in the Region List selects it on any track where it is present in assigned playlists. Likewise, selecting a region or region group on a track selects it in the Region List.

## Displaying File Info for Audio Regions

In addition to region names, the Region List can also display information about the region's color coding, type (audio, MIDI, and region group), timebase, and parent file:

**Color** Displays Track Color Coding as assigned with Default Region Color Coding option in Display Preferences page, or as assigned in the Color Palette.

**Icon** Displays the icon for audio and MIDI regions, and region groups.

**Timebase** Displays the timebase (samples or ticks) for audio and MIDI regions, and region groups.

**Warp Indicator** Displays the Warp Indicator icon if Elastic Audio processing has been applied to the region.

**File Name** Displays the parent file name.

**Disk Name** Displays the name of the hard drive on which referenced file resides.

**Full Path** Displays the full directory path of the region's parent file.

**Channel Name** Displays the channel name for audio files imported from field recorders.

**Scene and Take** Displays the scene and take for audio files imported from field recorders.



*Regions with file information shown in the Region List*

Pro Tools displays only the region name in the Region List by default.

💡 *When editing, the Region List can become cluttered with auto-created regions. You can hide auto-created regions by choosing Show in the Region List pop-up menu, and deselecting Auto-Created.*

# Sorting and Searching in the Region List

Most sessions will contain many regions, which can make it challenging to swiftly locate a particular region in the Region List. Pro Tools lets you sort and search regions in the Region List to quickly locate any region you want.

## Sorting Regions

**To sort regions in the Region List:**

**1** Click the Region List pop-up menu (at the top of the Region List) and choose Sort By.

**2** Select a basis for sorting from the submenu. Different options are available for audio and MIDI regions. See "Sort By Options" on page 191.

**3** To set whether regions are listed in ascending or descending order, click the Region List pop-up menu, choose Sort By, and select Ascending or Descending.

### Sort By Options

The Sort By options let you sort regions to help keep track of large numbers of regions.

Audio regions can be sorted by:

- Region Type
- Name
- Length
- Original Time Stamp
- User Time Stamp
- Timebase
- Start in Parent
- End in Parent
- File Name
- File Length
- File Creation Date
- File Modification Date
- Disk Name (audio and region groups only
- Track Format/Width
- By Channel Name
- By Scene and Take

MIDI regions can be sorted by:

- Name, Length
- Original Time Stamp
- User Time Stamp
- Timebase
- Start in Parent
- End in Parent.

Regions can also be sorted by Region Type (Audio and MIDI), or in Ascending or Descending order.

## Finding Regions

Use the Find command to display all regions in a list whose names contain a particular word or phrase.

**To find and display regions in the Region List:**

**1** Do one of the following:

- Click the Region List pop-up menu and choose Find.

– or –

- Press Control+Shift+F (Windows) or Command+Shift+F (Mac).



*Find Regions dialog*

**2** In the Find Regions dialog, do any of the following:

- Select By Name and type the name, or any portion of the name, for regions you want to find. The search string appears at the top of the Region List.
- Select Include Subsequently Added Regions to limit the display to newly added regions. A plus (+) sign appears at the top of the Region List to indicate this option is selected.

- Select both options to start with a list of named regions and allow display of added regions.



*Found Regions in the Region List*

Regions of any type whose name match the word or phrase you searched are displayed in the Region List. The search string is displayed at the top of the Region List in brackets.

☀ *Text entered into the Find dialog is saved in a Find History, letting you quickly repeat previous searches with a minimum of retyping.*

**3** Click OK.

**To repeat a previous search:**

**1** Click the Region List pop-up menu, and choose Find.

**2** Click the small arrow to the right of the text field in the Find dialog and select a text string from the Find History pop-up menu.



*An example of a Find history*

The Find History is saved with the session.

In addition to storing each text string previously entered, you can insert multiple entries into the Find History manually (without having to perform each Find in order to store words or phrases).

**To compile a Find History without performing each search:**

**1** Click the Region List pop-up menu, and choose Find.

**2** Type the name, or any portion of the name, for the regions you want to find.

**3** Click and hold the double arrow to the right of the text field in the Find dialog and choose Insert Entry from the pop-up menu.



*Region List while searching*

**4** Type another entry and choose Insert Entry again to add additional search strings to the history.

**To remove an entry from the history:**

**1** Select it from the Find History pop-up menu so it is displayed in the text field.

**2** Choose Remove Entry from the Find History pop-up menu.

**To clear the Find History:**

▪ Choose Remove All Entries from the Find History pop-up menu.

# Selecting Regions in the Region List

In the Region List, you can select regions so they can be dragged to tracks, processed with Audio-Suite plug-ins, or exported.

**To select or deselect a region in the Region List, do the following:**

▪ Click a region name that is unhighlighted to select it.

– or –

▪ Click a region name that is highlighted to de-select it.

**To select a range of regions in the Region List, do one of the following:**

▪ Move the cursor to the left of the region names, so the Marquee appears, and drag around the regions you want to select.



*Regions selected with Marquee*

– or –

▪ Click the name of a region in the Region List, and Shift-click an additional region name.

All regions that occur between the first region selected and the additional region will also be selected.

**To select or deselect a range of regions with the Marquee:**

**1** Move the cursor to the left of the region name until the Marquee icon with a small "+" symbol appears:

- To select regions, the Marquee should be to the left of an unhighlighted region name.
- To deselect regions, the Marquee should be to the left of a highlighted region name.

**2** Click on the region name and drag up or down (to select or deselect regions immediately above or below the region name).

[SHIFT] *To select multiple noncontiguous regions in the Region List, press and hold Control (Windows) or Command (Mac) when making subsequent selections.*

**To select or deselect noncontiguous regions, do one of the following:**

■ Control-click (Windows) or Command-click (Mac) region names that are unhighlighted to select them.

– or –

■ Control-click (Windows) or Command-click (Mac) region names that are highlighted to deselect them.

### Keyboard Selection of Regions

If the Region List Keyboard Focus is enabled, you can type the first few letters of a region's name and Pro Tools will automatically locate and select the region in the Region List.

**To enable and use the Region List Keyboard Focus:**

**1** Click the Keyboard Focus button in the upper right of the Region List.



Click to enable or disable Keyboard Focus

*Region List Keyboard Focus enabled*

**2** Type the first or first few letters of the region to automatically locate and select it. Once a region is located and selected, it can be dragged to a track.

Keyboard selection of audio regions locates regions based on their region name, not on the names for their parent audio files or the volumes on which they reside.

## Select Options

In the Region List, you can select specific regions so they can be dragged to tracks, processed with AudioSuite plug-ins, or exported.

**To select specific regions in the Region List:**

■ Choose Select, then choose one of the Select options:

**All** Selects all regions in the Region List.

**Unused** Selects regions that have not been placed in a track in the current session. Offline regions appear in the Region List as italicized and dimmed.

**Unused Except Whole Files** Selects regions that have not been placed in a track in the current session, but do not include Whole-file regions. Whole-file regions are regions that were created

when recording or importing audio, consolidating existing regions, and when nondestructively processing with an AudioSuite plug-in. Whole-file audio regions reference an entire audio file that resides on your hard drive. Whole-file audio regions are displayed in bold in the Region List

**Offline** Selects regions whose parent files cannot be located, or are not available, when opening a session or importing a track. Offline regions appear in the Region List as italicized and dimmed; they appear in playlists as light blue regions with italicized names.

## Previewing Regions in the Region List

You can preview audio and MIDI regions and region groups in the Region List. Previewing follows the master Audition path as selected in the Output pane of the Pro Tools I/O Setup dialog. The base level for previewing is determined by the Master Fader (or Auxiliary Input) level assigned to the Audition path.

**To preview a region in the Region List:**

■ Alt-click (Windows) or Option-click (Mac) the region name.

Audio regions and region groups play back through the specified audition path (see "Audition Paths" on page 67).

Sample-based regions play back at their native tempo. Tick-based regions play back at the session tempo (based on the location of the playback cursor). You can also preview regions from the Region List during session playback.

MIDI regions playback using the Default Thru Instrument selected in the MIDI Preferences page (see "The Default Thru Instrument" on page 363).

## Stereo and Multichannel Regions in the Region List

Stereo and multichannel regions, whether imported or recorded into Pro Tools, are displayed as single items in the Region List. For example, two mono source regions named "Main Piano.L" and "Main Piano.R" are listed as "Main Piano (Stereo)." An expand/collapse triangle indicates stereo and multichannel regions.

Stereo and multichannel regions are displayed in the Region List by default in collapsed view. The individual regions can be displayed by clicking the arrow to the left of the region to expand the name.
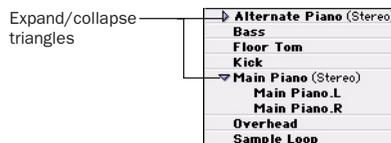


*Stereo regions, collapsed (top) and expanded (bottom)*

**To expand or collapse all stereo and multichannel regions:**

■ Press Alt (Windows) or Option (Mac) while clicking the expand/collapse triangle.

Individual items of an expanded-view stereo or multichannel region can be selected independently of the other associated regions in the Region List.

### Rules for Stereo and Multichannel Regions

For stereo and multichannel audio regions to be shown as collective regions, the component regions must be the same length. If an existing stereo or multichannel region has been dragged onto multiple mono tracks and edited such a way that one or more components are no longer the same length, the stereo display is removed and the regions are displayed as individual regions in the Region List.

# Naming and Displaying Regions in the Region List

A typical session can become cluttered with dozens of tracks and hundreds of regions. There are a number of things you can do, however, to keep track of and manage a session's regions, including:

- Renaming existing regions
- Specifying how auto-created regions are named
- Hiding auto-created regions
- Removing unused regions

## Renaming Regions

In the course of a session you can rename regions to give them more descriptive names, or merely to shorten or simplify existing names. When renaming a region that was auto-created during editing, the region becomes a user-defined region and is displayed in the Region List even when auto-created regions are hidden.

One of the easiest ways to rename a region, if it resides in a track, is to double-click it with one of the Grabber tools. However, if the region does not reside in a track, or if you want to rename several regions, use the Rename command in the Region List.

You can also rename a region in a track using the Rename command in the Region List pop-up menu or the Right-click pop-up menu.

**To rename one or more regions from the Region List:**

**1** If you will be renaming an auto-created region, select Show > Auto-Created in the Region List.

**2** Select one or more regions to be renamed in the Region List.

*If the Region List Selection Follows Edit Selection option in the Editing Preferences page is enabled, you can highlight a region in the Region List by selecting it in a track.*

**3** Do one of the following:
- From the Region List pop-up menu, choose Rename.
- Right-click on any selected region and select Rename from the pop-up menu.

**4** In the Name dialog, enter a new name for the region. If a whole-file audio region was selected, specify whether to rename just the region, or both the region *and* the disk file.
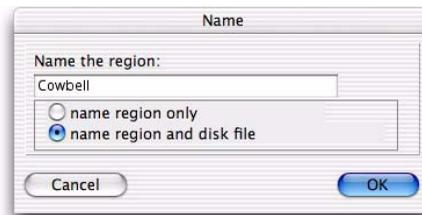


*Name dialog*

**5** Click OK to rename the region. If renaming multiple regions, you are prompted, successively, to rename each region.

## Auto-Naming Options

You can specify the auto-naming options for a region when new regions are created from it in the course of editing.

Auto-naming of regions does not affect the names of parent audio files. Instead, it stores pointers to the regions within the parent source file.

**To set auto-naming options for a region:**

**1** Select a region in the Region List.

**2** Choose Auto Rename from the Region List pop-up menu.

**3** In the Rename Regions dialog, enter the text to be used when naming regions created from the selected region.
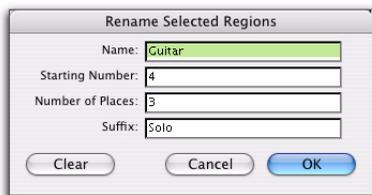


*Rename Selected Regions dialog*

**Name** Determines the root name for the auto-created regions.

**Number** Sets the start number for the sequentially numbered new regions.

**Zeros** Determines the number of zeros that occur before the auto numbers.

**Suffix** Specifies text to be appended to the end of the name, following the auto numbering.

**4** Click OK.

## Managing Regions in the Region List

In the course of editing a session, the Region List can quickly fill up with many regions—with ones you have created intentionally and also with those that are automatically created by cutting, pasting, and separating other regions, or importing Region Group files (or REX files as region groups). Pro Tools lets you hide or remove regions in your session so you do not have to scroll through a long Region List.

### Hiding Auto-Created Regions

You can hide regions that were automatically created during the course of editing.

**To hide auto-created regions:**

■ In the Region List, deselect Show > Auto-Created. With this option deselected, only user-defined regions appear in the Region List.

User-defined regions include:

- Whole-file regions
- Regions created during recording
- Imported regions
- Renamed regions
- Regions created as a result of AudioSuite processing
- New regions created with the Region > Capture command or the Edit > Separate Region commands
- Regions created by trimming whole-file audio regions

When auto-created regions are hidden, Pro Tools warns you if the number of auto-created regions exceeds a certain threshold, and gives you the option of deleting them. If you choose to delete them, all auto-created regions are deleted at the same time.

To ensure that you keep any specific auto-created regions, rename them. When you name a region, it is promoted from being an auto-created region to a user-defined region (see "Renaming Regions" on page 196).

## Removing Unwanted Regions

In the Region List, you can select unwanted regions and then use the Clear command to remove them from the session, whole-file regions can also be permanently removed from the hard drive on which they are stored.

⚠ *The Clear command cannot be undone.*

**To find and remove unused regions in a session:**

**1** Do any of the following:
- For MIDI regions, from the Region List pop-up menu, choose Select > Unused.

– or –
- For audio regions, from the Region List pop-up menu, choose Select, then choose Unused, Unused Except Whole Files, or Offline (as appropriate).

**2** After all unused regions are selected, choose Clear from the Region List pop-up menu.

**3** In the Clear Audio dialog, do one of the following:
- Click Remove to remove the unused regions from the session.

– or –
- If clearing a whole-file audio region and you want to permanently remove the audio file from your hard drive, click Delete.



*Clear Selected dialog (audio regions)*

When deleting audio files for multiple regions, Pro Tools presents a warning dialog for each audio file.

**To bypass repeated warning dialogs:**

■ Alt-click (Windows) or Option-click (Mac) the Delete button in the Clear dialog. This permanently deletes each successive audio file from your hard drive (for each of the unused regions) without any further warning.

⚠ *Use this "power delete mode" with caution: Deletion of these files cannot be undone.*

# Region Name Right-Click Pop-Up Menus

When you Right-click a region name in the Region List, a pop-up menu provides access to the following commands:

**Clear** Removes selected regions from the session.

**Rename** Renames selected regions.

**Time Stamp** Redefines the time stamp of selected regions.

**Replace Region (Pro Tools LE with DV Toolkit 2 Only)** Replaces multiple instances of a region with another region.

**Compact** Compacts selected regions.

**Export Region Definitions** Exports definitions for selected regions.

**Export Regions as Files** Exports selected regions as files.

**Recalculate Waveform Overviews** Redraws waveforms for selected regions.

**Select Parent in Workspace** Highlights the parent file of selected region in the DigiBase Workspace Browser.

**Object Select in Edit Window** Selects region as an object in the Edit window.

# Chapter 13: DigiBase

DigiBase and DigiBase Pro (Pro Tools HD and Pro Tools LE with DV Toolkit 2 only) combine an intuitive, browser-style interface with an integrated databasing engine, optimized for Pro Tools data and media management.

DigiBase browsers provide extensive databasing tools for searching, sorting, auditioning, and importing of audio, MIDI, video, plug-in settings (.txf), and session files. Multiple browsers can be displayed and arranged, with custom display settings provided to optimize your work environment.

## DigiBase Elements

Figure 9 shows the various elements of DigiBase. Arrows show how files can be moved between the elements.

📖 *For information on dragging and dropping files from DigiBase browsers to your Pro Tools session, see "Importing Files with Drag and Drop" on page 256.*
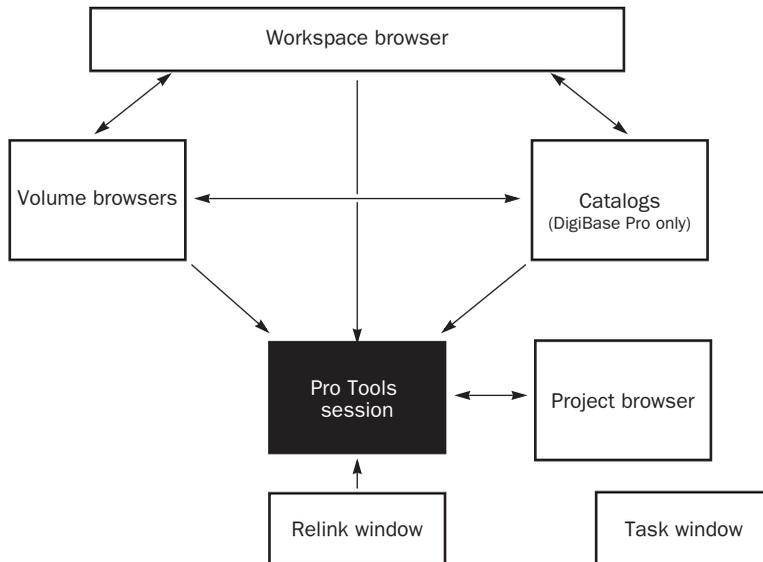
*Figure 9.  Data flow between a Pro Tools session and DigiBase browsers*

## DigiBase Browsers

DigiBase databases are accessed through Digi-Base *browsers* (see Figure 10). Browsers provide an intuitive user interface to DigiBase databases with many convenient features for various file management tasks (such as search and sort functions).

Browsers in Pro Tools are analogous to windows in your computer's operating system, but are specifically designed for Pro Tools workflow. Multiple browsers can be displayed simultaneously, and arranged independently with custom display settings for each.

Browsers let you search and sort audio files, video files, and sessions. Audio, video, and session files displayed in browsers can be dragged directly into the current Pro Tools session.

When offline items are needed, Pro Tools lets you find the correct matching files, then relink to online media.

The main elements of a DigiBase browser (see Figure 10) include the following.

**Title Bar** Shows the browser type (Work-space, Volume, Project or Catalog), and the name of its associated volume, session or catalog.

**Toolbar** Provides the Browser menu, Search icon, View Presets (numbered 1–5), and browser navigation tools.

**Items List** Displays the contents of a volume, folder, session, or Catalog database.

**Columns** Identifies the type of metadata displayed in the items list (such as file name and format) for volumes, folders, and files in the Items List.

- Columns can be resized by dragging the column border, or rearranged by dragging the Column headers.
- Columns can be dragged to either of two available panes, the Fixed or Scrolling panes.
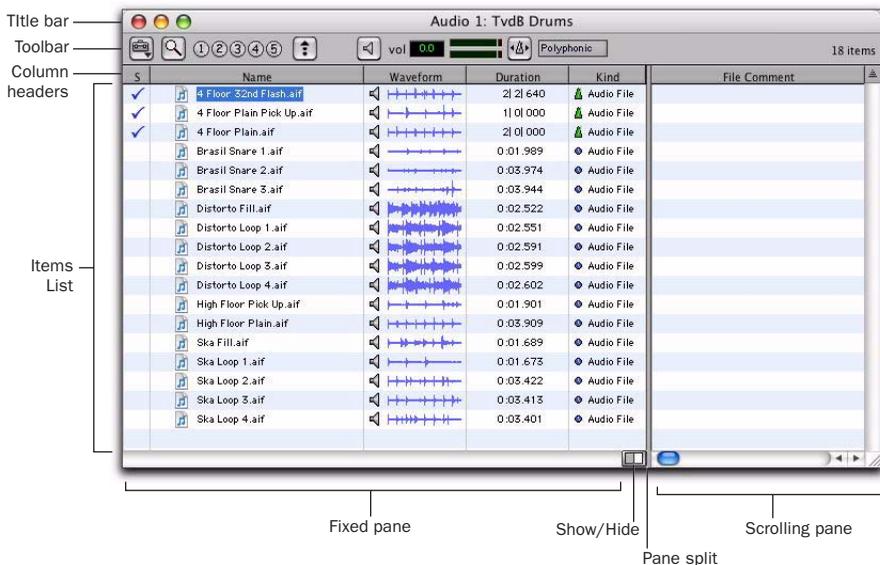


*Figure 10. Main elements of a DigiBase browser (Volume browser shown).*

There are three types of Pro Tools browsers available on all supported systems:

- The Workspace browser
- Volume browsers
- The Project browser

DigiBase Pro (Pro Tools HD and Pro Tools LE with DV Toolkit 2 only) provides one additional browser:

- Catalogs

## Workspace Browser

The Workspace browser provides access to all your mounted volumes, as well as the folders and files they contain.

Using the Workspace browser, you can:

- Access all mounted volumes.
- Access all Catalogs.
- Search across multiple volumes and Catalogs simultaneously.
- Designate volumes for Record and Playback, Playback Only, or Transfer.
- Unmount volumes.
- View, manage, audition, and import individual items in any catalog or mounted volume.
- Update databases for entire volumes.

📄 *For detailed information about the Workspace browser, see "Workspace Browser" on page 238.*

## Volume Browsers

Volume browsers provide file management for local and network *volumes*. Volumes are formatted partitions on a physical drive (hard drive). Open a Volume browser by double-clicking a volume in the Workspace browser. Any changes made in Volume browsers (such as copying, deleting, or moving files and folders) is mirrored on the volumes themselves. Volumes include mounted hard drives, network storage, and removable media (such as CD-ROMs).

Using Volume browsers you can:

- View, manage, audition, and import individual items on the volume.
- Update a database for contents of the volume.

## Project Browser

The Project browser provides powerful search and management tools for the files referenced in your current session, regardless of where they are stored. Using the Project browser, you can:

- Show all the media files associated with the current session, including any missing files.
- View, manage, audition, and spot individual items.

📄 *For detailed information about the Project browser, see "Project Browser" on page 241.*

**DigiBase Pro Catalogs**

**(Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)**

Catalogs provide the highest level of Pro Tools file management. Catalogs make it easy to organize files from multiple sources into libraries of favorite files. Catalogs can be sorted and searched, even when the files they reference are offline. Catalogs can also be shared.

Using Catalogs, you can:

- Collect and organize files from any combination of volumes.
- Create catalogs of complete volumes to view and search even if a volume is offline.
- View, manage, audition, and import individual items in the catalog.
- Update a database for contents of catalog.

*For detailed information about Catalogs, see "DigiBase Pro Catalogs" on page 243.*

## Task Window

The Task window is a utility for viewing and managing all of the background tasks that you initiate with Pro Tools. Use the Task window to monitor, pause, or cancel background tasks such as file copies, searches, indexing, and fade creation.

*For detailed information about the Task window, see "Task Window" on page 247.*

## Relink Window

The Relink window provides tools and features for relinking sessions and catalogs to media files. Use Relink tools to search and reacquire missing files for use in the current session.

*For detailed information about the Relink window, see "Relink Window" on page 234.*

# Performance and Transfer Volumes

DigiBase lets you view, manage, and import sessions and media from both Performance and Transfer volumes.

**Performance Volumes** Are storage volumes (hard drives) that are suitable for playback and have been designated in the Workspace browser as Record and Playback (R) or Playback Only (P) of media files in a Pro Tools session.

**Transfer Volumes** Are volumes that are not supported for media playback in Pro Tools (such as shared network volumes or CD-ROMs), or storage volumes (hard drives) that have been designated in the Workspace browser as Transfer (T) volumes. Transfer volumes *cannot* be used to record or play back media in a Pro Tools session. Designated Transfer (T) volumes can be useful for transferring session and media files between different Pro Tools systems.

*For more information on volume designations, see "Audio and Video Volume Designators" on page 239.*

# Digidesign Databases

The information displayed in browsers is stored in individual databases. Pro Tools creates these databases automatically for all mounted volumes, including Transfer volumes.

Digidesign databases use three file types:

**volume.ddb** Stores media and session file metadata for a particular volume.

**catalog.ddb (DigiBase Pro Only)** Stores media and session file metadata for a user defined Catalog. Cataloged media and session files are can reside on multiple volumes, including Transfer volumes.

**Wavecache.wfm** Stores waveform overviews for all audio files referenced by each session.

### Read/Write Volume Databases (Hard Drives)

For each volume, a database file is created in a folder named Digidesign Databases, on the root level of the volume. The database is stored with the volume it describes so that if the volume is later moved to a different system the database does not have to be recreated.

⚠ *If you delete the Digidesign Database folder, all existing database information for that volume is lost. To recreate a deleted Digidesign Database folder, re-index the volume (see "Indexing DigiBase Databases" on page 210).*

### Read-Only Volume Databases
### (CD/DVD-ROMs and Write-Protected Volumes)

Since data cannot be written to read-only volumes, databases for read-only volumes are stored locally on your system drive.

On Windows, these databases are stored in the Program Files\Digidesign\Pro Tools\ Databases\Volumes folder.

On Mac, they are stored in the Library/ Application Support/Digidesign/Databases/ Volumes folder.

### Shared Network Volume Databases

Though a shared volume may be read/write, Pro Tools treats it as if it were a Transfer volume and no database is stored on the shared volume. Consequently, databases for shared volumes are stored locally on your system drive.

On Windows, volume databases are stored in the Program Files\Digidesign\Pro Tools\ Databases\Volumes folder.

On Mac, volume databases are stored in the Library/Application Support/Digidesign/ Databases/Volumes folder.

### Sharing Database Files

Database files can be shared among users. This is particularly useful for Transfer volumes, eliminating duplicate processing (indexing) time.

For example, shared volumes (such as network storage volumes) tend to be large, and indexing can be a time consuming task. To avoid duplicate effort, one user can manually index part or all of the shared volume just once, then email the database files to other users. Database files can be added by placing them within each user's Volumes folder. Periodic manual indexing then keeps all databases current.

**Sharing Catalogs**

**(DigiBase Pro Only)**

Catalogs can be created for a particular project and then shared among multiple systems to help facilitate more efficient workflow. DigiBase Pro Catalogs are stored as database files on your system drive.

On Windows, Catalog database files are stored in the Program Files\Digidesign\Pro Tools\ Databases\Catalogs folder.

On Mac, Catalog database files are stored in the Library/Application Support/ Digidesign/ Databases/Catalogs folder.

# Browser Windows and Tools

Browsers display all files in their database (see Figure 11 on page 207), including Pro Tools and non-Pro Tools files. Unknown file types can be shown, as well as aliases, and desktop folders.

To maximize processing speed and protect vital components, DigiBase does not display all folders. For example, in Windows, DigiBase browsers do not display the Program Files, Windows, Digidesign Databases, WU Temp, or System Volume Information folders; and on Mac, DigiBase browsers do not display the System, Applications, Library, or Digidesign Databases folders. This excludes them from being indexed, searched, sorted, or affected in any way by DigiBase tasks. You should not store Pro Tools session or media files in any of these folders.

The main elements of a DigiBase browser (see Figure 11 on page 207) include the following:

**Title Bar** Shows the browser type (Workspace, Volume, or Project), and the name of its associated volume or Catalog.

**Toolbar** Includes the Browser menu, Search icon, View Presets, and browser navigation and preview tools.

**Items List** Displays the contents of a volume, folder, session, or Catalog database in rows.

**Columns** Display metadata (such as file name and format) for volumes, folders, and files in the Items List.

Each row of data in a browser represents an Item (such as a file or folder). Data about each item is displayed in columns. Columns can be arranged and placed in either the Fixed pane or the Scrolling pane.

Search icon

Browser menu

Toolbar

Column headers

View Presets

Preview controls

Title bar

Columns

**Workspace**

vol 0.0 ◁ Polyphonic 43 items

Items List

| S | Name | A | V | Kind | Size | Date Indexed | Capacity | Free | Waveform | Duration |
|---|---|---|---|---|---|---|---|---|---|---|
| | Audio 1 | R | R | Volume | | Mon, Apr 23, 2007 4:21:28 PM | 297.96 GB | 223.9 GB | | |
| | Audio 2 | R | R | Volume | | Tue, Apr 24, 2007 2:45:42 PM | 8.41 GB | 8.31 GB | | |
| | untitled | | | Folder | | | | | | |
| | Audio Files | | | Folder | | | | | | |
| | 101DANCE.1.wav | | | Audio File | 595.54 KB | Tue, Apr 24, 2007 2:45:51 PM | | | | |
| ✓ | 101DANCE.wav | | | Audio File | 598.76 KB | Tue, Apr 24, 2007 2:45:51 PM | | | | 0:04.601 |
| ✓ | 4 Floor 32nd Flash.L | | | Audio File | 624.63 KB | Tue, Apr 24, 2007 2:45:51 PM | | | | 0:04.484 |
| ✓ | 4 Floor 32nd Flash.R | | | Audio File | 624.63 KB | Tue, Apr 24, 2007 2:45:51 PM | | | | 0:04.484 |
| ✓ | Aviate 120 bpm.v | | | Audio File | 551.29 KB | Tue, Apr 24, 2007 2:45:51 PM | | | | 2\|0\|000 |
| ✓ | Aviate 120 bpm.R.v | | | Audio File | 551.29 KB | Tue, Apr 24, 2007 2:45:51 PM | | | | 2\|0\|000 |
| | Filter Fall 120 bpm- | | | Audio File | 519.31 KB | Tue, Apr 24, 2007 2:45:51 PM | | | | 0:04.000 |
| | Filter Fall 120 bpm- | | | Audio File | 519.31 KB | Tue, Apr 24, 2007 2:45:51 PM | | | | 0:04.000 |
| ✓ | Filter Fall 120 bpm.L | | | Audio File | 557.6 KB | Tue, Apr 24, 2007 2:45:51 PM | | | | 0:03.999 |
| ✓ | Filter Fall 120 bpm.R | | | Audio File | 557.6 KB | Tue, Apr 24, 2007 2:45:52 PM | | | | 0:03.999 |
| ✓ | Lo Filtre 120 bpm.L. | | | Audio File | 279.12 KB | Tue, Apr 24, 2007 2:45:52 PM | | | | 0:02.000 |
| ✓ | Lo Filtre 120 bpm.R. | | | Audio File | 279.12 KB | Tue, Apr 24, 2007 2:45:52 PM | | | | 0:02.000 |
| | Plug-In Settings | | | Folder | | | | | | |
| | Rendered Files | | | Folder | | | | | | |
| | Session File Backups | | | Folder | | | | | | |
| | untitled.ptf | | | Session File | 47.97 KB | Tue, Apr 24, 2007 2:45:44 PM | | | | |
| | WaveCache.wfm | | | Unknown | 23.01 KB | Tue, Apr 24, 2007 2:45:45 PM | | | | |
| | Audio 3 | R | R | Volume | | Mon, Apr 23, 2007 4:24:25 PM | 8.41 GB | 5.53 GB | | |
| | Audio 4 | R | R | Volume | | Mon, Apr 23, 2007 4:24:39 PM | 8.38 GB | 6.87 GB | | |
| | Big_Note | R | R | Volume | | Mon, Apr 23, 2007 11:48:41 PM | 698.51 GB | 523.28 GB | | |
| | Big_Swifty | R | R | Volume | | Mon, Apr 23, 2007 4:25:13 PM | 279.35 GB | 98.28 GB | | |
| | Catalogs | | | Folder | | | | | | |
| | Central Scrutinizer | R | R | Volume | | Mon, Apr 23, 2007 4:21:15 PM | 115.02 GB | 26.65 GB | | |
| | Macintosh HD | R | R | Volume | | Mon, Apr 23, 2007 4:24:51 PM | 8.35 GB | 676.3 MB | | |
| | Singular Pleasures | T | T | Volume | | Tue, Apr 24, 2007 2:45:35 PM | 676.81 MB | 0 Bytes | | |
| T | 1 Gnat Opener.aiff | | | Audio File | 50.98 MB | Tue, Apr 24, 2007 2:45:32 PM | | | | 5:03.080 |
| T | 10 Motor(Goat) Brool.aiff | | | Audio File | 10.68 MB | Tue, Apr 24, 2007 2:45:35 PM | | | | 1:03.480 |
| T | 11 Thumbfarben.aiff | | | Audio File | 30.04 MB | Tue, Apr 24, 2007 2:45:35 PM | | | | 2:58.560 |
| T | 12 Paths Of Great Resistance | | | Audio File | 26.9 MB | Tue, Apr 24, 2007 2:45:35 PM | | | | 2:39.906 |

Fixed pane

Show/Hide

Pane split

Scrolling pane

*Figure 11. Basic browser tools, panes, and columns (Workspace browser shown)*

## Opening Browsers

There are several ways to open, close, and navigate within browsers.

### To open the Workspace browser:

■ Choose Window > Workspace.

### To open a Volume browser:

**1** Open the Workspace browser (Window > Workspace).

**2** Double-click a volume or folder in the Items List. A new Volume browser opens.

### To open the Project browser:

**1** Open a Pro Tools session.

**2** Choose Window > Project.

### To open a Catalog browser (DigiBase Pro only):

**1** Open the Workspace browser (Window > Workspace).

**2** Click the Expand/Collapse icon next to the Catalogs icon to show all Catalogs, if they are not already visible.

**3** Double-click a Catalog.

**To open another Volume or Catalog in a new browser window and leave the current Volume or Catalog browser open:**

■ Control-double-click (Windows) or Command-double-click (Mac) the Volume or Catalog.

## Viewing the Contents of a Volume, Folder, or Catalog

**To expand or collapse the currently selected folder, do one of the following:**

■ Click the Expand/Collapse icon next to the folder.

– or –

■ Select a volume, folder, or Catalog, and press the Right Arrow key to expand, or the left Arrow key to collapse.

**To move up one browser level:**

■ Click the Back arrow in the Browser toolbar.

🔲 *To move up one browser level, press Control+Up Arrow key (Windows), or Command+Up Arrow key (Mac).*

Browser Back arrow
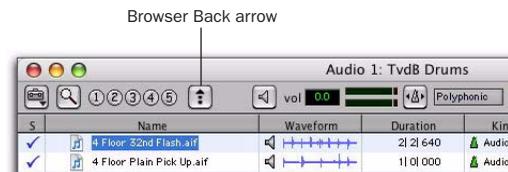


*Browser navigation icon*

## Moving Browsers to the Foreground or Background

**To bring all open browsers to the foreground:**

■ Choose Window > Browsers > Bring to Front.

🔲 *To bring all browsers to the foreground, press Alt+J (Windows) or Option+J (Mac).*

**To send all browsers to the background:**

■ Choose Window > Browsers > Send to Back.

🔲 *To send all browsers to the background, press Alt+Shift+J (Windows) or Option+Shift+J (Mac).*

All open browsers are moved to the background, bringing the other windows to the foreground. Browsers remain open and accessible.

**To bring an open browser to the foreground:**

■ Choose Window > Browsers, and select an open browser from the submenu.

**To cycle to the next or previous browser:**

■ Press Control+Left/Right Arrow keys (Windows) or Command+Left/Right Arrow keys (Mac).

## Closing Browsers

**To close all browsers:**

■ Alt-click (Windows) or Option-click (Mac) the Close box of any browser.

💡 *Because the Task window is a utility and not a browser, it remains open.*

# Working wIth Items in Browsers

## Opening Sessions

### To open a Pro Tools session listed in a browser:

■ With no Pro Tools session currently open, double-click a Pro Tools session file in any Digi-Base browser.

## Opening AAF and OMF Sequences

### (DigiTranslator 2.0 Only)

On systems with the DigiTranslator 2.0 Option, AAF and OMF sequences can be opened from DigiBase browsers.

You can also drag and drop AAF and OMF sequences from browsers into the current session.

### To open an AAF or OMF sequence from a DigiBase browser:

**1** Do one of the following:

• With no Pro Tools session currently open, double-click the AAF or OMF sequence in a browser.

– or –

• Drag the AAF or OMF sequence from a browser to the Timeline in an open session.

**2** Configure the Import Session Data dialog.

**3** Click OK.

📖 *For more information on importing AAF and OMF sequences, refer to the DigiTranslator Guide.*

## Creating and Opening Folders

Browsers let you create and manipulate folders (file system sub-directories). All folders have Expand/Collapse icons to show their contents. Dragging items onto a folder icon is the same as dragging into an open browser.

### To create a new folder in a Volume browser or Catalog:

**1** Choose New Folder from the Browser menu.

**2** Enter a name for the folder, and click OK. (Click Cancel to cancel the new folder.)

In Volume browsers, the folder is created on disk. In Catalogs, the folder is created in the Catalog only. The Items List updates as new items are added.

### To open a folder in the current browser:

■ Double-click the folder, or click the Expand/Collapse icon for the item.

⌨️ *With the browser in the foreground and the folder selected, press Control+Down Arrow key (Windows) or Command+Down Arrow key (Mac) to open a folder in the current browser.*

### To create and open a folder in its own new browser:

■ Control-double-click (Windows) or Command-double-click (Mac) the folder. The previous (parent) Browser window remains open.

⌨️ *With the browser in the foreground and the folder selected, press Control+Alt+Down Arrow key (Windows) or Command+Option+Down Arrow key (Mac) to open a folder in its own new browser.*

## Scrolling and Moving Selections

**To scroll the active pane up or down:**

■ Press the Page Up or Page Down key.

**To scroll to the top or bottom of the active pane:**

■ Press Home (for the top) or End (for the bottom).

**To move items up or down in the current browser:**

**1** Select items in a browser, and make sure that window is in the foreground.

**2** Press the Up or Down Arrow key.

## Text Entry in Browsers

Many text fields can be edited to replace or update data for an item.

**To enter an edit to a text field and exit, and return to the previous display state:**

■ Press Enter.

**To revert to the previous text and cancel a text edit:**

■ Press Esc.

📄 *For details on column editing, see "Column Data" on page 215.*

# Indexing DigiBase Databases

Indexing is the process of reading media files, extracting just the metadata for each file, then storing that data in an associated database so that it may be displayed in the columns of a browser. Once a volume or folder has been fully indexed, it can be searched very quickly because all of the metadata has already been sorted and organized.

If a volume or folder has not been indexed, it is indexed automatically the first time it is opened in a DigiBase browser. Volumes or folders containing a lot of media files can take a long time to index. For this reason, you may want to manually index specific volumes or files prior to starting a project to help expedite workflow.

## Indexing while Browsing

The first time you open a Volume browser for a volume or folder that has never been indexed, Pro Tools automatically begins to fill the database for that level of the volume. Files and folders appear in the browser Items List, along with metadata in the columns for each item. Indexing continues until you either close the browser, or until that folder is completely indexed.

The next time you open that browser, metadata for items that have already been indexed is visible immediately. If the browser or folder was closed before indexing was complete, or if the contents of the folder have changed since the last time it was browsed, Pro Tools automatically updates the database the next time it is opened. This way, the database is always up to date for the folder you are browsing. (View the Task Manager to see current activity.)

Indexing while Browsing saves time because it only fills the database for items on the level of the volume that you are currently browsing. For example, if you are browsing the root level of the volume, it indexes only the folders and files on the root level. If you open a folder, Pro Tools indexes just the items in that folder. As a result, a database is only indexed for the parts of the volume that you have browsed. However, searches are faster and more complete when a volume is already completely indexed.

## Manual Indexing

Manual indexing fills in all missing data, and updates changed data for selected folders and all of their sub-folders.

**To update the index for a folder and all sub-folders:**

**1** Select the item in a browser Items List.

**2** Choose Update Database for Selected from the Browser menu.

**To update the index for an entire volume:**

**1** Select the volume to update in the Workspace browser.

**2** Choose Update Database for Selected from the Browser menu.

### Last Indexed Date Display

The Last Indexed column shows the date that the index for that folder and all of its sub-folders was updated. Keep in mind that individual sub-folders may have been updated more recently.

### Automatic Updating for Pro Tools Actions

Whenever Pro Tools adds, deletes, or modifies a file on a volume or in a session, the appropriate database is immediately updated to reflect the change.

⚠️ *Changes that are made with Windows Explorer or the Mac Finder (such as copying or moving files) are not tracked by Pro Tools and are only indexed if the necessary folder is browsed or if a manual index is performed.*

## The Browser Menu

All Browser windows provide a Browser menu in the upper left corner of their toolbar. The Browser menu provides commands specific to each type of browser, as described below.



Browser menu

*Browser menu icon*

Not all browser commands are available in all browsers, as noted.

**New Folder** Creates a new folder on the current volume, or within the current Catalog. In Volume browsers, a new folder is created on disk. Available in Catalog and Volume browsers only. For more information, see "Creating and Opening Folders" on page 209.

**New Catalog** Creates a new, empty Catalog. Requires DigiBase Pro. Available in the Workspace browser only.

**Create Catalog from Selection** Creates a fully indexed catalog of the selected items. Requires DigiBase Pro.

**Calculate Waveform** Calculates the waveform displays for selected audio files, or all files contained in selected folders.

📖 *For more information, see "Waveforms" on page 224.*

**Update Database for Selected** Updates the database for the currently selected volumes or folders. Available in Workspace and Volume browsers only.

**Calculate Elastic Analysis** Calculates Elastic Audio analysis data for all selected audio files. Analyzed files are indicated by a check mark to the left of the file name. Analyzed files where a

tempo has been detected are also updated as tick-based, display their duration in Bars|Beats, and display their native tempo in the Tempo column.

**Clear Elastic Analysis** Clears Elastic Audio analysis data for all selected audio files. Files cleared of Elastic Audio analysis data revert to sample timebase, display their duration in minutes and seconds, and do not report a tempo.

*For more information, see "Elastic Audio Analysis" on page 224.*

**Select Offline Files** Selects all files that are currently offline.

**Select Transfer Files** Selects all files identified as Transfer files (files found on media that do not support playback).

**Select Online Files** Selects all files that are online.

**Invert Selection** Reverses (inverts) the current selection.

**Reveal in Finder/Explorer** Opens the corresponding parent window in the Finder (Mac) or Explorer (Windows) for the currently selected file.

**Reveal in Browser** Opens the parent browser for the selected item. The selected item is highlighted in its parent browser.

**Relink Offline** Opens the Relink window. Available in the Project browsers only.

**Relink Selected** Opens the Relink window, with all *selected* files from the current browser displayed and selected as Files to Match. Available in Catalogs and Project browsers only.

**Copy and Relink** Copies items currently selected in the Project browser to a chosen location, and relinks the session to the copies instead of the originals. Use this to easily move files from a Transfer to a Performance volume. This command is also available in DigiBase Pro Catalogs to copy items and relink the current Catalog to the copies.

**Duplicate Selected** Creates a duplicate of the selected items in the same location.

**Lock Selected** Locks all selected items. Any files already locked remain so. Locking a folder locks all files and sub-folders it contains.

**Unlock Selected** Unlocks the selected items.

**Delete Selected** Deletes any selected item. In the Workspace, Project, and Volume browsers, deleting an item deletes it from the disk. In Catalogs, you are asked whether you want to clear the items from the Catalog (leaving your disks unchanged) or delete the files referenced by the Catalog items.

**Unmount** Lets you unmount any online volume. Available in the Workspace browser only.

⚠ *While Pro Tools is running, always use the Unmount command in the Workspace browser menu to unmount the volume, or quit Pro Tools and then unmount the volume.*

**Auto-Preview** Enables or disables automatic preview of files. When this option is enabled, selecting a file in the browser starts preview. The Preview button updates to show that Auto-Preview is enabled. Additionally, the Preview button updates to show an Auto-Preview icon.

**Loop Preview** Previews the selected file by looping playback of the file. If multiple files are selected, only the first selected file previews. When Loop Preview mode is enabled, the Preview button updates to show a Loop Preview Mode icon.

**Spacebar Toggles File Preview** Enables or disables the Spacebar for starting and stopping preview. When this option is disabled, use the Preview button to start and stop preview. In this mode, the spacebar starts and stops session playback. This lets you play back the session and, with the Audio Files Conform to Session Tempo option enabled, preview the selected audio file in time with the session.

*When a browser is front-most, Control+P (Windows) or Command+P (Mac) starts and stops preview. Also, the Esc key stops preview.*

**Audio Files Conform to Session Tempo** Conforms all tick-based audio files with Elastic Audio analysis, as well as REX and ACID files, to the session tempo. This option lets you play back the session, and then simultaneously preview the selected files in time with the session. This option is only available when a session is open, otherwise it is disabled and grayed out.

When the Audio Files Conform to Session Tempo option is enabled, Pro Tools analyzes unanalyzed files on preview or import. Audio files that have been analyzed as tick-based can then be previewed at the session tempo and conform to the session tempo on import.

When the Audio Files Conform to Session Tempo option is disabled, any tick-based audio files with Elastic Audio analysis, and REX and ACID files preview and import at their native tempo.

*For more information, see "Conforming Preview to the Session Tempo" on page 229*

## Additional DigiBase Pro Commands

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

In Catalogs, the following additional commands are available to manage Comments in selected items.

*For more information on Comments, see "Comments Fields" on page 218.*

**Copy Database Comments to Clip Names** Copies an item's Database comments to its Clip Name.

### Copy File Comments to Clip Names (Mac Only)

Copies an item's File Comments to its Clip Name.

# Browser Panes and Display

Browsers display an Items List consisting of various columns (such as file name, size, creation date, and sample rate). The Items List is split into two panes. Individual columns can be placed in either pane, and all columns can be shown or hidden, resized, reordered, and sorted.

## Moving Columns Between Panes

Columns in browser can be placed in either pane. Move columns you frequently need to see into the left-hand pane. Columns that you use less often can be moved to the right-hand pane.

**To move columns between panes:**

■ Click the column header and drag it to a different pane.

**To show or hide the right-hand pane:**

■ Click the Show/Hide icon in the lower right corner of the leviathan pane.
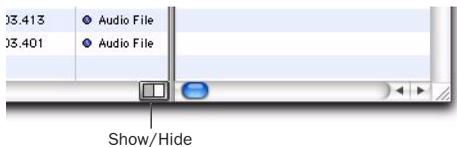


*Show/Hide Pane icon*

## Arranging and Resizing Columns

**To rearrange columns in a pane:**

■ Drag the column header to a new position.

**To resize a column:**

■ Drag the column header boundary to the desired width.

## Showing and Hiding Columns

You can show or hide individual columns in DigiBase browsers to fit your workflow. The default column display includes the items you would use in most sessions.

**To show or hide individual columns:**

■ Start-click (Windows), Control-click (Mac), or Right-click a column label and select or deselect the column name from the pop-up menu.
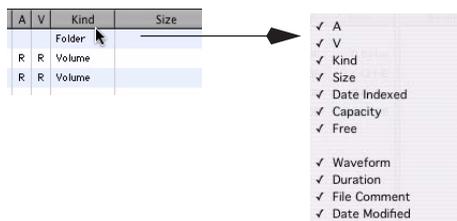


*Showing and hiding columns*

**To show or hide all columns:**

■ Start-click (Windows), Control-click (Mac), or Right-click a column header and choose ALL or NONE from the pop-up menu. (Only the Name and Clip Name columns remain when you choose NONE.)

**To show the default set of columns:**

■ Start-click (Windows), Control-click (Mac), or Right-click a column header and choose DEFAULT from the pop-up menu.

## View Presets

Pro Tools lets you save up to five preset views for each type of browser, and the Relink window. Presets can be recalled by clicking a View Preset button. View Presets are specific to each type of browser.

### To store a View Preset:

**1** Open a browser, or the Relink window.

**2** Arrange columns and views.

**3** Control-click (Windows) or Command-click (Mac) one of the five View Preset buttons.

Browser View Presets
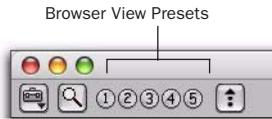


*View preset buttons*

### To recall a saved preset:

■ Click the appropriate View Preset button.

### About View Preset 1

Preset 1 becomes the default layout for other browsers of its type when they are opened for the first time.

## Sorting Columns

Columns can be sorted in ascending or descending order, and multiple sorts can be applied (up to four levels).

### To sort by columns:

■ Click the column title header.

It is often helpful to perform a secondary sort (for example, to sort by tape and timestamp).

### To add a secondary sort:

■ Alt-click (Windows) or Option-click (Mac) the column title for the secondary sort criteria.
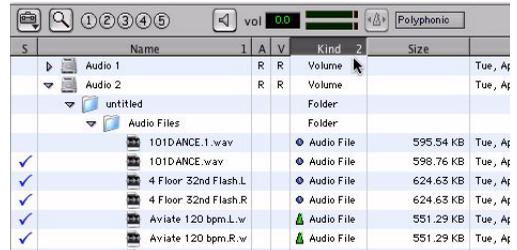


*Performing a secondary sort*

### To toggle the current sort order between ascending and descending:

■ Click the Sort toggle arrow, at the top of the vertical scroll bars.

## Column Data

In browsers, each row of data represents an item in a database (such as a file, session, or volume). Each column displays specific data for an item, as follows.

**Status** The Status column is the first column on the left, and it displays the status of each item, as follows.

*Status Icons and Display*

| Icon | Text | Status |
|------|------|--------|
| none | Black | Online |
| none | Blue *italics* | Offline |
| T | Blue *italics* | Transfer |

**Name** Displays the name of the file, folder, volume, catalog, or session. This text field is editable in all browsers except Catalogs.

**A** Designates volumes for audio R (Record and Playback), P (Playback only), or T (Transfer). Available in the Workspace browser only.

**V** Designates volumes as video R (Record and Playback), P (Playback only), or T (Transfer). Available in the Workspace browser only.

📄 *For more information, see "Audio and Video Volume Designators" on page 239.*

**Kind** Displays whether the volume, folder, catalog, or file. For files, this column displays what kind of file it is: session file, audio file, video file, or other. This field cannot be edited. For audio files, this column also indicates whether the file is sample-based to tick-based.

**Size** Displays the size of a file in kilobytes. For folders, the total size of all files in the folder is displayed. This field cannot be edited.

**Date Indexed** Displays the last indexed date for the item. This field cannot be edited.

**Capacity** Displays the total capacity of a volume. This field cannot be edited.

**Free** Displays the unused space on volumes. This field cannot be edited.

**Waveform** Displays a graphical overview of an audio file. See "Waveforms" on page 224 for more information.

**Duration** Displays the duration of a file in absolute time (minutes and seconds), regardless of the time code format. For region groups, MIDI, tick-based Elastic Audio files, REX, and ACID files, Duration displays Bars and Beats. This field cannot be edited.

**File Comment** Displays any embedded comments associated with the file. File comments are supported with BWF and SD II files, but are not supported with AIFF files. File Comments always remain with the file when copied, converted, or transferred. See "Comments Fields" on page 218 for more information.

**Database Comment** Displays user comments stored with the database, with support for Finder comments. Available in the Project browser and Catalogs only. See "Comments Fields" on page 218 for more information.

**Date Modified** Displays the last modified date for the item. This field cannot be edited.

**Date Created** Displays the creation date of an item. This field cannot be edited.

**Number of Channels** Displays the number of channels in an audio file: mono, stereo, or 3–8 as appropriate for supported multichannel files. This field cannot be edited.

**Format** Displays the audio file format: WAV, WAV (ACID) for ACID files, WAV (BWF), AIFF, MP3, or ReCycle for REX files. This field cannot be edited.

**Sample Rate** Displays an audio file's sample rate. This field can be edited in browsers for WAV and SDII files only. This can be useful when dealing with audio that has been pulled up or down, or to force a sample rate conversion to occur if that is necessary before importing a file that otherwise would not require conversion.

**Bit Depth** Displays an audio file's bit depth. This field cannot be edited.

**Tempo** Displays the tempo associated with region group, MIDI, tick-based Elastic Audio files, REX, and ACID files, and session files. This field cannot be edited.

**Original Time Stamp** Displays the original time stamp (time code location) of audio or video files.

**User Time Stamp** Displays the user time stamp, if any, of audio files only.

**Path** Displays the directory path to the item.

**Unique ID** Displays the unique ID for a Pro Tools file.

**Tape (DigiTranslator 2.0 Only)** This column displays the original Avid tape name if the item is an OMF file (audio or video). If an audio file was originally recorded in Pro Tools, this field displays the name of the original session. Video files originally recorded in Pro Tools with AVoption|XL do not display a tape name.

**TC Rate** When DigiTranslator 2.0 is installed, this column displays the frame rate of the item if the item is an AAF sequence or an OMF sequence or file: 24, 25, 29.97, 30, drop or non-drop. For sequences, the frame rate at the start of the sequence is displayed.

**Video Compression** Displays the compression ratio of video files where applicable.

**Frame Rate** Displays the frame rate of video files where applicable.

**Channel Names** Displays the channel name and number data embedded in multichannel audio files. This field cannot be edited.

**Scene** Displays scene number data embedded in audio files.

**Take** Displays take number data embedded in audio files.

**Shoot Date** Displays origination date and time information embedded in audio files. This field cannot be edited.

**Sound Roll** Displays sound roll number data (This data is usually named "Tape" in BWF files, but is distinct from the date displayed in the DigiBase Tape column). This field cannot be edited.

**Sound Roll TC** Displays the starting time code of audio files. This field cannot be edited.

**Sound Roll TC Rate** Displays the frame rate information embedded in audio files: 24, 25, 29.97, 30, drop or non-drop. This field cannot be edited.

**User Bits** Displays text information embedded in audio files. This field can be used for user comments, or auto-generated info with certain field recorders.

**Tape ID** Displays tape ID information embedded in audio files. This field cannot be edited.

**Project** Displays the project name data embedded in audio files.

**Circled** Indicates if the status of a take is set to "circled" (*No* or *Yes*) in audio files. This is usually for indicating which take should be used.

**Plug-in Name** Displays the name of the plug-in for Plug-in Settings files (.txf).

**Plug-in Manufacturer Name** Displays the plug-in manufacturer's name for Plug-in Settings files (.txf).

**Link Path** Displays the path to the file used for relinking. Available in the Relink window only.

**Clip Name** Displays the name of the file, or the Avid clip name when the item is an AAF or OMF file. The Clip Name is what appears in the Timeline and Region List when a file is imported into a session. This field can be edited in Catalogs

only, and can be generated using either of the Copy Comments to Clip Name commands in the Browser menu (see "Additional DigiBase Pro Commands" on page 213).

## Comments Fields

Comments about individual files can be stored in the database, and embedded with the file's metadata wrapper.

There are two types of comments fields: File Comments and Database Comments.

### File Comments

File Comments are stored with the metadata of the file itself. Not all file types support File Comments. Indexing stores File Comments in the database, allowing them to be searched and viewed even if the file is offline. File Comments can be edited in browsers, as long as the files or their parent media are not defined as read-only.

You can also add and edit File Comments to Pro Tools Session files from the Project browser. File Comments cannot be edited in Catalogs.

### Database Comments

### (Catalogs and Project Browsers Only)

Database Comments in a Catalog are stored in the Catalog database. Database comments in the Project browser are stored in the Session. Database Comments, which can be up to 256 characters in length, are searchable, cross-platform, and editable. For more information, see "Comments and Catalogs" on page 244.

## Adding and Editing Comments

**To add, view, or edit a Comment:**

**1** Click the Comments field. The field expands to display the entire contents of the field if necessary.

**2** Enter or edit a comment.

**3** Press Enter, or click outside the text box to close it.

# Selecting Items

**To select a single item in a browser:**

■ Click the icon for an item. When selected, the item Name is highlighted.

*You can also type the first letter, or the first few letters, of the item you want to select in the browser. For example, if you have a folder full of drum loops, and the one you are looking for is named "Ska Loop," just type the letters S and K on your computer keyboard and the first item that starts with "sk" will be highlighted in the list.*

**To select multiple items:**

■ Marquee-select a group of items, or Shift-click additional items. Control-click (Windows) or Command-click (Mac) to select multiple non-continuous items.

**To select all items listed:**

■ Press Control-A (Windows) or Command-A (Mac).

**To select all Transfer files in the current window:**

■ Choose Select Transfer Files from the Browser menu.

**To select all offline files:**

■ Choose Select Offline Files from the Browser menu.

**To select all online files:**

■ Choose Select Online Files from the Browser menu.

**To reverse the current selection:**

■ Choose Invert Selected from the Browser menu.

# Moving, Copying, Duplicating, and Deleting Items

Moving, copying, duplicating, and deleting items in browsers follow the same rules and behavior as in the operating system. For example, moving a file to another volume copies the file, and Pro Tools warns you if an items is about to be overwritten or replaced. Dragging an item from a Catalog to a Volume browser always makes a new copy of the item.

## Moving Items

**To move items:**

■ Select one or more items and drag them to a new location. Moving to a new location on the same volume moves the item, while moving to a different volume copies the item.

*You can drag items directly into the Timeline or Region List of the current session. See "Importing Files with Drag and Drop" on page 256.*

## Copying Items

**To copy and move items:**

■ Select one or more items and Option-drag them to a new location.

## Duplicating Items

**To duplicate one or more items:**

**1** Select one or more items.

**2** Choose Duplicate Selected from the Browser menu.

SHIFT *To Duplicate selected items in the Browser, press Control-D (Windows) or Command-D (Mac).*

## Deleting Items and Folders

You can select and delete files and folders in all browsers. If a selected item resides on a read-only volume, it cannot be deleted.

If using DigiBase Pro, see "Deleting Catalog Items" on page 220 for additional information.

**To delete one or more items:**

**1** Select one or more items.

**2** Press Delete, or choose Delete Selected from the Browser menu.

**3** Pro Tools asks you to verify that you want to permanently delete selected files from disk. Click Delete to proceed, or click Cancel to leave your files and disks unchanged.

*To skip the warning dialog, hold down the Option key while pressing Delete (or while choosing Delete Selected).*

**To delete locked files:**

**1** Select one or more items.

**2** Press Control+Delete (Windows) or Command+Delete (Mac).

### Deleting Catalog Items

#### (DigiBase Pro Only)

When you delete a folder or item from a DigiBase Pro Catalog, Pro Tools lets you choose whether to delete only the alias from the Catalog, or also delete the original files from the disk.

**To delete an item from a Catalog.**

**1** Open a Catalog and select one or more items.

**2** Press Delete, or choose Delete Selected from the Browser menu.

**3** When prompted, do one of the following:
- To remove the aliases for the selected items from the Catalog, click Aliases.

– or –
- To delete the selected items from disk (and remove their aliases from the Catalog), click Files.

### Deleting Folders in Catalogs

Deleting a folder from a Catalog does not delete the folder on disk (even if you choose to delete all files from disk). Because Catalogs are "snapshots" of items, their aliases only include files that resided in the corresponding folder at the time the Catalog was created. To avoid potential data loss, folders are never deleted from disk, even though you might choose to delete Files instead of Aliases.

# Searching Items

DigiBase provides powerful search capabilities so you can quickly search and find files.

The Workspace browser lets you search across multiple volumes and catalogs (if available). All other browsers let you search the currently displayed contents of that individual browser.

Performing a search filters the Items List or Search Results pane to display only found items that match the search criteria.

DigiBase Pro lets you search on multiple criteria in a single search pass, and search Catalogs.

The Relink window provides specialized search capabilities for finding and relinking missing files. For more information, see "Linking and Relinking Files" on page 230.

### Search Features for All Systems

All systems provide the following search capability:

- Search by item Name, Kind, and Date Modified.

- Results of a search are displayed in the Items List, where they can immediately be selected for auditioning, copying, and other operations. In the Workspace browser, a separate "Search Results" pane displays found items.

- Utilize search syntax modifiers, such as OR, wildcard characters, and greater than/less than. See "Search Modifiers" on page 222.

- Search in Quick or Advanced Search mode. Quick mode assumes (fills in) wildcard characters for faster data entry while searching. Advanced Search mode lets you specify wildcard characters for more precise searching. See "Search Modes" on page 223 for more information.

**Additional Search Features for DigiBase Pro Only**

With DigiBase Pro you can also:

• Search by any data column, such as Comments fields, sample rate, format, and tempo

• Save the results of a search as a new Catalog.

## Starting a Search

**To search the current browser:**

**1** Click the Search icon to display the Search pane.



*Search icon and Search pane*

**SHIFT** *You can also start a search by pressing Control+F (Windows) or Command+F (Mac).*

**2** Do one of the following:

• On all systems, enter text into the File Name field to search by name, or enter a date, or select a kind from the Kind pop-up menu. See "Entering Data for Searches" on page 221 for more information.

– or –

• If using DigiBase Pro (Pro Tools HD and Pro Tools LE with DV Toolkit 2), choose additional search criteria as needed. Press Tab to move to the next available search field, or Shift+Tab to move to the previous.

**3** Click the Search button, or press Enter (Windows) or Return (Mac).

Searching begins, indicated by the spinning arrows in the toolbar, and by the Search button changing to Stop. The Results List (at the bottom of the browser) fills with items that match the search criteria. Items can be selected and auditioned as they are found.

**To stop a search:**

▪ During a search, click the Stop button.

This stops the search routine, and the Stop button changes back to Search. Whatever results have already been found continue to be displayed, and all entries in search fields are retained.

**To reset your search settings:**

▪ Click Reset to clear all criteria in search fields, and return to the main Browser view (all items). The Search pane remains open.

**To close the search pane and return to the complete Browser view:**

▪ Click the browser Search icon to toggle the Search pane closed or open.

The search is stopped, the Search (and Search Results pane) close, and the window returns to show the main Browser view.

## Entering Data for Searches

### Field Formats and Searching

The following describe the types of data formats available (not all search fields are available on all systems).

**Text Fields** Allow direct entry of text. By default, the field is empty.

**Pull-Down Menus** Provide options for certain fields. For example, the Bit Depth pull-down provides choices for Any, 16-bit, or 24-bit.

**Date and Time** Accepts date and time entries in a variety of formats.

**Time Code** Uses standard Pro Tools time code entry shortcuts in hh:min:sec:frames.

### Search Modifiers

Certain fields have small pull-down menus containing *modifiers*, which limit the search criteria entered in the field.

Modifiers include:

- Equal to (=)
- Not Equal to (!=)
- Less Than (<)
- Greater Than (>)
- Less Than or Equal to (<=)
- Greater Than or Equal To (>=)
- Range (<…>)

**About Range-Limited** When enabled, a second search field is added so that a range of two values can be entered (such as two dates). Pro Tools finds all items that fall between or are equal to those two values.

### Wildcard Characters (* and ?)

An asterisk (*) can be entered at the beginning or end of a text entry when you want to perform wildcard searches. For example, if you want to find all files with a name that ends with *scratch*, you could enter *scratch* in the Search field. This finds files with names such as *vocal.scratch*, and *dialog2.scratch*.

A question mark (?) can be used for single-character wildcards. For example, a search on *f?ee* finds *free*, and *flee*. A similar search on *f\*ee* finds *frendlee*, *flippee*, *flee*, *free*, and so on.

### OR Searches

The Plus (+) and Minus (–) buttons add and delete OR rows to find results that match the criteria either in the top row or the additional rows.

**To add and use OR rows in a search:**

**1** Click the Plus (+) button to add an OR row identical to the upper row, but with no entries in the search fields.

**2** To add an additional OR row, click the Plus (+) button again. (An empty OR row has no effect on the search.)

**3** Enter search criteria.

For example, to find all files named either Dog or Bark:

- Type *Dog* in the first File Name field.
- Add an OR row.
- Type *Bark* in the second File Name field.

**4** Click Search.

**To remove OR rows:**

■ Click the Minus (–) button to delete the bottom OR row.

### AND Searches

If you enter two or more words in a text field, Pro Tools finds files that contain all of those words. For example, if you type *Dog Bark*, only files that contain both the words *Dog* and *Bark* are found.

## Quotations Marks for Text Strings

Text enclosed in quotation marks is searched as one text string. For example, if you type *"Dog Bark"* (with quotes), only items with *Dog Bark* anywhere in the File Name are considered a match.

## Search Modes

DigiBase provides two different text searching environments:

**Quick Search Mode** Applies wildcards before and after each text string. For example, a Quick search for *Dog* finds *Dogs*, *dog_bark*, and *howling_dogs*.

**Advanced Search Mode** Does not automatically apply any wildcards. Therefore, an Advanced search on *Dog* finds *Big Dog*, but not *Dogs* (unless you manually add a wildcard, as described in "Wildcard Characters (**\*** and **?**)" on page 222).

In addition, Advanced Search recognizes *word breaks* such as underscores and capitalization. For example, an Advanced search on *Dog* also finds *Big_Dog* (Big-underscore-Dog) and *BigDog*, though it would not find *BigDogs*.

#### To enable Advanced Search mode:

■ Click to enable the Advanced Search mode option.
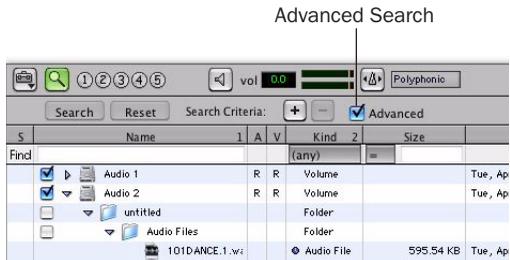
Advanced Search



*Search pane*

■ Click to deselect the Advanced Search mode.

💡 *Toggling search mode affects all DigiBase browsers.*

## About the Searching Process

Searches are conducted in two passes, each indicated by Search Status displayed in the Search pane (and the Task window).

**Searching Databases** The existing databases are searched first. While this is the fastest search pass, this search pass can only be as accurate as the database (in other words, if the database is not completely up to date you might not find the files you want).

**File System Search Pass** This is the second pass of a search. This search is not as fast as the Database pass, but it is more thorough because it is not relying on the database, which may or may not be current.

💡 *Each pass is completed before the next pass begins.*

## Saving Search Results as a Catalog
### (DigiBase Pro Only)

#### To save the results of your search as a Catalog:

**1** Choose Edit > Select All, or press Control+A (Windows) or Command+A (Mac), to select all items in the Items List.

**2** From the Browser menu, choose Create Catalog.

📄 *For more information, see "DigiBase Pro Catalogs" on page 243.*

## Waveforms

The Waveform column displays waveforms for audio files. Waveform display depends on the following:

• Waveforms are displayed if they have already been calculated and stored, either with the file metadata or in the global Waveform cache.

• When a file is imported into a session, a waveform is automatically calculated for it, if necessary.



*Waveform displays in a browser*

• Waveforms are gray if they have not been stored with the file metadata or in the global Waveform cache.
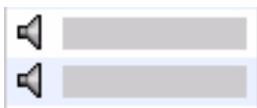


*Item waveforms prior to calculation*

The waveform overview is stored in the file, or in the appropriate Digidesign Databases folder. For more information, see "WaveCache" on page 224.

### Summed Waveforms for Multichannel Files

Waveform displays for stereo and multichannel files are summed.

### Calculating Waveforms for Display

If an audio file item does not have a waveform, the waveform must be calculated to be visible in a browser Waveform display.

**To calculate waveforms in a browser:**

**1** Select online audio files, or folders containing audio files, in a browser.

**2** Choose Calculate Waveform from the Browser menu.

### WaveCache

A global WaveCache file stores waveforms that cannot be written back to the sound file, such as read-only files, files on network and other read-only volumes, and interleaved files. The global WaveCache is stored in the Digidesign Databases folder on your Pro Tools startup volume. For write-enabled volumes, the cache is stored with the volume's Digidesign Database files, on that volume.

## Elastic Audio Analysis

You can both calculate and clear Elastic Audio analysis for selected audio files in DigiBase browsers. Only AIFF and WAV files are supported for Elastic Audio analysis and processing. Any other file format (such as MP3 and SD2) must be converted to AIFF or WAV for Elastic Audio analysis and processing.

☼ *Even though MP3 and SD2 file formats are not directly supported by Elastic Audio, you can import them into a WAV- or AIFF-based session and then use the converted files on Elastic Audio–enabled tracks. File formats that do not match the session are converted automatically on import.*

▤ *For more information on Elastic Audio, see Chapter 26, "Elastic Audio."*

**To calculate Elastic Audio analysis:**

**1** In a browser, select the files you want to analyze.

**2** Do one of the following:

- From the Browser menu, choose Calculate Elastic Analysis.

- Right-click one of the selected files and choose Calculate Elastic Analysis from the pop-up menu.

- Preview the file with the Audio Files Conform to Session Tempo option enabled.

Analyzed files are indicated by a check mark to the left of the file name.

Analyzed files in which a regular tempo was detected are updated as tick-based, display their duration in Bars|Beats, and display their native tempo in the Tempo column.

Analyzed files in which no tempo was detected remain sample-based. These files typically contain only a single transient (such as a snare hit) or they are longer files without a readily identifiable regular tempo (such as entire songs).

**To clear Elastic Audio analysis:**

**1** In a browser, select the files with Elastic Audio analysis that you want to clear.

**2** Do one of the following:

- From the Browser menu, choose Clear Elastic Analysis.

– or –

- Right-click one of the selected files and choose Clear Elastic Analysis from the pop-up menu.

Files cleared of Elastic Audio analysis data revert to sample timebase, display their duration in minutes and seconds, and do not report a tempo.

## File Timebase and Elastic Audio Analysis Icons

DigiBase browsers provide three icons to indicate whether a file has Elastic Audio analysis and the file's timebase.
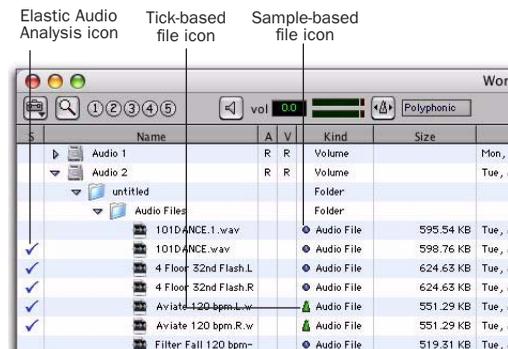


*Elastic Audio and Timebase icons in DigiBase browsers*

**Elastic Audio Analysis Icon** Indicates that the file has Elastic Audio analysis data.



*Elastic Audio Analysis icon*

**Sample-Based File Icon** Indicates that the file is sample-based. The file's duration is displayed in minutes and seconds.
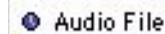


*Sample-based File icon*

**Tick-Based File Icon** Indicates that the file is tick-based. The file's duration is displayed in Bars|Beats and the file's native tempo is displayed in the tempo column.



*Tick-based File icon*

# Previewing

Audio files can be previewed in DigiBase browsers. Previewing follows the master Audition path as selected in the Output pane of the Pro Tools I/O Setup dialog (see "Audition Paths" on page 67). The base level for previewing is determined by the Master Fader (or Auxiliary Input) level assigned to the Audition path. You can also adjust the Preview Volume in the browser.

### Interleaved Files

When previewed in DigiBase, interleaved audio files with more than two channels are summed to mono for auditioning.

### Multi-Mono Files

Multi-mono files must be previewed one file at a time.

### Split Stereo Files Preview Together

When selecting one of a pair of Split Stereo files, such as "Drums.L" and "Drums.R," both files preview together. To preview only the selected channel of a split stereo pair, press the Shift key and start preview.

⚠ *Some Pro Tools operations can cause temporary interruptions in DigiBase auditioning.*

💡 *MIDI files can be previewed from the session Region List, but not from DigiBase browsers. See "Previewing Regions in the Region List" on page 195.*

**To preview an audio file in a browser:**

**1** Select an audio file in a browser Items List. Make sure the browser is the foreground (active) window.

**2** Do one of the following:

- Click the Waveform Preview button (the speaker icon to the left of the waveform display). Click again to stop auditioning.
- If Spacebar Toggles File Preview is selected in the Browser menu, press the Spacebar. Press the Spacebar again to stop auditioning.
- Press Control+P (Windows) or Command+P (Mac) to start and stop previewing.
- Press the Esc key to stop previewing.

💡 *If the Auto-Preview option is enabled, previewing starts as soon as the file is selected in a browser.*

**To audition from a specific location within the file:**

■ Click in the waveform display at the desired location.



*Auditioning an audio file*

# Preview Controls and Indicators

Every DigiBase browser provides the following preview controls in the Toolbar: Preview, Volume, Meters, Audio Filed Conform to Session Tempo, and Elastic Audio Plug-in.
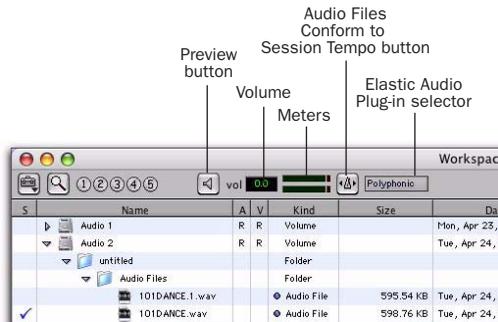


*Preview controls in DigiBase browsers*

## Preview Button

The Preview button starts and stops preview of audio files selected in browsers. You can also Right-click the Preview button to change the Preview mode and set whether or not the spacebar toggles file preview.
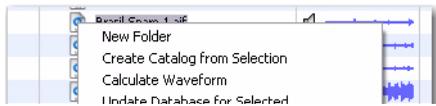


*DigiBase Browser, Preview button Right-click pop-up menu*

## Volume

The Volume control in DigiBase browsers lets you boost or attenuate the gain for previewing selected files.

## To change the volume for previewing in DigiBase browsers:

**1** Click the Volume field to display the Volume fader.

**2** Adjust the Volume fader as desired (from –INF to +12 dB).
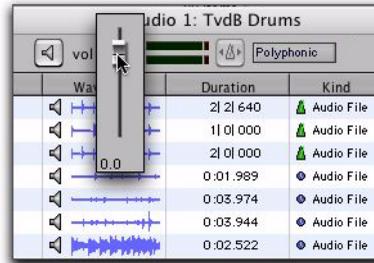


*DigiBase Browser, Preview Volume fader*

## Meters

The meters display the level of the audio and also provide clip indicators. For mono files, the mono signal is shown in both meters. For stereo files, the top and bottom meters show the left and right channels respectively. Greater than stereo multichannel files are displayed as summed mono in both meters.

The Clip LED lights when clipping occurs and clears automatically after 3 seconds.

## Audio Files Conform to Session Tempo Button

The Audio Files Conform to Session Tempo button mirrors the corresponding Browser menu command. When enabled, all tick-based audio files with Elastic Audio analysis, as well as REX and ACID files, conform to the session tempo. This lets you play back the session, and then simultaneously preview the selected files in time with the session. The Audio Files Conform to Session Tempo button is only available when a session is open, otherwise it is disabled and grayed out.

When the Audio Files Conform to Session Tempo button is enabled, Pro Tools analyzes any un-analyzed files on preview or import. Tick-based audio files conform to the session tempo during preview and on import. Sample-based files, those where no tempo has been detected, always preview and import at their original speed and duration.

When the Audio Files Conform to Session Tempo button is disabled, any tick-based audio files with Elastic Audio analysis, and REX and ACID files preview at their native tempo.

📄 *For more information, see "Conforming Preview to the Session Tempo" on page 229*

### Elastic Audio Plug-in Selector

The Elastic Audio Plug-in selector lets you select any Real-Time Elastic Audio plug-in as the default plug-in for previewing and importing Elastic Audio. Changing the plug-in in any DigiBase browser also affects the Elastic Audio Default Plug-in option in the Processing preferences.

📄 *For information on Elastic Audio plug-ins, see "Elastic Audio Plug-ins" on page 507.*

## Preview Modes

DigiBase browsers provide three Preview modes: Normal Preview, Loop Preview, and Auto-Preview.

### Normal Preview

Normal Preview simply plays the selected audio file and stops at the end of the file. Deselect Loop Preview and Auto-Preview for Normal Preview mode.

### Loop Preview

Loop Preview plays the selected file by looping playback of the file. If multiple files are selected, only the first selected file previews. When Loop Preview mode is enabled, the Preview button updates to show a Loop Preview Mode icon.

🔲 *Start-click (Windows) or Control-click (Mac) the Preview button to toggle Loop Preview mode on and off.*

**To loop preview a file in a DigiBase browser:**

**1** Do one of the following:

- In the Browser menu, select Loop Preview Mode. The Browser Preview button updates to show the Loop Preview icon.

– or –

- Right-click the Preview button and select Loop Preview.



*DigiBase Preview button, Loop Preview mode*

**2** Select an audio file in a browser Items List. Make sure the browser is the foreground (active) window.

**3** Do one of the following:

- Click the Browser Preview button.
- Click the Waveform Preview button.
- If Spacebar Toggles File Preview is selected in the Browser menu, press the Spacebar.

**To stop loop audition:**

- Do one of the following:
  - Click the Browser Preview button again.
  - If Spacebar Toggles File Preview is selected in the Browser menu, press the Spacebar again.
  - Press Control+P (Windows) or Command+P (Mac).
  - Press the Esc key.

### Auto-Preview

Auto-Preview plays the audio file as soon as it is selected. Additionally, the Preview button updates to show an Auto-Preview icon.

☐ *Control-click (Windows) or Command-click (Mac) the Preview button to toggle Auto-Preview mode on and off.*

**To automatically preview files when selected:**

- Do one of the following:
  - From the Browser menu, select Auto-Preview. The Preview button updates to show that Auto-Preview is enabled.
  - Right-click the Preview button and select Auto-Preview.

*DigiBase Preview button, Auto-Preview enabled*

## Conforming Preview to the Session Tempo

Pro Tools lets you preview Elastic Audio analyzed files at the session tempo. The selected default Elastic Audio plug-in is used for previewing Elastic Audio analyzed audio files at the session tempo. Additionally, other tick-based files, such as REX and ACID files, can also be previewed at the session tempo and in time with playback.

**To preview files at the session tempo:**

**1** In the session, place the insertion point at the location where you want to preview the file in DigiBase.

**2** In a DigiBase browser, select the file you want to preview.

**3** Do one of the following:
- Click the Audio Files Conform to Session Tempo button. It highlights when enabled.
- From the Browser menu, select Audio Files Conform to Session Tempo.
- Right-click the file you want to preview and select Audio Files Conform to Session Tempo from the pop-up menu.

**4** Click the Preview button in the browser and the file plays at the session tempo.

## Preview in Context

Pro Tools lets you preview audio files in DigiBase browsers while playing back a Pro Tools session. Tick-based audio files (those with tempo detected Elastic Audio analysis, as well as REX and ACID files) can play back in tempo, and at the corresponding bar and beat location, with session playback. Tick-based audio files audition at the session tempo when the Audio Files Conform to Session Tempo option is enabled.

### Reserve Voices for Preview in Context

### (Pro Tools HD Only)

Preview in context (previewing audio files in DigiBase during session playback) uses disk voices for playback. The number of voices required depends on the channel width of the selected Audition Paths on the Output page of the I/O Setup window. For example, if a stereo audition path selected in the I/O Setup requires 2 voices for preview in context, whereas a 5.1 audition path requires 6 voices. If one or more voices are not available for preview in context because they are in use by disk tracks (or routing for RTAS processing), the Preview button in DigiBase browsers will be unavailable during session playback.

Pro Tools provides an option to reserve voices for preview in context. The number of reserved voices is determined by the channel width of the selected Audition Paths in the I/O Setup. Voices reserved for preview in context are unavailable for disk tracks.

### To reserve for voices for preview in context:

**1** Choose Setup > Preferences.

**2** Select the Operation tab.

**3** Enable the Reserve Voices For Preview In Context option.

**4** Click OK to close the Preferences dialog.

# Linking and Relinking Files

A Pro Tools session is made up of references, or *links*, to audio files and other session media. Audio and video files must be stored on suitable Performance volumes and be properly linked in order to be playable in the session.

The following types of files are not playable:

**Transfer Files** Files that are stored on volumes not suitable for playback, such as network volumes or CD-ROMs.

**Missing Files** Files that cannot be found where the session expects them, either because they have been moved, or because they are stored on volumes that are not currently mounted (offline volumes).

The process of reacquiring missing files is referred to as *relinking*. Relinking can involve certain sub-tasks, depending on the situation.

• Transfer files must first be copied to a suitable Performance volume. The session is then relinked to the copies on the Performance volumes instead of the original Transfer files.

• Volumes may be searched for missing files and, when the files are found, Pro Tools relinks the session to the file's new location.

• Files that reside on offline volumes must first have their volumes mounted (brought online) before they can be relinked.

📄 *DigiBase Pro Catalogs have unique linking characteristics. See "Relinking and Aliases in Catalogs" on page 238.*

## Choosing When to Relink

Pro Tools lets you relink files while opening a session or after a session is already open, as follows:

◆ Relinking when opening a session ensures that the session opens with all media playable. Automatic and manual relinking can be performed. See "Opening a Session with Missing Files" on page 232.

◆ Relinking later (after a session is already open) is the fastest way to open the session, but all missing items remain offline and unplayable. When items are needed, go to the Project browser to relink offline items. See "Missing Files in an Open Session" on page 233.

### Forcing a Relink

If you cannot relink to the original file, you can force a relink to another file. See "Force Relinking Files" on page 237.

## Transfer Files

Unlike missing files, Transfer files are files that have been found but which reside on volumes unsuitable for playback, such as CD-ROMs or network drives. These volumes appear as Transfer volumes in the Workspace browser.

### Opening a Session with Transfer Files

If a session finds files on a volume unsuitable for playback, a dialog appears prompting you to copy them to a suitable volume.

**To copy Transfer files found when opening a session, do one of the following:**

▪ Click Yes to open the Copy and Relink dialog.

– or –

▪ Click No to open the session with all Transfer files offline. When opened, the session's Project browser indicates Transfer files with a "T" in their Status column.

### Transfer Files in an Open Session

**To make Transfer files playable in the current session:**

**1** Choose Window > Project.

**2** Double click the Audio Files folder to display all of the audio files.

**3** Choose Select Transfer Files from the Browser menu.

**4** Choose Copy and Relink from the Browser menu.

**5** Specify a location for the copied files on a valid Performance volume and click OK.

**6** Repeat for video and fade files, as necessary.

### Copy and Relink

The Copy and Relink command is a file management option in the Project browser and in DigiBase Pro Catalogs.

Copy and Relink provides a convenient way to copy files and relink the session or Catalog to the copies rather than to the originals.

**To copy items to a new location and Relink to the copies:**

**1** Do one of the following:

- Choose Window > Project.

– or –

- Open the appropriate Catalog.

**2** Select the items you want to copy and relink. You can select any media files (online, offline, and Transfer files).

**3** Choose Copy and Relink Selected from the Browser menu.

**4** If the default location for the copies (the session's Audio Files folder) is not appropriate, specify a different location and click Choose.

**5** The files are copied to the chosen destination and the session or Catalog is relinked in the background.

## Missing Files

Files are missing if they are not found in the same location as when the session was last saved. This could be because you moved the files or the session folder, or because the files are on a volume that is not currently mounted.

### Opening a Session with Missing Files

**To open a session with missing files:**

**1** When you open a session, Pro Tools opens the session with all available media, then shows you how many files are missing (if any) and asks how you want to proceed. (If told that files are unsuitable for playback, see "Transfer Files" on page 231.)
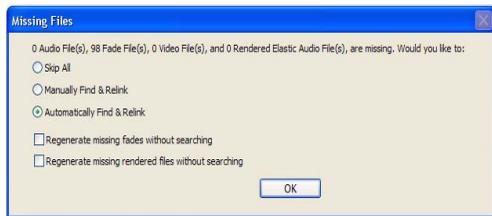


*Missing files warning when opening a session*

**2** Select one of the following:

- Skip All. You can also select Skip All by pressing Control+A (Windows) or Command+A (Mac).
- Manually Find Relink. You can also select Manually Find Relink by pressing Control+M (Windows) or Command+M (Mac).
- Automatically Find Relink. You can also select Automatically Find Relink by pressing Control+A (Windows) or Command+A (Mac).

**3** Select Regenerate Missing Fades Without Searching to exclude fade files from the relink process and regenerate them instead.

*You can also select Regenerate Missing Fades by pressing Control+R (Windows) or Command+R (Mac).*

**4** Select Regenerate Missing Rendered Files Without Searching to exclude Rendered Elastic Audio files from the relink process and regenerate them instead.

**5** Click OK

### Skip All

Use the Skip All option to skip all missing files and fades. This option is the fastest way to open the session utilizing all available media. Missing files are offline in the session, and shown in the Region List and the Project browser with *italic* text. Missing fades are regenerated if the contributing files are online.

### Manually Find and Relink

This option opens the Relink window. Use the Relink window to search, compare, verify, and relink missing files. Files can be relinked one at a time or in batches. See "Relink Window" on page 234 for more information.

### Automatically Find and Relink

Automatically Find and Relink is the simplest method to relink sessions to required media, but it provides no way to compare files or verify links. This option cannot be undone. The Automatically Find and Relink option does the following:

- Searches all Performance volumes for all missing items with matching Name, ID, Format, and Length.

- Links missing items to the first matches found.

- Commits links for all items possible, in the background.

⚠ *Links, once committed, cannot be undone once the session is saved. The only way to revert to previous links is to close the session without saving changes.*

- If some files remain unlinked, the Task window opens and a failed task appears in the Paused Tasks pane. Double-click the Task icon to open the Relink window and manually find and relink files.

📄 *Even if all of the missing files are later found and relinked, the failed task remains in the Task Window. Like all failed tasks, it must be manually selected and deleted. See "About Failed Tasks" on page 250.*

### Regenerate Missing Fades Without Searching

Enable this option to exclude fades files from the relinking process (fades are recalculated instead). This option is available when Automatically Find and Relink or Manually Find and Relink is enabled.

### Regenerate Missing Rendered Files Without Searching

Enable this option to exclude Elastic Audio Rendered files from the relinking process (rendered files are recalculated instead). This option is available when Automatically Find and Relink or Manually Find and Relink is enabled.

## Missing Files in an Open Session

You can open the Project browser to select and relink some or all missing files.

### To relink missing (offline) files in an open session:

**1** Choose Window > Project.

**2** Choose Relink Offline from the Browser menu to open the Relink window.

**3** Configure the Relink window as needed. See "Relink Window" on page 234 for more information.

### To relink selected files in an open session:

**1** Choose Window > Project.

**2** Select the files to relink. Any file can be relinked, even if it is not an offline file.

**3** Choose Relink Selected from the Browser menu.

**4** Configure the Relink window as needed. See "Relink Window" on page 234 for more information.

## Relink Window

The Relink window provides tools for all relinking tasks (see Figure 12 on page 234).

The Relink window includes the following:

**Menu and Toolbar** Includes the Relink menu, View Presets, and relinking buttons. Status is displayed at the far right.

**Areas to Search** Selects volumes on which to search for missing items.

**Files to Relink** Lists missing files.

**Candidates** Lists files that match the "relinking criteria" for a particular missing file. The Link icon next to the candidate can be toggled on or off to link (or unlink) the proposed candidate to the selected missing file.

The Relink window controls each phase of the relinking process.

The following sections explain how to:

• Open the Relink window.

• Select volumes and folders to search (and not search).

• Search, compare, and link individual files to one or more candidates.

• Quickly match and link missing files in batches, with the ability to adjust the criteria by which files are matched.

• Toggle links on or off for any candidate.

• Compare and review links before committing.
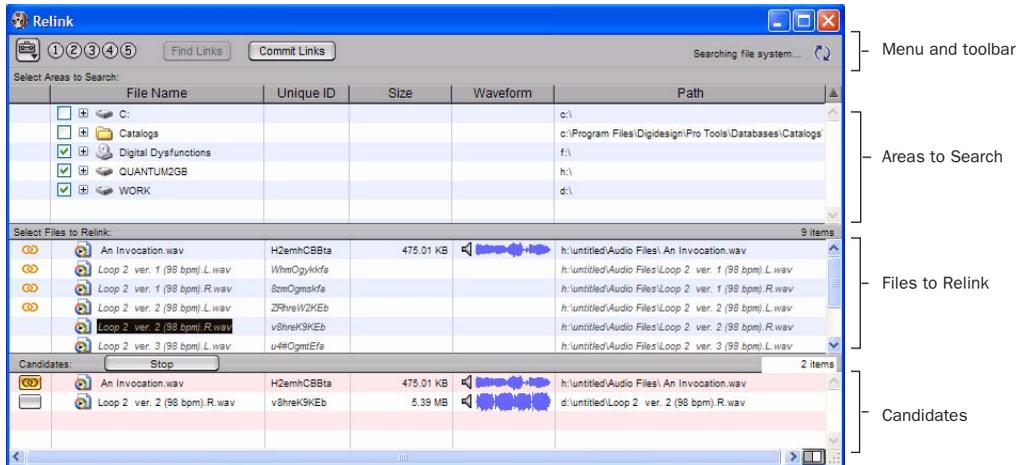


*Figure 12. Main elements in the Relink window*

## Opening the Relink Window

When opening a session with missing files, use the Manually Find and Relink option to open the Relink window.

The Relink window can also be accessed after a session is open.

**To access the Relink window from an open session:**

**1** Choose Window > Project.

**2** Choose Relink Offline from the Browser menu.

## Selecting Areas to Search

Selecting volumes and folders in the Areas to Search pane lets you focus the search for missing files. This can speed the relinking process by limiting the number of volumes or folders to search. In addition, excluding folders from a search for missing files also lets you redirect a session or Catalog to a more appropriate copy of an item.



*Volumes selected to include in the search*

**To select volumes or folders to include or exclude in a search:**

**1** Configure the Areas to Search pane to display the appropriate volume, Catalog, or folder.

**2** Click each item's Search column to toggle it to be included or excluded in the search. A check next to an item indicates it will be included in the search. All folders within items are also checked.

## Single and Multi-File Relinking

The Relink window can be used to relink one missing file at a time, or to relink missing files in batches.

### Relinking Individual Missing Files

In some situations, individual files must be relinked one at a time in order to relink the session to the correct file. This is necessary if multiple copies of a media file are online, or whenever you want the most control and flexibility over the relinking process.

**To relink a missing file:**

**1** Configure the Areas to Search pane.

**2** Select one item in the Files to Relink list.

**3** Click Find All Candidates.



Find All Candidates
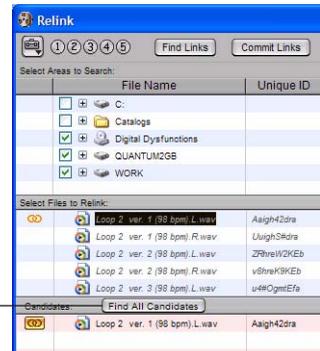
*Relinking a selected missing file*

Pro Tools searches the selected volumes and displays all files that match File Name and/or Unique ID in the Candidates list. Link icons indicate if a Candidate is already linked.

> ⚠ *OMF video clips can only be relinked to a session if they have matching Unique IDs.*

> ⚠ *QuickTime video clips can only be relinked to a session by file name and file format (QuickTime).*

> 💡 *To control matching and linking criteria when relinking an individual missing file, use the Find Links button. Find Links is explained in "Relinking Multiple Missing Files" on page 236.*

**4** Click the Link icon next to the appropriate Candidate to which you want to relink. A Link icon next to an item indicates it will be relinked to the item currently selected in the Files to Relink list.



Link
icon

*Indication of Linked status*

**5** Click the Link icon next to other Candidates, if you want to relink to additional missing files.

**6** Click the Commit Links button.

## Relinking Multiple Missing Files

Using the Find Links button, multiple files can be matched and linked in one procedure.

**To relink multiple missing files:**

**1** Configure Areas to Search. (See "Selecting Areas to Search" on page 235.)

**2** Select one or more items in the Files to Relink list. The Find Links button becomes available.

**3** Click Find Links.

**4** Configure criteria for relinking, if necessary, in the Linking Options dialog:

- By default, Find by Name and ID is enabled.
- To add additional matching criteria, select an option from the Linking Options dialog. (Modification Date is only applicable to Catalogs.)
- If Match Duration is enabled, Pro Tools only selects files of the same length or *greater.*



*Linking options*

**5** Click OK to continue (or click Cancel to return to the Relink window).

Pro Tools begins to search for an acceptable candidate for the first missing file (the first item selected in the Files to Relink list). A link icon appears next to each file as Pro Tools finds and links the first acceptable candidate to the miss-

ing file. The Link Path column shows the location of the selected candidate. Pro Tools continues searching, matching, and linking for each missing file in the Files to Relink list.

**6** To view the selected candidate for a particular missing file, select to highlight the missing file. That file's candidate appears in the Candidates pane, where you can view its file information and waveform.

**7** If, after the Find Links process is finished, you are not satisfied with the candidate selected for a particular missing file, you can click Find All Candidates for the selected file (see "Relinking Individual Missing Files" on page 235).

## Force Relinking Files

If you want to link to a substitute file (for example, if you know a file has the same audio or video but does not have a matching File Name or Unique ID), you can force a relink.

◆ To force relink an audio file, its file format (WAV, SD2, AIFF, or MXF), sample rate and bit depth must match those of the original file.

◆ To force relink a video file, its format (Quick-Time, Avid, MXF, or OMF) and frame rate must match those of the original file.

**To force a relink:**

**1** Choose Window > Project.

**2** Choose Relink Offline from the Browser menu.

**3** In the Relink window, select one item in the Files to Relink list.

**4** Navigate in the Areas to Search pane to locate the file you want to relink.

**5** Drag the file to the Candidates pane in the Relink window.

**6** Click the Link icon next to the file you dragged to the Candidates pane.

**7** Click the Commit Links button.

## Committing Links

There is no Undo for relinking. Once a file has been relinked and the session saved, the session always remembers the new link (the original link is forgotten). For this reason, no files are actually relinked until you click Commit Links.

⚠ *The Automatically Find and Relink option is the only relinking process that does not ask you to verify links before they are committed. If you use this option and are unsatisfied with the results, close the session without saving to prevent the new links from being committed.*

**To commit links:**

**1** Use the Relink window to link files as explained in "Single and Multi-File Relinking" on page 235.

**2** Click Commit. You are asked to verify committing links.
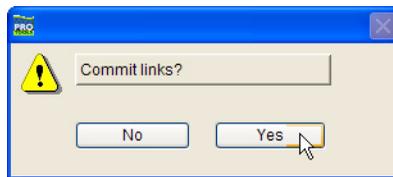


*Commit Links dialog*

**3** Do one of the following:

- Click Yes to commit links.

– or –

- Click No to stop without affecting files.

## Relinking and Aliases in Catalogs

DigiBase Pro Catalogs are collections of "aliases" or "shortcuts" to actual files. If the files are moved, an item in a Catalog can become un-linked from the file it references.

### To relink a Catalog:

**1** Open the Catalog.

**2** Select items to relink.

**3** Choose Relink Selected from the Browser menu in that Catalog window.

## Workspace Browser

The Workspace browser is your starting point for managing media (see Figure 13 on page 238). The Workspace browser is always available while Pro Tools is running, even if no session is open.

Only the Workspace browser lets you do the following:

- Designate volumes as Performance volumes (Playback or Record volumes) or as Transfer volumes.
- View and access all available volumes
- Unmount volumes
- Create, view, and access Catalogs.
- Search multiple volumes and Catalogs simultaneously.

The Workspace browser is similar to your computer's desktop, in that it shows all of the mounted local and network volumes. The Workspace browser has all the common browser elements, including an Items list, View presets, and access to all files. In addition, the Workspace browser provides drive allocation settings, access to catalogs, and the ability to search multiple volumes and catalogs simultaneously.
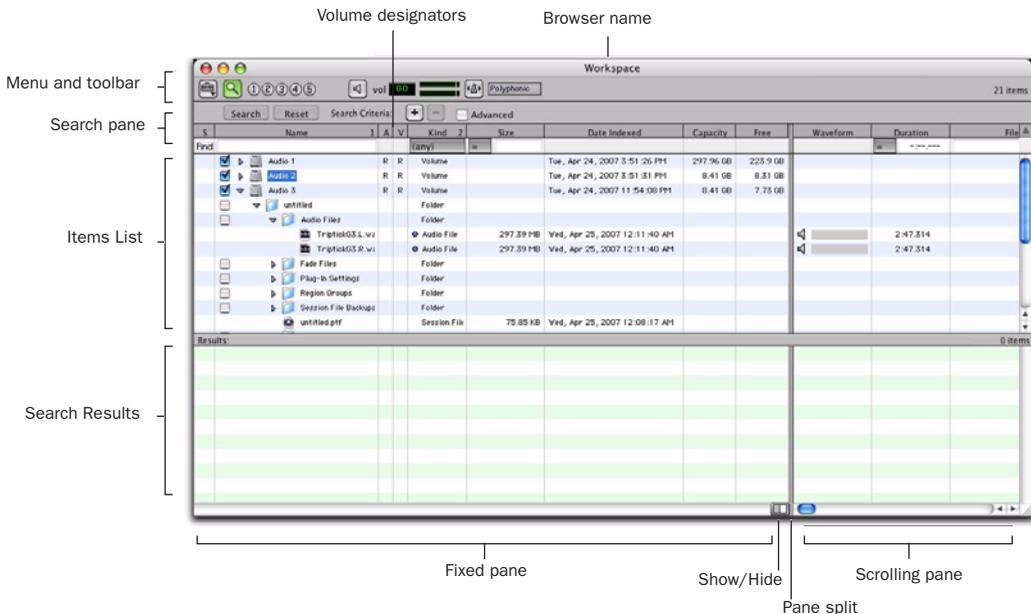


*Figure 13. Workspace browser, with the Search pane displayed*

## Opening the Workspace Browser

**To open the Workspace browser:**

**1** Launch Pro Tools.

**2** Choose Window > Workspace.

⇧ *Press Alt+; (Windows) or Option+; (Mac) to open the Workspace browser.*

## Audio and Video Volume Designators

The Workspace includes columns for Audio and Video Volume designators. These two columns display, and let you designate, whether a volume is a Record, Playback, or Transfer volume.

**R (Record and Playback)** Able to play audio and video files already on the volume, and record new files.

**P (Playback Only)** Can play audio and video files already on the volume, but cannot have new files recorded to it.

**T (Transfer)** Can only be used for storing, transferring, or auditioning files, and cannot be used for recording or playback.

## To change a volume designator:

**1** Open the Workspace browser.

**2** Click and select the appropriate Audio and/or Video designator for the volume.



*Designating a volume in the Workspace*

## Mounting and Unmounting Volumes

The Workspace browser lets you unmount volumes while Pro Tools is running, and shows newly mounted volumes as they come online.

**To unmount a volume from within the Workspace browser:**

**1** Select a volume in the Workspace browser.

**2** Choose Unmount Volumes from the Browser menu.

The Workspace browser closes the database file for the selected online volume and removes it from the Workspace browser, and unmounts the disk from the computer.

Pro Tools alerts you if the volume being un-mounted has files referenced in the Timeline.

⚠️ *Always use the Unmount command in the Workspace browser menu to unmount vol-umes, or quit Pro Tools and then unmount the volume. Do not use any other method to unmount a volume while Pro Tools is run-ning.*

## Catalogs in the Workspace Browser

### (DigiBase Pro Only)

With DigiBase Pro, the Workspace browser pro-vides special tools for creating and accessing Catalogs. Once Catalogs have been created, they appear in the Workspace browser in the Cata-logs folder.

### To show all Catalogs:

**1** Open the Workspace browser.

**2** Click the Expand/Collapse icon next to the Catalogs folder.
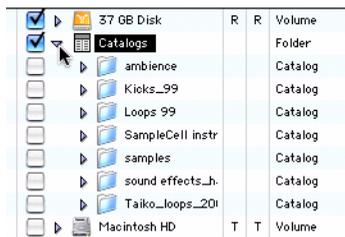


*Viewing Catalogs in the Workspace.*

### To open an individual Catalog:

■ Double-clicking a catalog opens a Browser window for that catalog.

📖 *For complete instructions on creating and working with Catalogs, see "DigiBase Pro Catalogs" on page 243.*

## Searching in the Workspace Browser

The Workspace browser provides the most com-prehensive DigiBase search capabilities. The Workspace browser lets you perform searches across a single volumes, multiple volumes, or across any combination of volumes, folders, and Catalogs. You select which volumes to include in the search, and which to exclude. The Work-space also provides a separate Search Results pane to view, select and manage the results of searches.
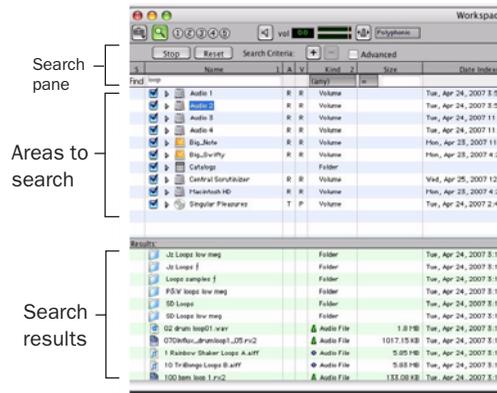


*Search and Search Results panes in the Workspace*

The Search Results pane lets you maintain the results of searches, while still viewing and con-figuring options for additional searches.

### To search from the Workspace:

**1** Choose Window > Workspace to open the Workspace browser.

**2** Click the Search icon to display the Work-space Search pane.

**3** Configure search criteria.

**4** Click next to each item in the Areas to Search list to include or exclude volumes to be searched. Checked items and their sub-folders are included in the search. (The next time you open a Search pane in the Workspace, these settings remain in effect.)

**5** Click Search.

**6** The results of the search are shown in the Search Results pane.

*For more information on searching, see "Searching Items" on page 220.*

# Project Browser

The Project browser displays and manages all the files related to the current session, regardless of what volume they reside on (see Figure 14 on page 241).

The Project browser is similar to the Region List in that it contains all files associated with a session, with the added data, searching, and sorting capabilities of Pro Tools browsers.

Unlike the Region List, however, individual regions are not displayed in the Project browser (in which only complete files are listed).

Use the Project browser and its Browser menu commands to:

• View all media files associated with a session

• Identify, select, and relink offline files

• Identify, select, copy, and relink Transfer files

## Opening the Project Browser

**To open the Project browser:**

**1** Launch Pro Tools and open a session.

**2** Choose Window > Project.

*Press Alt+O (Windows) or Option+O (Mac) to open the Workspace browser.*
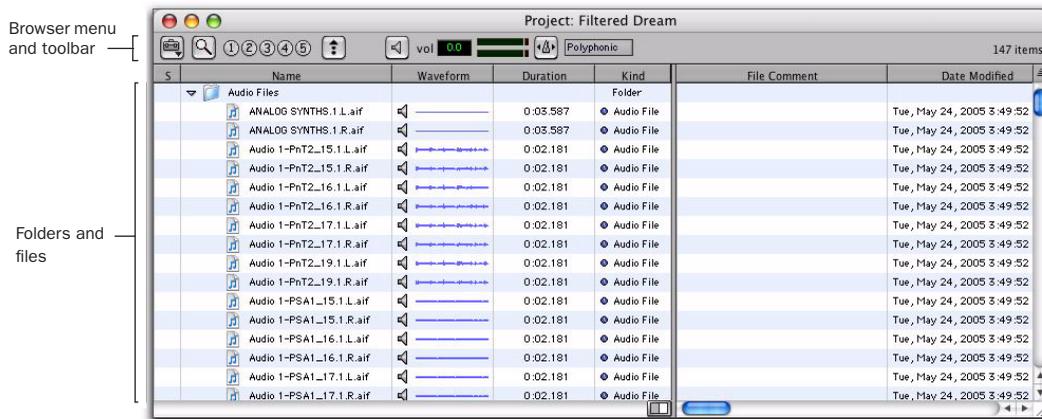


*Figure 14.  Project browser*

The Project browser displays the following:

**Audio Files Folder** Contains all of the audio files currently referenced by the session, regardless of where they are located.

**Fade Files Folder** Contains all of the fade files referenced by the session, regardless of where they are located.

**Render Sources Folder** Contains all files that have been imported into the session, but are still being converted, copied, or processed.

**Video Files Folder** Contains any video files referenced by the session.

Each of the folder types in the Project browser has an Expand/Collapse icon. Clicking the icon shows or hides all of the files in the sub-group. The folders displayed in the Project browser are session-specific groupings of files, not physical folders on disk.

### Locating Parent Files of Regions

The Project Browser can be set to automatically highlight the parent file of any region selected in the Pro Tools Region List.

#### To highlight the parent file of a selected region:

**1** Select a region in the Region List. If the Region List Selection Follows Track Selection preference is enabled, you can select a region on a track.

**2** From the Region List pop-up menu, select Select Parent in Project Browser.

*When the Select Parent in Project Browser option is enabled, the Project browser automatically highlights the parent file of any file or region selected in the Region List.*

## About the Project Browser

### No Drag and Drop to the Project Browser

To import a file from another browser into the current session, you must drag files to the Timeline or Region List. You cannot import a file into a session by dragging it to the Project browser. (You can, however, spot files from the Project browser into the current session using drag/drop.)

### Deleting Items in the Project Browser

Deleting items in the Workspace browser or in Volume browsers deletes the files from disk. Video and session files cannot be deleted in the Project Browser.

Deleting an item from the Project browser lets you remove items from the current session, or delete them from disk (using the Pro Tools Clear Regions dialog).

### Copy and Relink Restrictions

In the Project Browser, the Copy and Relink command (in the Browser menu) cannot be used on session files, or on offline audio files. Use the Relink window to first bring items on-line. In addition, the Relink Selected command cannot be used on session files.

### Updating the Project Browser

The Project browser is automatically updated whenever a file is added to or deleted from the session, so it is always fully indexed and up to date.

*For instructions on searching, sorting, and working with the Project Browser, see*

# DigiBase Pro Catalogs

**(Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)**
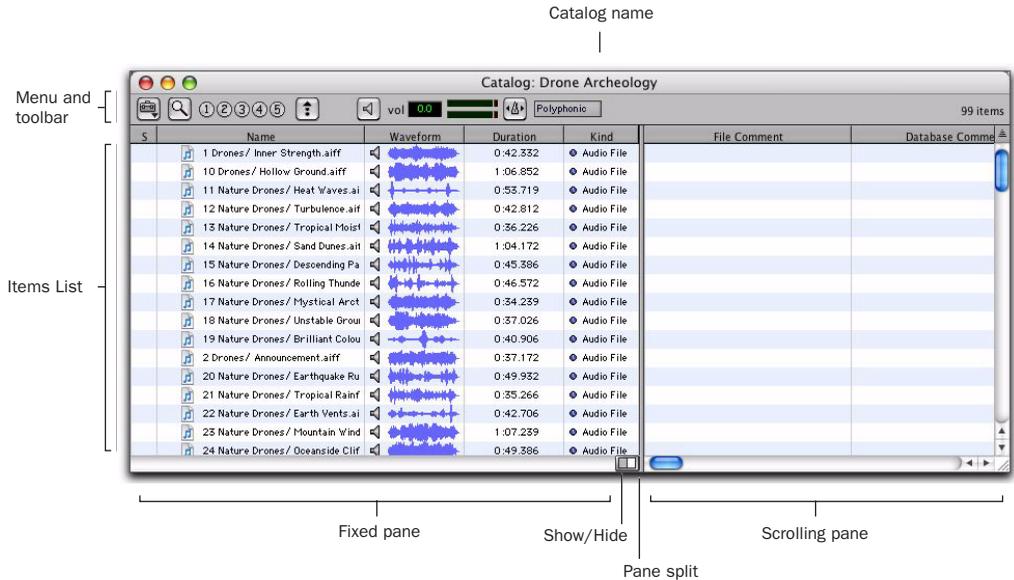


*Figure 15. Catalog browser*

Catalogs are available with DigiBase Pro, which is included with Pro Tools HD and Pro Tools LE with DV Toolkit 2 (see Figure 15).

While Volume browsers are designed to be an accurate representation of the file structure on a given volume, Catalogs are similar to having a Favorites folder, and serve as a way to collect and organize frequently used items regardless of where they are stored.

A Catalog is analogous to a folder full of aliases or shortcuts. Placing a file in a Catalog does not create a copy of the file, and does not change where the file is stored. Rather, it stores a reference (or alias) to the file so that it can be found and manipulated without having to search for its physical location.

## Opening a Catalog Browser

Catalogs are displayed in the Workspace browser.



*Catalogs item in the Workspace*

### To open a Catalog browser:

**1** Open the Workspace browser.

**2** Click the Catalogs Expand/Collapse icon.

**3** Do one of the following:

- Click the Expand/Collapse icon for the desired Catalog to view its contents in the Workspace.

– or –

- Double-click the Catalog name to open it in its own browser window.

## Clip Names in Catalogs

Clip Names are the names that appear in the Timeline and Region List when a file is imported into a session.

For most files, the Clip name is the same as the file name. For OMF Files, the Clip Name is the name that appears in the Avid bin.

Clip names can only be edited in a Catalog. Editing the Clip name does not affect the actual file; however, if you add the same file to a new Catalog, it retains its original Clip Name. When you drag a file from a Catalog into a session, the edited Clip Name is what appears in the Timeline and Region List.

If the Clip Name is longer than 32 characters, Pro Tools truncates the name automatically when imported into the session.

## Comments and Catalogs

Catalogs provide commands for managing OS 9 Finder comments, Database comments, and Clip Names.

Database Comments in a Catalog are stored in the Catalog database. Database Comments, which can be up to 256 characters in length, are searchable, cross-platform, and editable.

**Copy OS 9 Finder Comment to Database Comments** Copies an item's OS 9 Finder comments to its Database comments.

� *OS 9 Finder comments (from the OS 9 Get Info window) are not supported in OS X Get Info windows. Use the Copy OS 9 Finder Comment to Database Comments command to utilize any OS 9 Finder comments stored with your media.*

**Copy Database Comments to Clip Names** Copies an item's Database comments to Clip Name.

**Copy File Comments to Clip Names** Copies an item's File Comments to Clip Name.

## Creating Catalogs

Catalogs can be added to the Workspace as new, empty Catalogs, or you can select items first and then save a Catalog of all selected items.

**To create a new, empty Catalog:**

**1** Open the Workspace browser.

**2** Choose New Catalog from the browser menu.

**3** Enter a unique name and click OK.

**To catalog a selection of items:**

**1** Open any browser (including an existing Catalog).

**2** Select the items you want to include in the new Catalog.

**3** Choose Create Catalog from Selection from the Browser menu.

A new, fully indexed Catalog database of the selected items is created.

## Creating Catalogs of Folders

### To create a Catalog of an entire folder and all its contents:

**1** Open the Workspace browser, if not already open.

**2** Drag and drop a single folder onto the Catalog icon in the Workspace browser.

Pro Tools first indexes the folder, then a fully indexed Catalog is created, with the same name as the dropped folder.

## Renaming a Catalog

Catalogs can be renamed at any time.

### To rename a Catalog:

**1** Click the Catalog item in the Workspace browser until its name highlights.

**2** Enter a new name for the Catalog.

## Modifying Catalogs

### To add items to a Catalog, do one of the following:

■ Open the Catalog and drop new items from another browser.

– or –

■ Click the main Catalogs icon in the Workspace, to expand your view of all existing Catalogs, then drop items onto any Catalog.

### To add a folder to a Catalog:

**1** Open the Catalog.

**2** Choose Create Folder from the Browser menu.

### To delete items from a Catalog:

**1** Select the items.

**2** Press the Delete key, or choose Delete Selected from the Browser menu. A warning dialog appears.



*Delete Catalog warning dialog*

**3** In the warning dialog, do one of the following:

- Click Cancel to cancel the delete operation.
- Click Delete Files to delete aliases and associated files from disk.
- Click Delete Aliases to delete only the aliases and not the associated files.

This operation cannot be undone.

### Consolidating Files with Catalogs

Catalogs are excellent tools for consolidating files from a variety of sources.

For example, create a Catalog named "Thumps" and fill it with sound effects from three different volumes. You can then drag the Catalog from the Workspace browser to another volume, and a folder named "Thumps" is created on that volume. All of the files referenced by the Catalog are automatically copied to the volume. Folders and sub-folders, if any, and their contents are included in the copy.

## Updating Catalogs

Since a Catalog database is not linked to any particular volume, there is a limit to the abilities of the Update Index command. When Update Database for Selected is selected from the Browser menu in a Catalog, Pro Tools searches for the items represented by the aliases in the Catalog and updates the following information:

**Metadata** Metadata for all files found online, including File comments, are updated.

**Database Comments** Database Comments are not updated, because they are unique to each Catalog and are not part of the file's metadata.

## Relinking Catalog Items

If files are ever missing from a Catalog, use the Relink window to locate, copy, and relink files. For more information, see "Linking and Relinking Files" on page 230.

## Deleting Catalogs

**To delete a Catalog:**

**1** Select one or more Catalogs in the Workspace browser.

**2** Press the Delete key, or choose Delete Selected from the Browser menu. A warning dialog appears.

**3** In the warning dialog, do one of the following:

- Click Cancel to cancel the delete operation.
- Click Delete Files to delete aliases and associated files from disk.
- Click Delete Aliases to delete only the aliases and not the associated files.

This operation cannot be undone.

## Importing Catalog Items

You can import online and offline items from Catalogs into the current session.

### Importing Online Items from a Catalog

Dragging and dropping audio files to the Pro Tools Region List and Timeline is identical to dragging and dropping from Volume browsers.

📄 *For more information, see "Importing Files with Drag and Drop" on page 256.*

### Importing Offline Items from a Catalog

With Catalogs, it is possible to search and import files that are offline. For example, if you have a music cue that you know you want to use, but it resides on a CD-ROM or other unmounted volume, you can spot the file from a Catalog to the session Timeline, and it is automatically imported into the session when the volume is mounted.

The first step is to add files to a Catalog (files must be online to be added to a Catalog). Once added to a Catalog, if the items are taken offline they are listed in italicized text.

Offline files can be dropped from a Catalog to the Timeline just like online files. When you drop the files, a dialog appears asking if you want to relink the files or skip relinking. Click Skip All to load all the items as offline files (in the Timeline, their regions appear in light blue). In the Project browser, these items are listed in the Render Sources folder, to ensure that Pro Tools remembers that these items need to be relinked.

Whenever the volume containing the offline items is mounted, Pro Tools automatically starts to import the files, in the background. This is true even if you have saved the session, quit, and relaunched Pro Tools.

Once the items are completely imported, they appear as online items in the Timeline, Region List, and in the Project browser.

If the offline items match the session sample rate, bit depth, and file format, no conversion is necessary. As long as the volume is playable, the items become playable in the session as soon as the volume is mounted.

If the volume is unsuitable for playback, you are informed that some items must be copied to suitable volumes first.

📄 *For more information on Transfer files, missing files, and relinking, see "Relink Window" on page 234.*

## Task Window

For maximum performance and flexibility with file management tasks, Pro Tools provides the Task window (see Figure 16 on page 248). File management with Pro Tools involves nearly constant creating, copying, converting, processing, searching, and indexing files. These tasks occur in the background, letting you continue recording, editing, and mixing without delay.

The Task window lets you monitor, pause and cancel ongoing tasks including file copying, fade creation and indexing.

⚠️ *You cannot drag and drop items to or from the Task window.*

## Opening the Task Window

**To open the Task Window:**

▪ In Pro Tools, choose Window > Task Manager.

[SHIFT] *Press Alt+' (Windows) or Option+' (Mac) to open the Workspace browser.*

### Task Window Messages

If any background task cannot be successfully completed, the Task window comes to the foreground to notify you. The incomplete task is shown in the Paused Tasks pane of the Task window.

Because the Task window is a floating window, it does not interrupt current work. This allows you to continue recording and editing, and postpone file management until a more convenient time.

## Task Window Views

The Task window provides a maximized and minimized view.

**To toggle between maximized and minimized views:**

▪ Click the View Toggle icon in the top of the Task window.
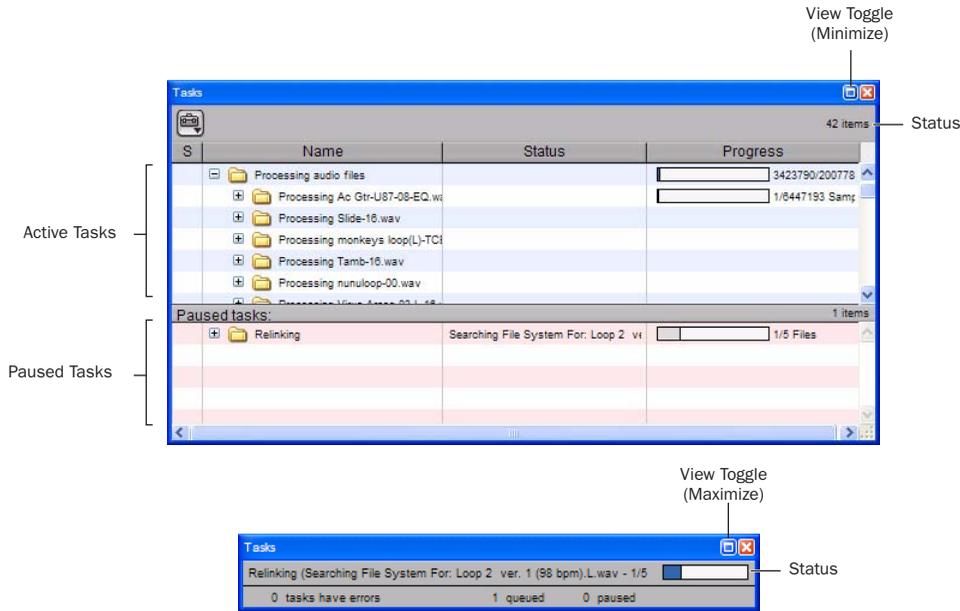
*Figure 16. Task window, maximum view (upper) and minimized view (lower)*

## Task Window Tools, Columns, and Displays

The Task window menu provides commands for Task window operations.

The following data is always displayed in the Task window (both views):

**Item Name** Indicates affected item, whether a file, database, or other supported item.

**Status** Action being taken (for example, Copying, Processing, Indexing and so on).

**Progress** Indicates the progress of the task or its sub-tasks, which include assessing the size of the items and the estimated amount of time necessary to complete the task.

**Progress Indicator** Indicates processing is ongoing.

**Quantification** Shows percentage of progress of the current task.

### Active Tasks Pane

The upper Active Tasks pane shows the tasks that are in progress or waiting to start. The currently executing task is at the top. Tasks in this pane will be processed.

As tasks complete, they disappear from the queue.

Any task that fails to complete successfully is moved to the Paused Tasks pane (see below). The Status column displays a description of the failure.

## Paused Tasks Pane

The Paused Tasks pane is displayed below the Active Tasks pane, and is separated by a moveable horizontal divider. Tasks listed in this pane will not be processed until they are moved back to the Active Tasks pane.

## Pausing and Cancelling Tasks

The Task window lets you pause, resume, and cancel tasks.

**To pause a task:**

■ Drag the appropriate task from the Active Tasks pane to the Paused Tasks pane.

The task moves to the top of the Paused Tasks pane.

**To pause all tasks:**

■ Choose Pause All from the Task window menu.

**To resume a task:**

■ Drag a task from the Paused Tasks pane to the Active Tasks pane. The task returns to its previous position in the queue.

**To resume all paused tasks:**

■ Select Resume All from the Task window menu. All tasks in the Paused Tasks pane (except failed tasks) are moved to the Active Tasks pane.

**To cancel a task:**

**1** Highlight any task in either pane of the Task window.

**2** Press Delete to remove it from the Task window.

**To cancel all tasks:**

**1** Select any single task in either pane.

**2** Press Control-A (Windows) or Command-A (Mac) to select all the tasks in that pane.

**3** Press Delete.

This command cannot be undone.

## About Cancelling Tasks

Some tasks involve one or more sub-tasks. Deleting a task cannot undo sub-tasks already completed. For example, if importing and converting multiple files appears as a single task, deleting that task before it is completed stops the import and conversion process, but files already converted and imported remain on disk. If you want to cancel a task involving multiple sub-tasks, you can instead let the process complete and then use Undo to completely undo all sub-tasks, as available.

## Closing Sessions with Pending Tasks

If you close a session or quit Pro Tools while tasks are still pending (either in the Active or Paused Tasks panes of the Task window) Pro Tools asks if you want to cancel, or complete the pending tasks. You can choose to open the Task window and wait for pending tasks to complete, cancel the pending tasks, or quit. If you quit, some tasks are cancelled. Tasks that involve file copies are remembered and restarted when you relaunch Pro Tools.

### About Failed Tasks

The Paused Tasks pane shows any tasks that could not be completed. The reason for the failure is shown in the Status column.

Failed Tasks cannot be resumed, and must be deleted manually from the Paused Tasks pane.

If Automatically Find and Relink was unable to find all files in a session, a failed task is placed in the Paused Tasks pane of the Task window. It remains there unless you manually remove it from the Task window (even if you have since found the files through a subsequent search and relink task).

## Task Prioritization

A task that is in progress may be interrupted by a task of higher priority. When this happens, the partially completed task is halted and rescheduled later in the queue, and shown with a progress bar in the Active Tasks pane. When the higher priority task is finished the first incomplete task in the queue resumes.

## Tips for Using the Task Window

### Pause Tasks During Playback

A global preference Pause during Playback is provided in the Task window Browser menu. When enabled, Active Tasks are paused whenever Pro Tools is playing (or recording). This setting is especially useful when working on slower CPUs, or whenever you want to minimize system load for maximum playback and recording performance. This Preference maintains its setting until the next time it is changed.

## Stored Tasks

Any task that imports files into a session is stored with a session when it is closed, and resumes when the session is re-opened.

For example, if you Import Tracks with Copy Media selected, then save and quit before the copy completes, the copy tasks resume when the session is reopened.

## Grouped Tasks

Some tasks consist of many smaller tasks. For instance, Copy and Relink may require hundreds of individual files to be copied. To help manage these tasks, they are grouped under the originating command. So in the example of a Copy and Relink command, one Copy task would appear with an Expand/Collapse icon in the Task window. Clicking the icon shows each of the individual sub-tasks.

If there is more than one grouped task in the queue, all of the sub-tasks for the first group must be completed before the sub-tasks of the second group can be processed.

If the session is saved and closed while several of these group tasks are in the queue, and if those tasks are the type that can be interrupted and saved when closing the session, all of the tasks reappear as part of the same group when the session is reopened.

# Chapter 14: Importing and Exporting Session Data

Pro Tools lets you import and export a variety of data into and out of a session, including audio and MIDI files, region groups, video files, track playlists, I/O configurations, and signal routing configurations.

You can import individual audio and MIDI files into a session, or import entire audio or MIDI tracks, along with all of their attributes, from another session. Additionally, with Pro Tools HD, you have the option of importing any combination of track attributes from another session, such as a track's audio or MIDI playlists, signal routing, plug-ins, or automation (see "Importing Session Data" on page 266).

📖 *For information on importing and exporting video files, see Chapter 43, "Working with Video in Pro Tools"*

## Importing and Exporting to and from a Session

### Importing

Pro Tools lets you import audio, video, MIDI, region groups, or session files into the current Pro Tools session by:

- Dragging and dropping from:
  - A DigiBase browser
  - Windows Explorer or the Mac Finder
- Using the File menu Import commands:
  - Session Data
  - Audio
  - MIDI
  - Video
  - Region Groups

Session data, audio files and regions can be imported to existing tracks, new tracks, the Track List, or the Region List in a Pro Tools session.

## Exporting

Pro Tools lets you export audio, video, MIDI, region groups, and session data by:

- Using the Send Via DigiDelivery command

- Using the Send to Sibelius command (MIDI only)

- Using the File menu Export commands:
  - Selected Tracks as New AAF/OMF
  - MIDI
  - Session Info As Text

- Using the Tracks Right-click pop-up menu:
  - Send To Sibelius command
  - Export MIDI command

- Using the Region List pop-up menu:
  - Export Region Definitions command
  - Export Regions as Files command
  - Export Region Groups command

# Audio Conversion on Import

Depending on the properties of the audio files you are importing, you can add, copy, or convert the files:

◆ When files are *added* to a Pro Tools session, they remain at their current hard drive location and are not moved or copied. The session references the original files where ever they are on your system.

◆ When files are *copied* into the session, the original files remain where ever they are on your system and are copied to the session's Audio Files folder and are then added to the session. The session references the copied files, not the original files.

◆ When files are *converted* into the session, the original files remain where ever they are on your system and are copied to the session's Audio Files folder and converted to the session's audio file format, sample rate, and bit depth. The session references the converted files, not the original files.

### Files That Can Be Added to a Session without Conversion

Mono and split stereo (or split multichannel) audio files that are of the same audio file format, sample rate, and bit depth of the session can be added to the session without conversion and with or without copying the files to the session's Audio Files folder.

☼ *You can enable the Automatically Copy Files on Import option in the Processing Preferences page to be sure to always copy files to the session's Audio Files folder when importing audio by drag and drop.*

### Files That Must Be Converted on Import

Pro Tools automatically converts files that don't match the session's audio file type, sample rate, or bit depth. Audio files that don't match the session audio file type, sample rate, and bit depth must be converted on import. Pro Tools also splits interleaved audio files into multiple mono files.

If region definitions are present in an audio file, you can convert and import the audio for a region without importing the entire parent audio file using the Import Audio command.

⚠ *Pro Tools 7.x does not support audio file names that contain certain ASCII characters (see "Opening a Session that Contains Audio File Names with Illegal Characters" on page 287).*

## Supported Audio File Formats

Audio files of the following types can be imported into Pro Tools sessions:

- AIFF
- WAV or BWF (.WAV)
- SD II
- SD I
- MP3
- MXF audio
- Sound Resource (AIFL—Mac only)
- WMA (Windows Media—Windows only)
- QuickTime (Mac only)
- AAC audio (including audio with AAC, Mp4, and M4a file extensions)
- ReCycle (REX 1 and 2) files
- ACID files

⚠️ *Pro Tools cannot import protected AAC or MP4 files with the .M4p file extension. These files are protected under the rules of digital rights management.*

## Sample Rate Conversion Quality

The Sample Rate Conversion Quality determines the quality of sample rate conversion used when converting and importing audio into a session. It can also applied when exporting files at different sample rate and when bouncing to disk. There are five possible settings, ranging from *Low* (lowest quality) to *Tweak Head* (highest quality). The higher the quality, and the larger the conversion, the longer it will take.

The Sample Rate Conversion Quality options are available in the Import Audio, the Import Session Data, the Export Regions as Files, and the Bounce to Disk dialogs. In each case, the Sample Rate Conversion Quality setting is local to that specific dialog. The Sample Rate Conversion Quality preference only applies to conversion on import by drag and drop.

**To set the sample rate conversion quality for importing audio by drag and drop:**

**1** Choose Setup > Preferences and click the Processing tab.

**2** From the Sample Rate Conversion Quality pop-up menu, select a quality setting. For most applications, the Good or Better setting will yield very good results.



*Sample Rate Conversion Quality preference*

**3** Click OK.

💡 *The Import Audio, Import Session Data, and Bounce To Disk dialogs provide local controls for sample rate conversion quality.*

## Bit Depth Conversion and Dithering

When importing audio at a lower bit depth than the session, Pro Tools converts the file to match the session bit depth by adding empty bits. For example, when importing a 16-bit file into a 24-bit session, Pro Tools converts the file to 24-bit.

When importing audio at a higher bit depth than the session, Pro Tools automatically applies a preset, noise-shaped dither and converts the file to the session bit depth. For example, when importing a 24-bit file into a 16-bit session, dither is applied automatically and the file is converted to 16-bit.

### Importing Interleaved Files

When using the Import Audio command, interleaved stereo files are automatically imported to stereo tracks.

Split stereo (dual mono) audio files can be automatically imported to stereo tracks. Split stereo audio files must have the channel identifiers ".L" and ".R" in their names (for example, *filename*.L and *filename*.R), and the files must be the same length. In Windows, or in Mac/PC Compatibility mode, these files will have a 3-letter file extension appended after the ".L" or ".R" channel identifier.

Pro Tools also lets you import multichannel interleaved files of any supported file type.

# Import Options and Preferences

Pro Tools provides several options and preferences that affect audio import. Configure Pro Tools to match your most common workflows. For example, if you frequently work by importing REX files for loop-based composition, you can configure Pro Tools to always import REX files to conform to tempo and create new tick-based Elastic Audio tracks.
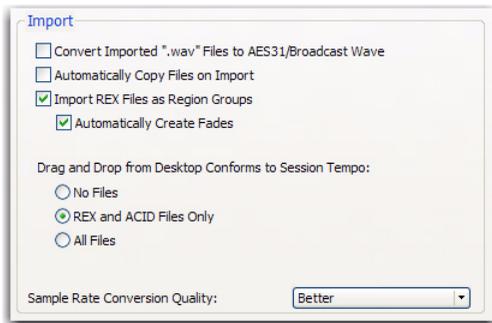


*Import options in the Processing Preferences page*

**Convert Imported "WAV" Files To AES31/BroadcastWave** When selected, this option applies to all newly imported WAV files, making them compliant with the AES31/EBU Broadcast standard.

**Automatically Copy Files on Import** When selected, all audio files that are imported by dragging and dropping are copied to the current session's Audio Files folder, regardless of whether the files need to be converted to the current session's file type, bit depth or sample rate. Additionally, when selected, the Import Session Data dialog defaults to "Copy from Source Media." The Automatically Copy Files on Import preference does not affect the Import Audio command.

**Import REX Files as Region Groups** When selected, REX flies are imported as region groups, all the underlying slices are imported as individual regions contained within the region group. When this option is not selected, importing REX files into a session converts them to the session's audio file format, the individual slices are consolidated, and the slice information is used for Elastic Audio analysis. These files remain tick-based after import and conversion.

**Automatically Create Fades** When selected, crossfades are applied automatically to the sliced regions within region groups created by importing REX files. If the Import REX Files as Region Groups option is not selected, the Automatically Create Fades option does not apply.

To change the default fade settings for REX files, click the REX button in the Default Fade Settings section on the Editing Preferences page (see "Fades Editing Preference" on page 256).

### Drag and Drop From Desktop Conforms to Session Tempo

The Drag and Drop From Desktop Conforms to Session Tempo options determine whether or not REX, ACID, and all other audio file formats dragged and dropped from Windows Explorer or Mac Finder are imported as tick-based Elastic Audio and conformed to the session tempo.

**None** When enabled, all audio files, including REX and ACID files, are not conformed to the session tempo when imported by drag and drop from Windows Explorer or the Mac Finder. They are imported as sample-based files and converted to the sessions audio file format.

**REX and ACID Files Only** When enabled, only REX and ACID files are conformed to the session tempo when imported by drag and drop from Windows Explorer or the Mac Finder. REX files are imported either as tick-based Elastic Audio or, if the Import REX Files as Region Groups option is enabled, as tick-based region groups.

**All Files** When enabled, all audio files are imported as tick-based Elastic Audio and conform to the session tempo.

### Sample Rate Conversion Quality

The Sample Rate Conversion Quality preference determines the quality of sample rate conversion used when converting and importing audio into a session by drag and drop. Sample rate conversion is used in a variety of Pro Tools processes including converting and importing audio files of different formats into a session, and bouncing and saving tracks to a different sample rate or bit depth. The higher the quality of sample rate conversion you choose, the longer Pro Tools will take to process the audio file.

### Elastic Audio Options

The Elastic Audio preferences determine which Elastic Audio plug-in is used for preview and import, and whether or not new tracks are created with Elastic Audio enabled using the selected default plug-in.



*Processing Preferences, Elastic Audio*

**Default Plug-in** Lets you select any Real-Time Elastic Audio plug-in as the default plug-in for previewing and importing Elastic Audio. The selected Default Elastic Audio plug-in is also used when new tracks are created with Elastic Audio enabled. The Elastic Audio Plug-in selector in DigiBase browsers inherits the selected Default Plug-in. Likewise, changing the selected plug-in in DigiBase browsers updates the selected Default Plug-in in the Processing preferences.

**Default Input Gain** Lets you attenuate the signal input to Elastic Audio plug-ins by 0 to –6 dB for preview and import. If you experience clipping due to Elastic Audio processing during preview or after import, you may want to set the Default Input Gain to slightly attenuate the audio signal input for Elastic Audio processing. This preference also applies to any audio imported to an Elastic Audio–enabled track.

If you commit any regions on a track (by disabling Elastic Audio on the track) that were imported with Input Gain, their region-based Input Gain is reset to 0.

The Elastic Properties window inherits the Default Input Gain preference. To apply further region-based Input Gain for Elastic Audio processing, select the region and adjust the Input Gain setting in the Elastic Properties window (see "Elastic Properties Window" on page 522).

**Enable Elastic Audio on New Tracks** When selected, new tracks are created with Elastic Audio enabled. The selected Default Plug-in is used. When importing audio to new tracks, new tracks are created with Elastic Audio enabled if this option is enabled.

💡 *If the Enable Elastic Audio on New Tracks option is selected, you may want to also select the New Tracks Default to Tick Timebase option in the Editing Preferences page.*

### Tracks Preference

When the New Tracks Default To Tick Timebase is enabled, all new tracks default to ticks. This includes importing audio to new tracks. When deselected, audio, Auxiliary Input, Master Fader, and VCA (Pro Tools HD only) tracks default to samples. MIDI and Instrument tracks always default to ticks.

### Fades Editing Preference

The Default Fades for REX files in the Editing preferences lets you select the default envelope shape for fades and crossfades between regions ("slices") in imported REX files. Fades are only applied to imported REX files if the Import REX Files as Region Groups option and the Automatically Create Fades option are both enabled on the Processing Preferences Page.
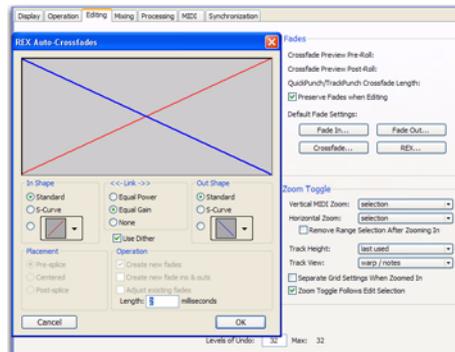


*REX Auto-Crossfades preference and dialog*

# Importing Files with Drag and Drop

Pro Tools lets you import audio, MIDI, video, and session files by dragging and dropping files from a DigiBase browser, Windows Explorer or Mac Finder to the Pro Tools application icon, the session Timeline, a track, the Track List, or the Region List.

Figure 17 on page 257 illustrates some of the options available to import files using drag and drop from DigiBase browsers.

⚠️ *Importing does not always convert or copy audio files. See "Audio Conversion on Import" on page 252.*

⚠️ *Importing using drag and drop does not necessarily bring the Edit window to the foreground. For example, dragging and dropping a file from a browser into a track leaves the source browser in the foreground (not the Edit window). Always verify the active, foreground window or browser before continuing.*

**To import files into the Region List:**

**1** Select audio, video, MIDI, region group, REX, or ACID files in a DigiBase browser, or Windows Explorer, or Mac Finder.

**2** Drag the selected files onto the Region List.

**To import files into an existing track:**

**1** Select the files you want to import in a Digi-Base browser, or Windows Explorer, or Mac Finder.

**2** Drag the selected file onto an existing, compatible track at the desired location. The file is imported and placed where it was dropped.

**To import files as new tracks:**

**1** Select the files you want to import in a Digi-Base browser, or Windows Explorer, or Mac Finder.

**2** Do any of the following:

- Shift-drag files and drop anywhere in the Edit window.
- Drop files to the Track List.
- Drop files to empty space in the Edit window, below or between tracks.
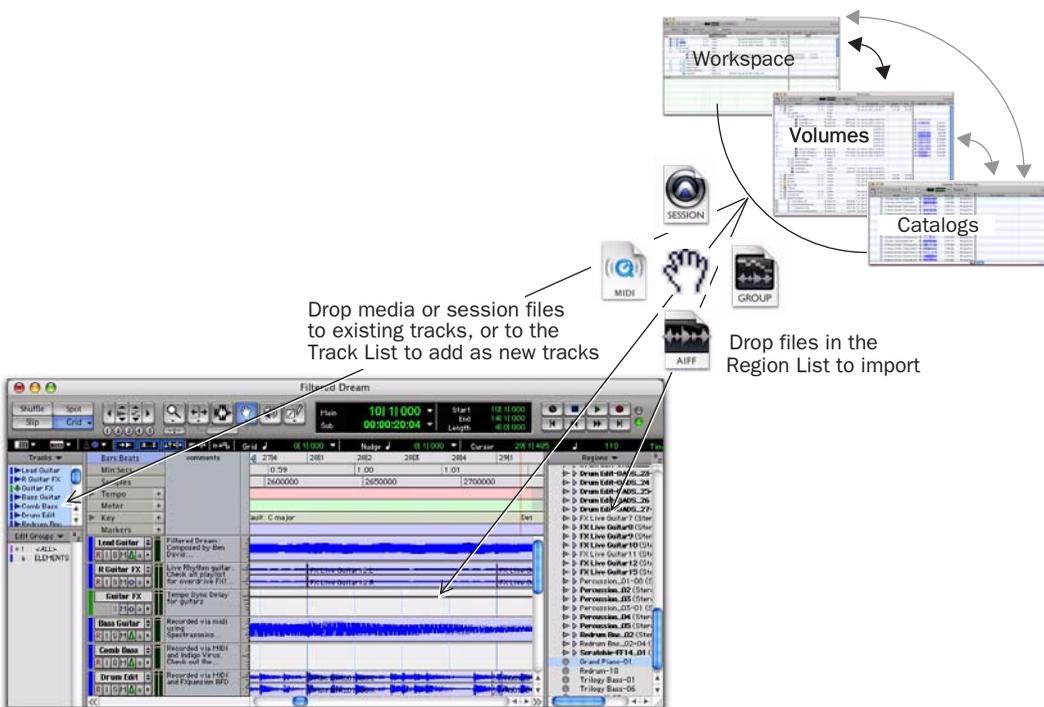


*Figure 17. Importing from browsers by drag and drop*

**To import and spot files into a track:**

**1** Enable Spot mode.

**2** Select the files you want to import in a Digi-Base browser, or Windows Explorer, or Mac Finder.

**3** Drag the files onto an existing, compatible track. The Spot dialog appears.

**4** Enter the appropriate time code location (where you want to spot the imported file).

**To import and spot an audio file by its Waveform in DigiBase browsers:**

**1** In a DigiBase browser, Control-click (Windows) or Command-click (Mac) the file's Waveform display at the approximate reference point you want to use for placement in a track.

**2** While continuing to press Control (Windows), or Command (Mac), drag the waveform onto an existing audio track (the source audio file and the destination audio track must have the same number of channels).

## Snapping to Head and Tail

**To import and snap to head:**

■ Start-drag (Windows) or Control-drag (Mac) a file onto a track.

**To snap to head and copy the file to the session Audio files folder:**

■ Alt-Start-drag (Windows) or Option-Control-drag (Mac) a file onto a track.

**To snap to tail:**

■ Control-Start-drag (Windows) or Command-Control-drag (Mac) a file onto a track.

**To snap to tail and copy the file to the session Audio Files folder:**

■ Control-Alt-Start-drag (Windows) or Command-Option-Control-drag (Mac) a file onto a track.

## Elastic Audio on Import

When importing any audio file by drag and drop to an Elastic Audio–enabled track, the audio file is imported and analyzed (if not already analyzed). If the imported audio file is tick-based, it is conformed to tempo using the track's Elastic Audio plug-in. If it is a sample-based audio file, such as a single drum hit or short sound effect, it maintains its original duration. Longer audio files with no detectable tempo also remain sample-based.

You can also import audio by drag and drop to create new tick-based Elastic Audio–enabled tracks.

When importing tick-based audio by drag and drop from DigiBase browsers to the Track List or empty space in the Edit window, Pro Tools creates a new tick-based, Elastic Audio–enabled track using the default Elastic Audio plug-in selected in the Processing Preferences page (see "Elastic Audio Options" on page 255).

If you are importing an audio file by drag and drop from Windows Explorer or Mac Finder to the Track List or to empty space in the Edit window, files are imported as sample-based or as tick-based Elastic Audio depending on the Drag and Drop from Desktop Conforms to Session Tempo preference (see "Drag and Drop From Desktop Conforms to Session Tempo" on page 255).

## Importing Elastic Audio from DigiBase to the Region List

With the Audio Files Conform to Session Tempo option enabled, dragging and dropping tick-based audio from DigiBase browsers to the Region List (or to the Track List), creates two separate regions in the Region List. The first is a sample-based whole file region and the second is the tick-based copy of the same region.

## Importing Tempo from Tick-Based Audio

If there are no tracks in the session, and you import a tick-based audio file to the Region List, Track List, empty space in the Edit window, you are prompted to either import the tempo from the file or use the default session tempo. To keep the default session tempo, and have the loop conform to the session tempo, click Don't Import.

If the session already contains at least one track (regardless of track type), you are not prompted to import the tempo from the file and the file is conformed to the session tempo.



*Import Original Tempo From File*

## Importing Audio Files and Regions Using the Import Audio Command

The Import Audio command lets you import audio files or regions into your Pro Tools session.

📄 *To import entire tracks from other sessions, see "Importing Session Data" on page 266.*

**To import audio files or regions into a session using the Import Audio command:**

**1** Choose File > Import > Audio.

**2** In the Import Audio dialog, locate and select an audio file to display its properties and associated regions.

You can choose to display only a certain file type (such as AIFF) by selecting the type from the Show pop-up menu. To display all supported file types, select All Documents from the Show pop-up menu.
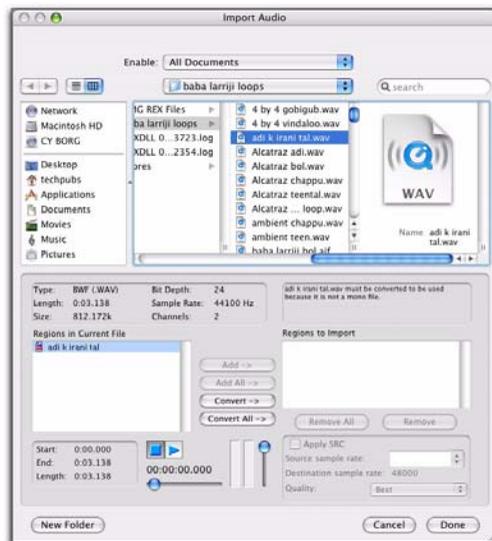


*Figure 18. Import Audio dialog*

In the import list, audio files are distinguished from regions by their icons.

 Audio File icon

 Audio Region icon

*File and Region icons in the Import Audio dialog*

⚠ *On Mac, Sound Resource files must have the ".SFIL" extension to be imported by Pro Tools.*

**3** To preview a selected file or region before you import it, click the Play and Stop buttons in the Import Audio dialog.

Adjust the preview volume with the vertical slider. To navigate to a particular location in the file, use the horizontal slider under the Play and Stop buttons.

The audition output path defaults to channels 1–2. For Pro Tools systems with more than 2 channels of output, the audition path can be changed in the I/O Setup (see "Audition Paths" on page 67).

**4** Do any of the following:
- To place a file or region in the Import list, select the file and click Add or Convert.
- To import all files and regions in the current directory, click Add All or Convert All.
- To remove a file or region from the Import list, select it and click Remove.
- To remove all files and regions, click Remove All.

⚠ *Pro Tools lets you add files to a session that are at a different sample rate than your session. In the comments field of the Import Audio dialog, a warning is posted that these files will play back at the wrong speed and pitch if they are not converted.*

**5** When you have added all audio files and regions to the Import list, you can apply sample rate conversion by doing the following:
- Enable Apply SRC.
- Specify the Source Sample Rate either by typing a number, or by selecting a sample rate from the pop-up menu.
- Select the sample rate conversion quality from the Quality pop-up menu. This setting overrides the Sample Rate Conversion Quality setting in the Processing Preferences page.

**6** Click Done.

**7** If you are copying or converting files, choose a location for the new files. Choose a folder on a valid audio drive, such as the Audio Files folder for the current session.

**8** In the Audio Import Options dialog, choose where the imported files will go in the session:



*Audio Import Options dialog*

**New Track** Each audio file is imported into its own individual track and into the Region List.

When importing audio into a track, you can also choose the location in the track where the audio file will begin (such as Session Start).

**Region List** Audio files are imported into the Region List without creating a new track. Imported audio files appear in the Region List and can then be dragged into an audio track.

**9** If you chose to create a new track, choose a location for the imported file in the track:

**Session Start** Places the file or region at the start of the session.

**Song Start** Aligns the beginning of the file or region to the Song Start point.

**Selection** Aligns the beginning of the file or region to the edit cursor or to the beginning of a selection in the Timeline.

**Spot** Displays the Spot dialog, which lets you spot the file or region to a precise location based on any of the Time Scales.

**10** Click OK.

# Importing Audio from Audio CDs

Pro Tools lets you import tracks from audio CDs using the same methods that you use to import audio files, as follows:

- Drag and drop CD audio from the CD folder.
- Drag and drop files from DigiBase Browser.
- Use the Import Audio command.

☆ *Importing CD audio with either drag and drop method lets you continue working in the session foreground (such as in the Mix or Edit window), while the Task Manager (Window > Task Manager) works in the background (importing and converting the audio until the import is completed). For more information on the Task Manager, see "Task Window" on page 247.*

Since the transfer is made in the digital domain, there is no signal loss.

The sample rate for audio CDs is 44.1 kHz. Therefore, if your session's sample rate is set to 48 kHz or higher, Pro Tools will convert the sample rate for the imported audio. Before importing CD audio, set the Conversion Quality preference accordingly. For more information, see "Sample Rate Conversion Quality" on page 253.

Before importing CD audio, make sure your hard drive has enough space for the converted audio files.

# Importing ACID and REX Files

ACID files and REX 1 and 2 files are converted to the session audio file type. Depending on the preferences settings, ACID and REX files can be imported as sample-based regions or as tick-based Elastic Audio regions. For REX files only, Pro Tools uses any slice data to create Event markers with 100% confidence. ACID files are analyzed for Elastic Audio events just like WAV files, and so events are detected with varying degrees of confidence.

📄 *For information on Elastic Audio, see Chapter 26, "Elastic Audio."*

REX files can also be imported as tick-based region groups.

📄 *For information on region groups, see "Region Groups" on page 675).*

**To import ACID and REX flies as sample-based regions:**

**1** Choose Setup > Preferences and click the Processing tab.

**2** Disable the Import REX Files as Region Groups option.

**3** Select No Files as the Drag and Drop from Desktop Conforms to Session Tempo preference.

**4** Click OK to close the Preferences dialog.

**5** When importing by drag and drop from Digi-Base browsers, ensure that the Audio Files Conform to Session Tempo option is disabled.

**6** Import the ACID and REX files you want by drag and drop from a DigiBase browser or the Desktop, or using the Import Audio command (see "Importing Audio Files and Regions Using the Import Audio Command" on page 259).

**To import ACID and REX files as tick-based Elastic Audio regions:**

**1** Choose Setup > Preferences and click the Processing tab.

**2** Disable the Import REX Files as Region Groups option.

**3** Select REX and ACID Files Only or All Files as the Drag and Drop from Desktop Conforms to Session Tempo preference.

**4** Click OK to close the Preferences dialog.

**5** Do one of the following:
- Import the REX files you want by drag and drop from a DigiBase browser
- Import the REX files you want by drag and drop from the Desktop.
- Use the Import Audio command (see "Importing Audio Files and Regions Using the Import Audio Command" on page 259).

**To import REX files as tick-based region groups:**

**1** Choose Setup > Preferences and click the Processing tab.

**2** Select the Import REX Files as Region Groups option.

**3** If desired, enable the Automatically Create Fades option (see "Automatic Fades for Imported REX Files" on page 262).

**4** Select REX and ACID Files Only or All Files as the Drag and Drop from Desktop Conforms to Session Tempo preference.

**5** Click OK to close the Preferences dialog.

**6** Do one of the following:
- Import the REX files you want by drag and drop from a DigiBase browser
- Import the REX files you want by drag and drop from the Desktop.
- Use the Import Audio command (see "Importing Audio Files and Regions Using the Import Audio Command" on page 259).

### Automatic Fades for Imported REX Files

If the Import REX Files as Region Groups option is enabled in the Processing Preferences page, Pro Tools can automatically apply real-time crossfades to the regions or "slices" in imported REX format files.

**To apply real-time crossfades to REX files:**

**1** Choose Setup > Preferences and click the Processing tab.

**2** Enable the Import REX Files as Region Groups option is enabled.

**3** Enable the Automatically Create Fades option.

**4** In the Preferences dialog, click the Editing tab.

**5** Under Default Fade Settings, click REX and choose the shapes for the crossfades, and click OK.

**6** Click OK to close the Preferences dialog.

⚠ *Depending on your edits or tempo changes after importing REX files, the fades can be deleted and you will have to recreate them manually.*

## Importing Multichannel Audio Files from a Field Recorder

Pro Tools lets you use any of its import methods to import monophonic and polyphonic audio files recorded by a field recorder. When you import these types of files, they must be converted to an audio format compatible with Pro Tools.

▤ *For more information on importing files from a field recorder, refer to the Field Recorder Workflow Guide.*

### Importing Monophonic Audio Files

A monophonic audio file contains one mono channel and relevant metadata from a single multichannel recording.

When you import monophonic audio files that were recorded simultaneously, they are converted to multichannel regions and displayed together in the Region List. Any metadata is also imported with the files.

### Importing Polyphonic Audio Files

A polyphonic audio file contains multiple mono channels and relevant metadata recorded simultaneously in a multichannel recording.

When imported into Pro Tools, a polyphonic audio file is divided into individual monophonic audio files written to disk—one file for each channel. Regions for each channel appear in the playlist, and a multichannel region appears in the Region List with the channels expandable underneath. Any metadata is also imported with the files.

## Exporting Audio

Pro Tools supports exporting audio regions as audio files, exporting left and right audio files as stereo interleaved files, and exporting region information.

You can also export audio from Pro Tools by bouncing or consolidating audio tracks. For more information, see "Bounce to Disk" on page 836 and "Consolidate Command" on page 475.

### Exporting a Region as a New Audio File

You can export regions as audio files with the Export Regions as Files command. Use this command if you intend to use a region in other sessions (or other audio applications) without using its parent source file.

This command also provides a way to convert regions to a different audio format, sample rate, or bit depth.

**To export regions as new audio files:**

**1** In the Region List, select the regions you want to export.

⚠ *Warped regions (Elastic Audio) will be exported unwarped at their original duration.*

**2** From the Region List pop-up menu, choose Export Regions as Files. The Export Selected dialog appears.
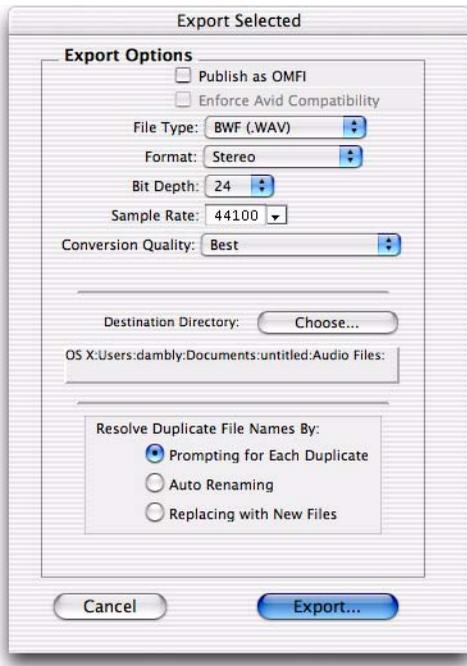


*Export Selected dialog*

**3** In the Export Selected dialog, set the file type, format, bit resolution, and sample rate. In addition, specify the Conversion Quality, and choose the destination directory.

When you export regions to a lower bit depth, Dither (with or without Noise Shaping) is applied as shown in Table 15.

*Table 15. Dither and Noise Shaping with Export Selected dialog*

| Bit Depth | Dither | Noise Shaping |
|-----------|--------|---------------|
| 24-bit to 24-bit | No | No |
| 16-bit to 24-bit | No | No |
| 24-bit to 16-bit | Yes | Yes |
| 16-bit to 16-bit | No | No |
| 24-bit to 8-bit | Yes | No |
| 16-bit to 8-bit | Yes | No |

The Dither setting used for any conversion is the Digidesign Dither plug-in (with or without Noise Shaping enabled, as noted in Table 15).

📄 *For more information about using Dither, see "Dither" on page 746.*

**4** Select an option for how Pro Tools should resolve duplicate file names.

**Prompting for Each Duplicate** Prompts you for a file name for any file that has the same name as a file in your destination directory.

**Auto Renaming** Automatically changes the name of any duplicate file by adding a number at the end of the file name (such as file_01).

**Replacing with New Files** Replaces files with the same name with the new files.

**5** Once the Export Options are configured, click Export to export the new audio files.

## Exporting Stereo or Multichannel Interleaved Files

You can use the Export Regions as Files command to export audio regions to stereo or multichannel interleaved files for use in other applications. (Pro Tools cannot use interleaved files directly in the Timeline—these must be converted into multi-mono files.) For example, for this to work with a stereo file, the selected regions must have identical names with ".L" and ".R" suffixes (for instance, vocals_01.L and vocals_01.R). These regions appear as a stereo region in the Region List.

Pro Tools HD also lets you bounce multichannel interleaved files of any supported file type.

**To export regions as a stereo or multichannel interleaved file:**

**1** Select the stereo or multichannel audio region in the Region List or in the track playlist. If the regions appear on mono tracks in the session, select the two mono regions.

**2** From the Region List pop-up menu, choose Export Regions as Files.

**3** In the Export Selected dialog, select "Stereo Interleaved" in the Format pop-up menu. For multichannel regions, the Stereo Interleaved option produces a multichannel interleaved file.

**4** Configure any other output settings, then click Export to export the new stereo interleaved file.

## Exporting Region Definitions

Pro Tools stores region definitions for audio files within each session. If you want to use an audio file's regions in another session, or with another application that supports them, you can export the region information.

☼ *If you plan to transfer Pro Tools session data to another session, you should export region definitions for sessions containing multiple takes created with Loop Record.*

The Export Region Definitions command does not export regions as audio files (unlike the Export Regions as Files command). Instead, it stores pointers to the regions within the parent source file.

**To export region definitions for an audio file:**

**1** In the Region List, select any regions or region groups for which you want to export definitions. You do not have to select the parent file audio region.

**2** Choose Export Region Definitions from the Region List pop-up menu.

**3** Click Export.

# Importing Session Data

You can import entire tracks from other Pro Tools sessions into the current Pro Tools session using the Import Session Data command or drag and drop.

With Pro Tools LE, you can import tracks and some general session data, but with Pro Tools HD or Pro Tools LE with DV Toolkit 2, you can select specific session data (such as automation and routing) to import. You can also import main playlist options—either replacing existing options or overlaying elements onto existing tracks.

For example, with Pro Tools HD or Pro Tools LE with DV Toolkit 2, you can choose to import only the track's audio into your current Pro Tools session. This is analogous to "changing the tape reel" in a traditional studio setup with a tape machine and mixing console. Or, you can choose to import all of a track's mixer settings without its audio, effectively importing a channel strip and using it on a track in your current session. By importing mixer settings for all of the tracks in a session or session template, you can reuse an entire Pro Tools mixer on all the sessions in a project.

**To import tracks or their attributes:**

**1** Open or create a new session.

**2** Do one of the following:

- Choose File > Import > Session Data, select the session to import data from, and click Open.

– or –

- Drag the session file whose tracks or attributes you want to import from a DigiBase browser, Windows Explorer, or Mac Finder into empty space in the Edit window or to the Track List.

**3** If the Fader Gain of the sessions are different, you will be prompted to keep or change Fader Gain before the Session Data dialog opens.

**4** In the Source Tracks section, select tracks to import by clicking the pop-up menu to the right of each track name and selecting Import As New Track.

*To select multiple tracks, Alt-click (Windows) or Opt-click (Mac) on any track pop-up men and select Import As New Track.*

⚠ *If the current Pro Tools system does not support surround mixing, surround tracks are not displayed in the Source Track List.*

**5** With Pro Tools HD or Pro Tools LE with DV Toolkit 2, for each track you select, you can choose to import it as a new track, or choose a destination track from the corresponding pop-up menu. Click Match Tracks to automatically match source and destination tracks with the same names.

**6** With Pro Tools HD or Pro Tools LE with DV Toolkit 2, select from among the Track Playlist options to choose how you want to import the source tracks.

**7** If applicable, choose options for how media files should be imported from the Audio Media Options and the Video Media Options pop-up menus.

**8** Choose the Time Code Mapping option for imported data.

**9** If the sample rates of the sessions are different, select the sample rate for the source session from the Source Sample Rate pop-up menu.

**10** To import the meter and tempo maps from the source session, select the Import Tempo/Meter Map option.

**11** To import key signatures from the source session, select the Import Key Signature Map option.

**12** To import Markers and Memory Locations from the source session, select the Import Marker/Memory Locations option.

**13** With Pro Tools HD or Pro Tools LE with DV Toolkit 2, select the Import Mix/Edit Groups option to import any Mix or Edit Groups from the source session.

**14** With Pro Tools HD, select the Import Mic Pre Settings option to import any Mic Pre settings from the source session.

**15** Click OK when you are finished.

**16** If you chose to copy or consolidate media, choose a location to place the media files.

⚠ *Imported tracks are made inactive if their source media is unavailable, or if the current session does not contain an equivalent output path.*

## Importing Grouped Playlists from Other Sessions

You can import tracks that use Grouped Playlists from another Pro Tools session, and the playlist grouping function will remain intact for those imported tracks. There is, however, a restriction for importing from pre-Pro Tools 6.1 sessions: After importing a partial set of grouped playlists (such as tracks 1–7 of a 10-track group), you cannot subsequently import tracks 8–10 and have them "rejoin" the playlist group for tracks 1–7.

## Import Session Data Dialog

The Import Session Data dialog lets you view the properties of the source session, select which tracks to import, and with Pro Tools HD, choose which attributes of those tracks you want to import into the current session.
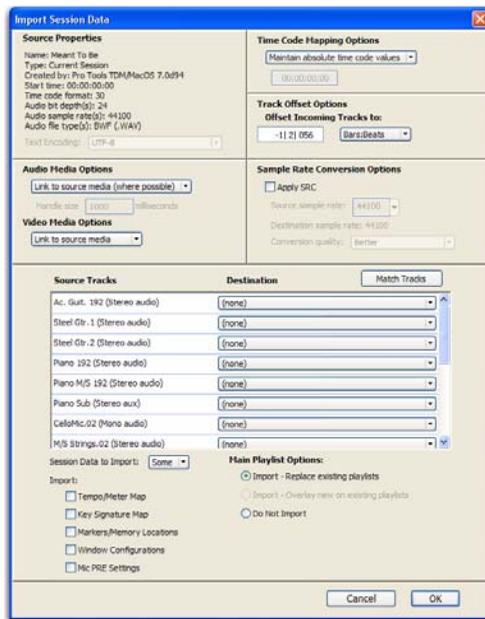


*Import Session Data dialog (Pro Tools HD)*
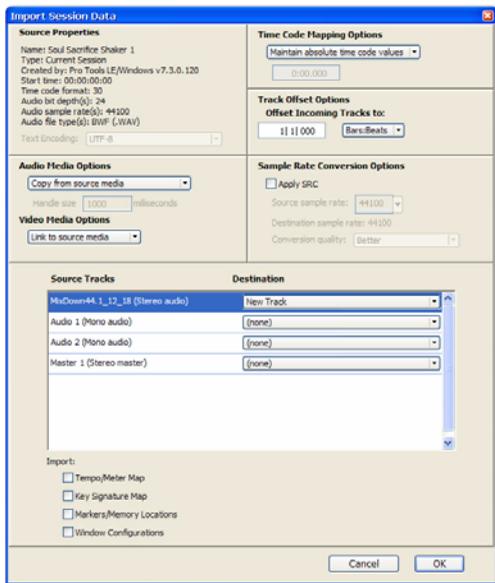
*Import Session Data dialog (Pro Tools LE)*

### Source Properties

The Import Session Data dialog displays properties for the source session. These properties include source session name, session type, start time of the session, audio bit depth, and sample rate. For Pro Tools 5.1 or higher sessions, the program that created the session and the session's audio file type are listed.

### Text Encoding

Pro Tools allows entry and display of any language characters supported in Unicode anywhere in the Pro Tools application. This lets you use multiple languages in session names, and in path names, file names and region names.

However, versions of Pro Tools 7.3.x and lower does not support Unicode. When importing data from sessions or OMF sequences created or saved with older versions of Pro Tools, you may need to identify the language encoding used in the imported elements.

**To choose the language encoding when importing data from a legacy Pro Tools session:**

**1** Choose File > Import > Session Data.

**2** Choose the language used in the legacy session from the Text Encoding pop-up menu.

### Audio Media Options

**Refer to Source Media (Where Possible)** This option lets you avoid duplicating audio files by referring to the original files when possible. If the source files do not reside on supported playback media (such as a CDs or DVDs), or if they require bit depth or sample rate conversion, the source files are copied instead. This option allows the current session to refer to files that do not match the current session's audio file format.

**Copy from Source Media** This option copies all audio files related to the imported tracks from the source media to a new specified location, and converts the files to the current session's audio file format, bit depth, and sample rate if necessary. This is useful if you are importing tracks from a source such as CD or DVDs or shared storage, and you want to place the audio files on a different hard drive.

**Consolidate from Source Media** This option consolidates audio while copying it. This is useful if you want to copy only the regions of the audio files used in the source tracks, without copying

unused audio. This option copies and converts consolidated audio to the current session's audio file format, bit depth, and sample rate if necessary.

When you choose this option, you can also choose the size of the handle (in milliseconds) applied to consolidated audio. *Handle* is the amount of the original audio file that is preserved before and after each region in case you need to make any edits to the new regions.

**Force to Target Session Format** This option copies and converts any files that do not match the current session's file format, bit depth, and sample rate. Files that do match the current session's file type, bit depth and sample rate are referred to directly and not copied.

### Video Media Options

You can either choose to leave video media files in their original locations or copy them to a new location. This is useful if you are importing tracks from a source such as CDs or DVDs or shared storage, and you want to place video files on a different drive.

### Time Code Mapping Options

You can specify where the imported tracks are placed in the current session. Times are indicated in time code for Pro Tools|HD and Pro Tools LE with DV Toolkit 2, and minutes:seconds for other Pro Tools LE systems.

From the Import Session Data dialog, the following Import Mapping Options are available:

**Maintain Absolute Time Code Values** This option places tracks at the locations where they were located in the source session. For example, if the current session starts at 00:01:00:00, and the ses-

sion from which you are importing starts at 10:00:00:00, the earliest imported tracks can appear in your session is 9 hours and 59 minutes after the start of the session.

**Maintain Relative Time Code Values** This option places tracks at the same offset from session start as they had in the source session. For example, if the source session starts at 01:00:00:00 and contains a track that starts at 01:01:00:00, and the current session start is 02:00:00:00, the track will be placed at 02:01:00:00 in the current session.

**Map Start Time Code To** This option places tracks relative to their original session start time. (With Pro Tools|HD or Pro Tools LE with DV Toolkit 2 systems, times are expressed in hh:mm:ss:ff, and on Pro Tools LE systems, times are expressed in hh:mm:ss.) For example, if the current session starts at 00:01:00:00, and the session from which you are importing starts at 10:00:00:00, you can reset the start time code to 00:01:00:00, to avoid placing files 9 hours and 59 minutes from the start of your session.

### Track Offset Options

You can specify a track offset in addition to any offset incurred with the Time Code Mapping options. Any imported audio is offset in the current session's Timeline by the specified amount. You can enter values in Minutes:Seconds, Bars|Beats, Samples, Time Code, or Feet/Frames.

### Sample Rate Conversion (SRC) Options

You can set options that control how sample rate conversion is applied to imported audio files. If the source session and the current session have the same sample rate, this portion of the dialog is unavailable.

**Source Sample Rate** For audio files created in any session, no matter what the session sample rate is, you can have the sample rate conversion process treat the files in several ways to compensate for pull-up, pull-down, and NTSC or PAL frame rates. This setting allows you to choose the sample rate from which you want the sample rate conversion process to start.

**Destination Sample Rate** The destination sample rate is always set to the sample rate of your current session.

**Conversion Quality** This option lets you set the quality of the sample-rate conversion process. See "Sample Rate Conversion Quality" on page 253.

### Source Tracks

This area of the dialog lists the tracks in the source session that can be imported, each with a corresponding pop-up menu.

### Operation/Destination Track Pop-Up Menus

For each source track, there is a corresponding pop-up menu that lists options for importing the track and, with Pro Tools HD and Pro Tools LE with DV Toolkit 2, possible destination tracks in the current session. The pop-up menus display the following items:

**Do Not Import** Neither the source track nor any of its attributes are imported.

**Import as New Track** The source track and all attributes selected in the Session Data to Import menu are imported into a new track in the current session.

**Destination Track Names (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)** The names of possible destination tracks in the current session are listed at the bottom of the pop-up menu. Imported playlists and all attributes selected in the Session Data to Import will be placed in the destination track you choose.

Only destination tracks that match the track type (audio, Instrument, MIDI, Auxiliary Input, or Master Fader) and the channel format (mono, stereo, or any of the supported multichannel formats) of the source track appear in the pop-up menu.

### Find Matching Tracks

#### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

If you are importing playlists from source tracks with the same name as destination tracks in the current session (such as a new cut of a scene), click Find Matching Tracks to automatically match the track names. Tracks must have the same name, track type, and channel format to be automatically matched.

### Session Data to Import

#### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

The Session Data to Import menu is where you select which attributes of the selected tracks you want to import into the current session.

Selected attributes are applied to all tracks that you choose to import into the current session.

### Replacing Track Attributes

When you import an attribute of the source track into an existing track in the current session, it replaces the corresponding attribute in the destination track. If you choose not to import an attribute of the source track, the corresponding attribute in the destination track is retained.

### Replacing Track Path Names

When you import a track's input, output, send output or hardware insert assignments, any custom path names and I/O configurations from the source session are not imported. You can import path names and I/O configurations by importing I/O Setup settings. See "Working with I/O Settings Files" on page 63 for more information.

### Selecting Track Attributes to Import

You can select All, None, or any combination of the listed attributes to import. The following attributes are available to import:

**All** Imports all of the source track's playlists, according to the Track Playlist Option setting, and all of the attributes in the Session Data to Import list.

**None** Imports only the source track's main playlist, according to the Track Playlist Option setting, and no other attributes of the source track.

**Alternate Playlists** Imports all of the source track's alternate playlists. The alternate playlists appear in the destination track's playlist pop-up menu.

**Regions and Media** Imports all of the audio files or regions in the source track, and places them in the Region List.

**Volume Automation and Setting** Imports the source track's Volume fader setting and any automation data on the track's Volume Automation playlist. The Volume fader setting and any Volume automation data in the destination track are replaced.

**Pan Automation and Setting** Imports the source track's Pan Slider settings and any automation data on the track's Pan Automation playlist. The Pan Slider setting and any Pan automation data in the destination track are replaced.

**Mute Automation and Setting** Imports the source track's Mute setting and any automation data on the track's Mute Automation playlist. The Mute setting and any Mute automation data in the destination track are replaced.

**Main Output Assignments** Imports the source track's channel output assignments, including any multiple output assignments. The channel output assignments in the destination track are replaced.

**Send Output Assignments** Imports the source track's send output assignments. Any Send output assignments in the destination track are replaced.

**Plug-in Assignments** Imports the source track's plug-in assignments. Any plug-ins in the destination track are removed, and their associated settings and automation are lost.

If the source track uses a plug-in that is not available on the destination system, it appears in the destination track and is made inactive.

**Plug-in Settings and Automation** When the source track's plug-in assignments are imported, this option imports the track's plug-in settings and any automation data associated with the plug-ins. If no plug-in assignments are imported, this option has no effect.

**Hardware Insert Assignments** Imports the source track's hardware Insert assignments. Any Insert assignments in the destination track are replaced.

**Voice Assignments** Imports the source track's voice assignment from the source session. Any voice assignments in the destination track are replaced.

**Input Assignments** Imports the source track's channel input assignment. The Input assignment in the destination track is replaced.

**Side-Chain Assignments** When the source track's plug-in assignments are imported, this option imports any side-chain assignments associated with the plug-ins. If no plug-in assignments are imported, this option has no effect.

**Track Active State** Imports the active/inactive state of the source track from the source session.

**I/O Labels (Path Names)** Imports the source track's path names.

**Track Comments** Imports the track comments associated with the source track. Any comments in the destination track are replaced.

**Record Safe/Solo Safe Settings** Imports the record safe and solo safe settings of the source track from the source session. Any record safe or solo safe settings in the destination track are replaced.

**Track View Settings** Imports the track height and playlist view of the source track from the source session.

**Mix/Edit Groups:** Imports track groups from source session.

## Import Options

**Import Tempo/Meter Map** Imports the meter and tempo maps, as they appear in the Tempo and Meter Conductor rulers, from the source session. Any Tempo or Meter events in the destination session are replaced.

**Import Key Signature Map** Imports all key signatures (if present) into Pro Tools with the imported session data. Any Key Signatures in the destination session are replaced.

**Import Marker/Memory Locations** Imports markers and Memory Locations as they appear in the Marker ruler, from the source session. Any markers and Memory Locations in the destination session are retained. Imported marker and Memory Locations are assigned the next available Marker/Memory Location numbers.

**Import Window Configurations** Imports the Window Configurations from the source session.

**Import Pre Settings (Pro Tools HD Only)** Imports any Pro Tools Mic Pre settings from the source session. Any Mic Pre settings in the destination session are replaced.

## Track Playlist Options

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

You can select from the following options to control how the main playlist from each source track is imported to the destination track in the current session.

**Import Main Playlists — Replacing Destination Main Playlists** Imports the main playlist from the source track. When you import the playlist into an existing track, the main playlist in the destination track is deleted and replaced with the imported playlist.

◆ If you select this option and import all of the source track's attributes, this is equivalent to importing the entire track.

◆ If you select this option and do not import any of the source track's attributes, you replace the audio playlists while keeping your current mixer settings.

**Import Main Playlists—Overlaying New with Existing, Trimming Existing Regions** Imports the main playlist from the source track. When you import the playlist into an existing track, any existing playlist data that overlaps data imported from the source track is trimmed and replaced with the imported data. Any playlist data in the destination track that does not overlap remains in the destination track.

**Do Not Import Main Playlists—Leaving Destination Playlists Intact** Does not import the main playlist from the source track. No audio is imported; only the attributes selected in the Session Data to Import list are imported to the selected tracks. When selected, importing all of the source track's input, output, send, insert and plug-in attributes is equivalent to importing a channel strip.

## Importing Sessions and Tracks by Drag and Drop

Session files can be dragged into the current session to import (and spot) audio, video, MIDI, region group, REX and ACID files, tracks, and session data.

• Dragging a session to the Region List imports all the regions from that session (without importing tracks).

• Dragging a session to a track in Pro Tools LE lets you import tracks.

• Dragging a session to a track playlist in Pro Tools HD opens the Import Session Data dialog, letting you select tracks and attributes to import. The imported session data will begin wherever you drop the session in the Timeline.

**To import tracks and other session data by drag and drop:**

**1** Open a browser.

**2** Drag a Pro Tools session file, or an AAF or OMF sequence (requires DigiTranslator 2.0), into the current session, as follows:

• Drag onto an existing track to overlay or overwrite data on the target tracks. Hold the Shift key while dragging if you intend to replace the current track playlists with those being imported (the Shift key preconfigures the settings in the Import Session Data dialog).

• Drag to empty space in the Edit window to create new tracks for the imported session data.

• Configure the Import Session Data dialog as appropriate. (See the *Pro Tools Reference Guide* for details on the Import Session Data dialog.)

## Copying During Import

If no conversion is necessary, and the files reside on a suitable Performance volume, Pro Tools references the original version of the media. You can also choose to copy media while importing by using key commands, or enabling the Automatically Copy Files on Import preference. Copies are created in the session's Audio Files Folder.

**To manually copy files on import:**

■ Alt-drag (Windows) or Option-drag (Mac) the files. A copy is created in the session Audio Files folder.

When importing sessions or tracks, the Import Session Data dialog lets you specify whether to reference the source media, or copy it.

**To automatically copy files on import:**

**1** Choose Setup > Preferences, and click the Operations tab.

**2** Select Automatically Copy Files on Import.

**3** Click OK to close the Preferences dialog.

## Using Undo after Importing

Using Undo after importing any files to the Timeline removes the files from the Timeline. However, the files remain in the session (in the Region List and Project browser) and are offline. If you do not remove or delete the files from the session manually, Pro Tools will report them as missing files the next time the session is opened.

## Importing AAF and OMF Sequences

**(DigiTranslator 2.0 Required)**

With the DigiTranslator 2.0 option, Pro Tools lets you open AAF and OMF sequences as new Pro Tools sessions or you can import AAF and OMF sequences into existing Pro Tools sessions.

⚠ *Pro Tools cannot play MXF audio or video files embedded within an AAF sequence.*

▤ *For more information on opening and importing AAF and OMF sequences using the DigiTranslator 2.0 option, see the DigiTranslator Guide.*

## Exporting Pro Tools Tracks as AAF or OMFI Sequences

**(DigiTranslator 2.0 Required)**

With the DigiTranslator 2.0 option, Pro Tools lets you export individual tracks in AAF or OMFI format. Use the Export Selected Tracks as AAF/OMF command.

⚠ *Pro Tools with DigiTranslator 2.0 does not support AAF files with embedded media.*

▤ *For more information on exporting selected tracks from Pro Tools sessions as AAF and OMF sequences using the DigiTranslator 2.0 option, see the DigiTranslator Guide.*

# Exporting Sessions as Text

## (Pro Tools HD Only)

You can use the Export Session Info as Text command to create a text file that contains extensive information about your session.

This text file can contain a list of audio files, audio regions, audio track EDL (Edit Decision List) information, extended timestamp information, and information about crossfades.

Track EDLs are exported as tab-delimited text—that is, with tabs between each column heading, and tabs between each event parameter. You can use this data in a program for reading EDLs, or you can format the EDL data into tables using a word processor or spreadsheet application.

## Export Session Info as Text Options
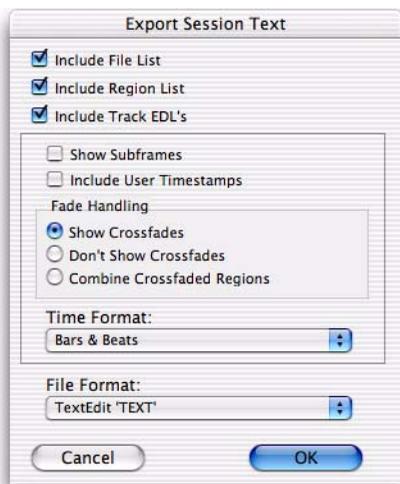


*Export Session Info as Text dialog*

## Include File List/Region List

You can choose to export a list of the session's audio files and regions. The File List provides a list of all the audio files and fades in the session, and their hard drive locations. The Region List displays all audio regions in the session, and the source audio file for each region.

## Include Track EDLs (Playlists)

You can export track EDLs (playlists). Track EDLs can be used to spot-check region placement and edits, or in a conforming program for post applications. In extreme circumstances the EDL can be used to recreate the entire session.

⚠ *MIDI track EDLs are not exported.*

When exporting track EDLs, the following options are available:

**Show Subframes** This option allows you to export subframe time information with track EDLs, if used in your session.

**Include User Timestamps** You can include user timestamps with track EDLs. User timestamps indicate a user-defined session location for the region, or the original location of the region when recorded.

**Fade Handling** For track EDLs, you can choose whether to show crossfades, not to show them, or to combine crossfaded regions. When regions are combined, their durations and locations are listed up to the center of the crossfade (for the leading region) and from the center of the crossfade (for the following region).

**Time Format** You can select the appropriate time format that exported EDL information is based on. For example, for post work, you might select SMPTE time, but for music creation locked to a grid, you might select Bars & Beats.

### File Format

You can choose to export to any of several different text formats. These include standard text formats, and Microsoft Word and Excel formats.

## Exported Session Text

### Session Information

The session text file starts with basic information about the session. This information includes the session name, sample rate, bit depth, time code format, and number of audio tracks, audio regions, and audio files, as shown in the following example.

*Session Information example*

| SESSION NAME: | Ripleys II-092700 |
|---|---|
| SAMPLE RATE: | 48000.000000 |
| BIT DEPTH: | 24-bit |
| TIME CODE FORMAT: | 30 Frame |
| # OF AUDIO TRACKS: | 19 |
| # OF AUDIO REGIONS: | 203 |
| # OF AUDIO FILES: | 54 |

### File List and Region List

Next, if you choose to include them, are the lists of audio files and regions.

### Track EDLs

The final item, if exported, is the list of track EDLs. A track EDL lists the track name, and all edits, including the event number, the region name, region start and end time, and region duration. The region timestamp is also exported, if you select this option. Subframes are shown in each time field if you select this option.

### To export a session as text:

**1** Choose File > Export > Session Info as Text.

**2** Select whether to include the File List, Region List, and track EDLs.

**3** If you choose to include track EDLs, select whether to show subframes, and whether to include user timestamps. Also select an option for crossfade handling.

**4** If you choose to include track EDLs, select the Time Format for the exported session text from the pop-up menu.

**5** Select the File Format for exported text using the pop-up menu.

**6** When you have set your options, click OK.

**7** Select a location and enter a filename for the exported text file. In Windows, Pro Tools adds the correct 3-letter filename extension, while on the Mac, the file extension ".txt" is added.

## Send via DigiDelivery

DigiDelivery® is Digidesign's system for efficient and reliable transfer of digital media files over the Internet. Send via DigiDelivery lets you send a Pro Tools session and all of its related files using DigiDelivery from within Pro Tools.

Like the Save Copy In command, DigiDelivery copies all files of the same type, regardless of their location, into a single destination folder.

The requirements for using DigiDelivery with Pro Tools are as follows:

◆ To send a delivery, senders must have an Internet connection, an account on a DigiDelivery network appliance, and the DigiDelivery client application.

◆ To receive a delivery, recipients only need an Internet connection and the DigiDelivery client application. An account on the network appliance is not needed.

📓 *For more information, visit the DigiDelivery website (www.digidesign.com/digidelivery).*

**To send a session from Pro Tools using DigiDelivery:**

**1** Choose File > Send via DigiDelivery.

**2** Do one of the following:

- If the DigiDelivery client is not installed on your system, Pro Tools will launch your Web browser, and connect to the Digi-Delivery site where you can download the current DigiDelivery client.

  – or –

- If the DigiDelivery client is installed on your system, the Send to DigiDelivery dialog will open.

**3** In the Send to DigiDelivery dialog, select which files to include.



*Include in Delivery dialog*

You have the option to include:

- Audio files
- Fade files
- Video files
- Plug-in settings files
- Timeline files only (files that are referenced in the current session Timeline)

**4** Click OK. The DigiDelivery client will launch, and the DigiDelivery Send Wizard (Page 1) will open. On this page you can name the delivery and add or remove files.

**5** Complete the remaining DigiDelivery Send Wizard pages and send the file, following the instructions that came with the DigiDelivery client software.

# Importing MIDI Files

You can import Standard MIDI Files (SMF) into your Pro Tools sessions.

Pro Tools provides several ways to import MIDI files into an open session.

- "Importing MIDI Files Using Pro Tools Menu Commands" on page 278.
- "Importing MIDI Files with Drag & Drop" on page 279.

Pro Tools does not import proprietary sequence files. To use sequences from other MIDI applications in a Pro Tools session, you will need to first save them as Standard MIDI Files. Refer to the manufacturer's documentation for details on saving Standard MIDI Files.

There are two types of Standard MIDI Files, both of which are supported by Pro Tools:

◆ Type 0 MIDI files store data for all MIDI channels in a single track. When importing these files, Pro Tools separates the data by channel and places each track's data in separate regions and tracks.

◆ Type 1 MIDI files, sometimes referred to as multitrack MIDI files, contain multiple tracks of MIDI data. When importing these files, each track's data is placed on its own new MIDI track in the Pro Tools session.

## Importing MIDI Files Using Pro Tools Menu Commands

Pro Tools provides menu commands to import MIDI files.

**To import Standard MIDI files into a session using the Pro Tools File menu:**

**1** Choose File > Import > MIDI and select the file you want to import.

**2** In the MIDI Import Options dialog, choose where the imported file will go:

**New Track** Creates a new track where the file will be imported.

**Region List** Imports the file into the Region List, where it will be available to place into tracks.



*MIDI Import Options dialog*

**3** If you chose to create a new track, choose a location for the imported file in the track:

**Session Start** Places the file or region at the start of the session.

**Song Start** Aligns the beginning of the file to the Song Start point.

**Selection** Aligns the beginning of the file to the edit cursor or to the beginning of a selection in the Timeline.

**Spot** Displays the Spot dialog, which lets you spot the file to a precise location based on any of the Time Scales.

**4** Select any of the following Import options:

**Import Tempo Map From MIDI File** When selected, overwrites any existing tempo and meter map with tempo and meter information read from the MIDI file.

**Import Key Signature From MIDI File** When selected, overwrites any existing key signatures with key signature information read from the MIDI file.

**Remove Existing Instrument Tracks** When selected, deletes any existing Instrument tracks. Selecting this option does not remove any current MIDI tracks. All existing MIDI regions will be left in the Region List.

**Remove Existing MIDI Tracks** When selected, deletes any existing MIDI tracks. Enabling this option does not remove any current Instrument tracks. All existing MIDI regions will be left in the Region List.

**Remove Existing MIDI Regions** When selected, deletes existing MIDI regions (all data on all MIDI and Instrument tracks) but leaves existing MIDI and Instrument tracks in place.

**5** Click OK.

The MIDI file will be imported according to the settings in the Import MIDI Settings dialog.

⚠️ *If the Standard MIDI File contains markers, they are only imported if the current session does not contain any markers.*

**6** In the Mix window, click the MIDI Output selector for each new track and assign a MIDI instrument and channel.

## Importing MIDI Files with Drag & Drop

You can drag and drop MIDI files from a DigiBase browser, Windows Explorer, or Mac Finder to the Timeline, a track, the Track List, or the Region List.

**To import MIDI into the Region List:**

**1** Select MIDI files in a DigiBase browser, or Windows Explorer, or Mac Finder.

**2** Drag the files onto the Region List of the current session.

**To import MIDI into an existing track:**

**1** Select MIDI files in a DigiBase browser, Windows Explorer, or Mac Finder.

**2** Drag the files onto an existing track in the Edit window of the current session.

**To import MIDI into new tracks:**

**1** Select MIDI files in a DigiBase browser, Windows Explorer or Mac Finder.

**2** Do one of the following:

- From the DigiBase browser, Shift-drag the files and drag them anywhere in the Edit window of the current session.
- Drag the files to the Timeline of the current session.
- Drag the files to the Track List.

📖 *For more information on using DigiBase browsers, refer to the DigiBase Guide.*

## Exporting MIDI Files

To export a session's MIDI tracks for use in another MIDI application, or for playback with an external (hardware) MIDI sequencer, you can export Pro Tools MIDI and Instrument tracks as a Standard MIDI File.

MIDI can be exported from Pro Tools as a merged, single, multichannel track (Type 0), or as multiple tracks (Type 1).

If your Pro Tools session uses key signatures and meters, they are exported with the MIDI file.

**To export all MIDI and Instrument tracks in the current session:**

**1** Make sure to unmute any MIDI tracks in the session that you want included in the exported MIDI file. (Or, conversely, mute any MIDI tracks you do not want included in the exported MIDI file.) For Instrument tracks, enable or disable the MIDI mute button (Instruments View) as desired.

**2** Choose File > Export > MIDI. The Export MIDI Settings dialog opens.
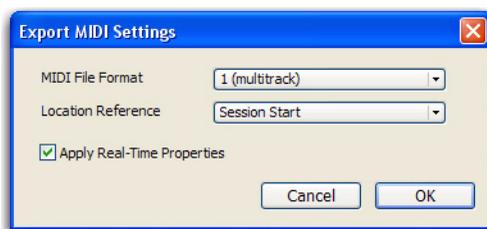


*Export MIDI Settings dialog*

**3** From the MIDI File Format pop-up menu, select 1 (multitrack) or 0 (single track).

**4** If the Song Start time is different from the Session Start time, select Session Start or Song Start from the Location Reference pop-up menu.

**5** Enable or disable the Apply Real-Time Properties option as desired.

**6** Click OK. A Save dialog opens.

**7** Specify a folder destination and name for the MIDI file.

💡 *Pro Tools automatically adds the ".mid" extension when exporting MIDI files.*

**8** Click Save.

Pro Tools exports all unmuted MIDI and Instrument tracks in the current session to a Standard MIDI File and writes it to your hard drive. Exported MIDI information includes notes, controller events, program changes, and System Exclusive data, as well as events for tempo, meter, and markers.

The SMPTE start time for the session or the song (depending on the selection from the Location Reference pop-up menu) is also exported. This ensures that the exported tracks, when played from another MIDI application, will align with the correct SMPTE frames, and also synchronize correctly to tape and video devices, or Pro Tools.

Refer to your third-party MIDI sequencer documentation to determine whether it supports importing SMPTE start times from MIDI files.

### Items Not Exported with MIDI Files

Mute automation and muted regions do not affect exported MIDI. As long as a MIDI track is not muted by clicking its Mute button, or an Instrument track is not muted by clicking its MIDI mute button (Instruments View), all of its MIDI data is exported.

When exporting MIDI files from Pro Tools, device assignments for tracks are not retained (though channel assignments are). If you export MIDI or Instrument tracks from Pro Tools and later re-import them, you will need to reassign the tracks to devices in your studio.

All playlist information for MIDI and Instrument tracks is lost when exporting. For example, tracks that previously contained dozens of MIDI regions will be flattened and only contain single regions after exporting and re-importing.

### Exporting Individual MIDI and Instrument Tracks

You can also export individual MIDI and Instrument tracks as MIDI files. This can be useful for storing libraries of your favorite MIDI sequences or Sysex data (such as bulk or individual patch dumps for your external MIDI devices), or for importing MIDI into notation applications (other than Sibelius).

**To export a single MIDI or Instrument track as a MIDI file:**

**1** Do one of the following:
- Right-click the Track name of an unselected track in the Edit or Mix window, or in the Track List.

– or –

- In the Track List, or Mix or Edit window, Control-Right-click (Windows) or Command-Right-click (Mac) the track name.

**2** From the Right-click pop-up menu, select Export MIDI.

**3** Set the Export MIDI settings in the Export MIDI Settings dialog.

**4** Click OK.

**5** In the Save dialog, type a name for the MIDI file, specify where you want to save it, and click Save.

*⌂* *Alt-Right-click (Windows) or Option-Right-click (Mac) to export all tracks to a single MIDI file.*

**To export all selected Pro Tools Instrument or MIDI tracks as a MIDI file:**

**1** Select the tracks you want to export to a MIDI file.

**2** Right-click the Track name of one of the selected tracks in the Edit or Mix window, or in the Track List.

**3** From the Right-click pop-up menu, select Export MIDI.

**4** Set the Export MIDI Settings as desired.

**5** Click OK.

**6** In the Save dialog, type a name for the MIDI file, specify where you want to save it, and click Save.

*⌂* *Alt-Shift-Right-click (Windows) or Option--Shift-Right-click (Mac) to export all selected tracks as a single MIDI file.*

## Send to Sibelius

Pro Tools lets you send all or only selected MIDI and Instrument tracks to Sibelius or G7 notation software. This lets you print the score and parts from your Pro Tools session. For example, if you are working in Pro Tools with a sampled trumpet part, but you want to bring in a real trumpet player to play the part, you can send just the trumpet track to Sibelius and print the part for the trumpet player. You can then record the trumpet player reading the part.

**To send all Pro Tools Instrument and MIDI tracks to Sibelius:**

■ Choose File > Send To Sibelius.

Pro Tools exports all Instrument and MIDI tracks to Sibelius as a MIDI file. If Sibelius is installed on your computer, it launches Sibelius. If Sibelius is not installed, but G7 is, G7 launches. Sibelius (or G7) prompts you to import the MIDI file exported from Pro Tools with the Open MIDI File dialog. You can then further edit the notation in Sibelius and print the score of your session.

If your Pro Tools session uses key signatures and meters, they are exported with the MIDI file and imported into Sibelius.

MIDI files exported from Pro Tools using the Send to Sibelius command are saved in an automatically created "MIDI Files" folder in the Pro Tools session folder. MIDI files are named after the session, or if only one track is exported, MIDI files are named after the track.

**To send a single Pro Tools Instrument or MIDI track to Sibelius:**

**1** Do one of the following:
- Right-click the Track name of an unselected track in the Edit or Mix window, or in the Track List.

– or –

- In the Track List, or Mix or Edit window, Control-Right-click (Windows) or Command-Right-click (Mac) the track name.

**2** From the Right-click pop-up menu, select Send To Sibelius.

The track is selected and sent to Sibelius.

*⌂* *Alt-Right-click (Windows) or Option-Right-click (Mac) to send all tracks to Sibelius.*

**To send all selected Pro Tools Instrument or MIDI tracks to Sibelius:**

**1** Select the tracks you want to send to Sibelius.

**2** Right-click the Track name of one of the selected tracks in the Edit or Mix window, or in the Track List.

**3** From the Right-click pop-up menu, select Send To Sibelius.

All selected tracks are sent to Sibelius.

| SHIFT | *Alt-Shift-Right-click (Windows) or Option-Shift-Right-click (Mac) to send all selected tracks to Sibelius.*

# Importing and Exporting Region Group Files

Pro Tools can export and import the region group file format (.rgrp). This lets you do the following:

- Separate region group metadata from audio files to avoid unnecessary file copy operations when exporting audio region groups composed from multiple source files.
- Export MIDI data as part of a region group.
- Create multitrack loops.

Region group files store the following metadata:

- References to all audio files within the region group
- Region names and relative location in tracks
- Embedded fades and crossfades
- Region group names and format (single or multitrack)
- All MIDI data present in the region group (such as notes, controllers, and Sysex)
- Track names
- Elastic Audio Warp markers and TCE factor
- Region timebase (samples or ticks)
- Sync points
- Loops
- Tempo map

Region group files do not store the following:

- Audio
- Automation
- Plug-ins
- Track routing
- Meter map
- Region List information

Pro Tools provides several ways to import Region Groups into an open session:

- "Importing Region Groups with Pro Tools Menu Commands" on page 283
- "Importing Region Groups with Drag & Drop" on page 283

## Importing Region Groups with Pro Tools Menu Commands

**To import a region group with Pro Tools menu commands:**

**1** Choose File > Import > Region Groups and select the region group you want to import.

**2** In the Region Group Import Options dialog, choose where the region group will go:

**New Track** Creates a new track where the region group will be imported.

**Region List** Imports the region group into the Region List, where it will be where it will be available to place into tracks.



*Region Group Import Options dialog*

**3** If you chose to create a new track, choose a location for the imported group in the track:

**Session Start** Places the group at the start of the session.

**Song Start** Aligns the beginning of the group to the Song Start point.

**Selection** Aligns the beginning of the group to the edit cursor or to the beginning of a selection in the Timeline.

**Spot** Displays the Spot dialog, which lets you spot the group to a precise location based on any of the Time Scales.

**4** Select any of the following import options:

**Import Tempo Map from Region Group File** When selected, replaces the session tempo map with the tempo map of the region group. This option is only available when importing the region group to the Session Start.

**5** Click OK.

## Importing Region Groups with Drag & Drop

You can drag and drop Region Groups from a DigiBase browser or from Windows Explorer or the Mac Finder to the Timeline, a track, the Track List, or the Region List.

**To import Region Groups into the Region List:**

**1** Select one or more Region Groups in a Digi-Base browser, Windows Explorer or Mac Finder.

**2** Drag the files onto the Region List of the current session.

**To import Region Groups into an existing track:**

**1** Select one or more Region Groups in a DigiBase browser or from Windows Explorer or Mac Finder.

**2** Drag the files onto an existing track in the Edit window of the current session.

**To import Region Groups into new tracks:**

**1** Select one or more Region Groups in a Digi-Base browser, Windows Explorer or Mac Finder.

**2** Do one of the following:
- From the DigiBase browser, Shift-drag the files and drag them anywhere in the Edit window of the current session.
- Drag the files onto any empty space in the Edit window of the current session.
- Drag the files to the Track List.

📄 *For more information on using DigiBase browsers, refer to the DigiBase Guide.*

## Exporting Region Groups

**To export a region group:**

**1** Select one or more region groups in the Region List.

**2** From the Region List pop-up menu, choose Export Region Groups. The Export Region Groups dialog opens.



*Export Region Groups dialog*

**3** The Destination Directory defaults to the auto-created Region Groups folder in the session folder. You can change the Destination Directory by clicking the Choose button, navigating to the desired location, and clicking Choose. Click Reset to reset the Destination Directory to the default location.

**4** Enable one of the following options for resolving duplicate region group file names:
- Prompting for Each Duplicate (default)
- Auto Renaming
- Replacing with New Files

**5** Click OK.

### Exporting Region Groups to Another Hard Drive

Generally, if you are exporting region groups to another hard drive, you should copy any referenced audio files. This way you can move region groups not only from one session to another, but from one system to another.

**To export a region group to a different hard drive and include its audio files:**

**1** Export one or more region groups to the desired drive.

**2** Create a new session on the new drive.

**3** Choose Setup > Preferences.

**4** In the Preferences dialog, click the Processing tab and select Automatically Copy Files on Import.

**5** Click OK to close the Preferences dialog.

**6** Import all previously exported region groups by dragging and dropping them into the session.

The audio files folder of the new session now contains all files referenced by the region groups.

# Chapter 15: File and Session Management and Compatibility

When you work with Pro Tools, you encounter several different kinds of computer files. Pro Tools systems require that you keep certain files in specific hard drive locations in order to function properly.

◆ Pro Tools software files (such as the application and plug-ins files) should be located on your Startup drive (the drive that contains your operating system and other system-related files).

◆ On Pro Tools|HD systems, data files (such as session files, audio files, and fade files) can be located on any compatible drive connected to your computer's internal or external ATA/IDE, FireWire, or SCSI busses (including SCSI HBA). For maximum performance, SCSI drives are recommended for Pro Tools|HD systems. FireWire and ATA/IDE drives are also supported. See the Digidesign website for details (www.digidesign.com).

◆ On Pro Tools LE systems, data files (such as session files, audio files, and fade files) can be located on any compatible hard drive connected to your computer's internal or external ATA/IDE, FireWire, or SCSI busses.

⚠ *Although Pro Tools lets you record to your system drive, this is generally not recommended. You should record to system drives only when necessary—for example, if your computer system has just one hard drive, or it your other hard drives are completely out of space.*

## Audio File Management

### Unique File IDs

Pro Tools tags each audio file in a session with a unique identifier that allows it to distinguish a particular file even if its name or location has changed.

### Locating Audio Files

With Pro Tools, you manage *links* to audio and other media files using the Relink window.

Pro Tools classifies storage volumes according to their suitability for *performance* (recording or playback) or *transfer* (storage or copying) of audio and other media files. Audio files must be stored on suitable Performance volumes and be properly linked in order to be playable in a Pro Tools session.

When you open a session, if Pro Tools determines that audio files are not located on a Performance volume, or if it is unable to locate audio files contained in the session, you can locate or copy the files in order to play back the session. This process is called *relinking*.

📄 *For more information on storage volume classifications, see "Performance and Transfer Volumes" on page 204.*

### Transfer Files

Transfer files reside on volumes unsuitable for playback, such as CD or DVD discs, or network drives.

**To open a session containing Transfer files:**

■ Open the Pro Tools session. If any files are on a volume unsuitable for playback, Pro Tools prompts you to do one of the following:

- Click Yes to open the Copy and Relink window.

  – or –

- Click No to open the session with all Transfer files offline.

**To make Transfer files playable in the current session:**

**1** Choose Window > Project.

**2** Double-click the Audio Files folder to display all of the audio files.

**3** Choose Select Transfer Files from the Browser menu.

**4** Choose Copy and Relink from the Browser menu.

**5** Specify a location for the copied files on a valid Performance volume.

**6** Click OK.

📄 *For complete information on relinking Transfer files, see "Linking and Relinking Files" on page 230.*

### Missing Files

A file is missing if it is not found in the same location as when the session was last saved.

**To open a session with missing files:**

**1** Open the Pro Tools session. If any files are missing, Pro Tools posts a Missing Files warning.



*Missing files warning when opening a session*

**2** Choose one of the following options:

**Skip All** Ignores all missing files and fades. The missing files are offline in the session.

**Manually Find and Relink** Opens the Relink window, where you can search, compare, verify, and relink missing files.

**Automatically Find and Relink** Searches all Performance volumes for all missing files with matching name, unique file ID, format, and length, and automatically commits links to missing files where possible.

**3** To exclude fades from the relinking process, and have them recalculated instead, select Regenerate Missing Fades Without Searching.

**4** To exclude any Rendered Elastic Audio files from the relink process and regenerate them instead, select Regenerate Missing Rendered Files Without Searching.

**5** Click OK.

&#x1F4D1; *For more information on relinking missing files, see "Linking and Relinking Files" on page 230.*

### Renamed Audio Files and the Renamed Audio Files Folder

Renamed audio files are located in the auto-created Renamed Audio Files folder in the Pro Tools session folder. Files can be renamed when you open a session that references audio file names with incompatible characters. Files can also be renamed in certain situations when saving a copy of a session to a Pro Tools version that does not support long file names

#### Opening a Session that Contains Audio File Names with Illegal Characters

Pro Tools 7.x does not support audio file names that contain the following ASCII characters:

/ (Forward Slash)

\ (Backslash)

: (Colon)

* (Asterisk)

? (Question mark)

" (Quotation marks)

< (Less-than symbol)

> (Greater-than symbol)

| (vertical line or pipe)

Any "high order" ASCII character (created with a key combination)

When opening sessions that contain audio file names with illegal characters, Pro Tools automatically creates a renamed copy of each file that contains illegal characters (replacing these characters with an underscore "_"). Renamed files are copied to the Renamed Audio Files folder. The original files are left intact in the Audio Files folder.

Before the session opens, you are prompted to save a detailed report of the renamed files and their original file names to a Notes text file. By default, the Notes text file is saved to the Session folder.

&#x26A0; *It is possible to have a Pro Tools 7.x session that contains audio file names with illegal characters. If you Save Copy In the session to Pro Tools 6.9.x or lower with Mac/PC Compatibility on, the tracks are renamed with legal characters. If Mac/PC Compatibility is off, the characters are not changed.*

#### Saving a Copy of a Session that Contains Long Audio File Names

When saving files to Pro Tools 6.9.x and lower (using Save Copy In), audio files with file names that exceed the limits of the destination format are truncated and located in the Session folder, as follows:

• If the new session is saved to the same directory as the original, a Renamed Audio Files folder is created in the session's original folder, and the renamed audio files are placed in it.

• If the new session is saved to a different directory than the original and the All Audio Files option *is not checked*, a new Session folder is created, which includes an Audio Files folder and a Renamed Audio Files folder. Renamed audio files are included in the Audio Files folder.

- If the new session is saved to a different directory than the original and the All Audio Files option *is checked*, a new Session folder is created, which includes an Audio Files folder. Renamed audio files are included in the Audio Files folder.

# WAV File Compatibility

### Convert Imported WAV files to AES31/BroadcastWave

Pro Tools always creates AES31/Broadcast compliant BWF (.wav) files when the file originates in Pro Tools. Non-BWF .wav files can be added to BWF (WAV) format Pro Tools sessions without conversion. This option ensures that all WAV files are imported, and if necessary, converted to BWF (WAV), compliant with the AES31/EBU Broadcast standard.

AES31/Broadcast Wave is a variant of the standard audio WAV file type. The AES31 format contains SMPTE time stamps and other information beyond the raw PCM audio data.

This variant complies with standards set by the AES (Audio Engineering Society) and EBU (European Broadcasters Union). Choose this option to ensure compatibility with other workstations that recognize this file type.

### To make imported WAV files compliant with the AES31/EBU Broadcast standard:

**1** Choose Setup > Preferences and click the Processing tab.

**2** Select the Convert Imported ".wav" Files to AES31/BroadcastWave option.

**3** Click OK.

# Sharing Sessions Created on Different Computer Platforms

This section includes the following:
- "Working with Mac-Based HFS+ Drives on Windows Computers" on page 288.
- "Saving Copies of Mac Sessions to be Compatible with Windows" on page 290.

## Working with Mac-Based HFS+ Drives on Windows Computers

Either the Digidesign HFS+ Disk Support option or the MacDrive Utility is required to mount HFS+ drives on an NTFS system for use with Pro Tools.

### Digidesign HFS+ Drive Support Option
### (Windows Only)

Pro Tools HD and Pro Tools LE for Windows support recording and playback of sessions directly from Mac-formatted (HFS+) drives using the Digidesign HFS+ Disk Support option. The HFS+ Disk Support option is automatically installed with Pro Tools HD and Pro Tools LE software by default.

When using the Digidesign HFS+ Disk Support option for recording and playback on a Windows system, the session file and all associated files (such as audio and MIDI files) must be stored on Mac-formatted (HFS+) drives. Recording and playback of a session from a mixture of Windows- and Mac-formatted drives is not supported.

*For more information, see the Mac HFS+ Disk Support Option Guide.*

## Moving Sessions on Windows Systems to Mac-Based HFS+ Drives

### (From Window-Based NTFS Drives Only)

There are specific steps for transferring session files from Windows-based NTFS drives to Mac-based HFS+ drives.

**To transfer Pro Tools Windows sessions from NTFS drives to HFS+ drives:**

**1** Set the Digidesign HFS+ Disk Support Options or the MacDrive Options to Backup/File Transfer.

**2** Do one of the following:

- Drag the session folder from the NTFS drive to the HFS+ drive.

– or –

- Open the Windows session on the NTFS drive, choose Save Copy In, and save a copy of the session to the HFS+ drive.

## Moving Mac-Based Sessions on HFS+ Drives to Windows Systems

### (To Windows-Based NTFS Drives Only)

There are specific steps for transferring files from Mac-based HFS+ drives to Windows-based NTFS drives.

📖 *To save (or create) Mac sessions to be compatible on Windows systems, see "Saving Copies of Mac Sessions to be Compatible with Windows" on page 290.*

⚠️ *When transferring Pro Tools sessions from HFS+ drives to NTFS drives, Pro Tools sessions cannot relink to audio files and fades that have Mac characters that are illegal in Windows. These characters are automatically converted to underscore ("_") characters. These files are saved to the Renamed Audio Files folder. You need to manually relink each file by File ID. See "Missing Files" on page 286.*

💡 *To save session with no illegal characters, see "Saving Copies of Mac Sessions to be Compatible with Windows" on page 290.*

**To transfer Pro Tools Mac sessions from HFS+ drives to NTFS drives:**

**1** Set the Digidesign HFS+ Disk Support option or the MacDrive Options to Normal Use.

**2** Do one of the following:

- Drag the session folder from the HFS+ drive to the NTFS drive.

– or –

- Open the Mac session on the HFS+ drive, and when prompted, choose Save Copy In and save a copy of the session to the HFS+ drive.

If the session previously used SD II files, the files are converted to the new audio file format.

### Recording and Playback from HFS+ Drives on Windows

Windows supports recording and playback of sessions directly from Mac-formatted (HFS+) drives using either the Digidesign HFS+ Disk Support option or the MacDrive software application.

*In older versions of Pro Tools, Mac-formatted HFS+ drives could only be used as Transfer volumes when connected to Windows systems using MacDrive.*

When using either the Digidesign HFS+ Disk Support option or MacDrive for recording and playback on a Windows system, the session file and all audio files must be stored on Mac-formatted (HFS+) drives. Recording and playback of a session from a mixture of Windows- and Mac-formatted drives is not supported.

*For information on using the Digidesign HFS+ Disk Support option, see the Mac HFS+ Disk Support Option Guide.*

**To record or play back from HFS+ drives with Windows using MacDrive:**

**1**  In Windows, go to the MacDrive Control Panel.

**2**  Choose Options > File Names and select the "International Use" option.

**3**  Delete all options listed under "File Name Maps."

**4**  In Pro Tools, choose Window > Workspace and make sure that all Mac-formatted volumes are set to R (record) or P (playback) in the A (Audio) and V (Video) columns.

### Saving Copies of Mac Sessions to be Compatible with Windows
#### (Save Copy In to Pro Tools 6.9.x and Lower Only)

Sessions created and saved as Pro Tools 7.x sessions are always compatible on both Windows and Mac systems.

If you create a Pro Tools 6.9.x or lower session on a Mac system, the session is only compatible on Windows systems if the Enforce Mac/PC Compatibility option is selected during the Save Copy In. In addition, there are cross-platform limits to consider when completing the Save Copy In.

### Cross-Platform Session Limits

When saving (or creating) a copy of a Pro Tools session that you want to be compatible on both Mac and Windows, keep in mind the following limits and how Pro Tools deals with them:

#### Audio File Types

The recommended file format for cross-platform interoperability is BWF (.WAV). To support optimal session interchange, Pro Tools defaults to BWF format for new sessions.

Pro Tools lets you save, bounce, and export in a variety of file formats. However, if you create a session using the SD II format, a warning dialog appears reminding you of its limitations:

- SD II is not supported on Windows XP.
- The maximum sample rate for SD II files is 48 kHz.

### File Name Extensions

For cross-platform compatibility, all files in a session must have a 3-letter file extension added to the file name. Pro Tools 5.1 to 6.9.x session files have the extension ".pts," and Pro Tools 5 sessions have the extension ".pt5." Wave files have the ".wav" file extension, and AIFF files have the ".aif" file extension.

### Incompatible ASCII Characters

Region names, track names, file names, and plug-in settings cannot use ASCII characters that are incompatible with either system.

When importing files into a session, incompatible characters are converted to underscores ("_") and the renamed files are placed in the Renamed Files folder.

The following characters cannot be used in Windows sessions:

   / (Forward Slash)

   \ (Backslash)

   : (Colon)

   * (Asterisk)

   ? (Question mark)

   " (Quotation marks)

   < (Less-than symbol)

   > (Greater-than symbol)

   | (vertical line or pipe)

   Any "high order" ASCII character (created with a key combination)

### Saving Cross-Platform Sessions

**To save an existing session to Pro Tools 6.9.x or lower and maintain Mac and Windows compatibility:**

**1** Choose File > Save Copy In.

**2** In the Save Copy In dialog, choose a destination and enter a name for the new session file.

**3** Set the Audio File Type to AIFF or BWF (.WAV). These file formats are compatible with either platform.

**4** Set the Sample Rate and Bit Depth for the session.

**5** Select Enforce Mac/PC Compatibility. This option must be selected to make the session cross-platform compatible.

**6** Select the Items to Copy to the new session.

**7** Click Save.

If the session previously used SD II files, the files are converted to the new audio file format.

📋 *Pro Tools can convert a file created on a Mac and saved without the "Enforce Mac/PC compatibility" option selected to a Windows compatible file. For more information, see "Sharing Sessions Created on Different Computer Platforms" on page 288.*

# Sharing Sessions Created on Different Pro Tools Systems

Pro Tools makes it easy to share sessions between Pro Tools|HD systems and Pro Tools LE systems. There are some important differences between the three types of systems that can affect how session material is transferred.

📄 *For details on transferring sessions between Windows and Mac systems, see "Sharing Sessions Created on Different Computer Platforms" on page 288.*

The following table also includes Pro Tools LE systems with the DV Toolkit 2 option, as well as Pro Tools LE systems with the Music Production Toolkit option.

*Differences between Pro Tools systems*

| Feature | Pro Tools|HD Systems | Pro Tools LE Systems | Pro Tools LE Systems with DV Toolkit 2 | Pro Tools LE Systems with Music Production Toolkit |
|---|---|---|---|---|
| Maximum number of audio tracks | up to 256 tracks | up to 128 tracks (32 voiceable) | up to 128 tracks (48 voiceable) | up to 128 tracks (48 voiceable) |
| Maximum number of Instrument tracks | 128 | 32 | 32 | 32 |
| Maximum number of mix busses | 128 busses (Pro Tools 6.9 and higher)<br><br>64 busses (Pro Tools 6.7 and lower) | 32 busses (Pro Tools 7.x)<br><br>16 busses (Pro Tools 6.9.x and lower) | 32 | 32 |
| Inserts per track | up to 5 inserts | up to 5 inserts | up to 5 inserts | up to 5 inserts |
| Sends per track | up to 10 sends (Pro Tools 7.x)<br><br>up to 5 sends (Pro Tools 6.9.x and lower) | up to 10 sends (Pro Tools 7.x)<br><br>up to 5 sends (Pro Tools 6.9.x and lower) | up to 10 sends | up to 10 sends |

## Opening Pro Tools HD Sessions in Pro Tools LE

A Pro Tools HD 7.2 or higher session that does not contain video tracks or VCA Masters can be opened with Pro Tools LE 7.x, but certain session components open differently or not at all.

⚠ *Pro Tools HD 7.2 sessions that contain video tracks or VCA Master tracks can only be opened with Pro Tools LE 7.0cs3 and higher.*

**When opening a Pro Tools HD 7.x session in Pro Tools LE 7.x, the following occurs:**

*Tracks*

- Any tracks beyond the first 32, as well any inactive tracks, are set to *voice off*.
- Any assignments to busses beyond 32 are made inactive.
- Any Instrument tracks beyond 32 are made inactive.
- TDM plug-ins with RTAS equivalents are converted; those without equivalents are made inactive.
- Multichannel surround tracks are removed from the session.
- Unavailable input and output paths are made inactive.
- Any Delay Compensation settings are removed.
- VCA Master tracks are removed and any uncoalesced VCA automation is dropped.

*Groups*

- In Pro Tools LE 7.1 or lower only, all groups beyond the first 26 (Bank 1, Groups a–z) are dropped.
- Mix Groups keep only Main Volume information.
- Mix/Edit Groups keep only Main Volume and Automation Mode information.
- Automation overflow information for grouped controls is be preserved.
- Group behavior of Solos, Mutes, Send Levels, Send Mutes is be preserved.
- Solo Mode and Solo Latch settings are dropped.

*Video*

- Only the main video track is displayed.
- Only the first QuickTime movie in the session is displayed or played back.
- If the session contains QuickTime movies in the Region List but no video track, the session opens with a new QuickTime Movie track containing the first QuickTime movie from the Region List.
- The Timeline displays and plays back only the video playlist that was last active. Alternate video playlists are not available.
- In Pro Tools LE 7.1 or lower only, video regions and video region groups are not shown or saved.

# Sharing Sessions Created on Different Pro Tools Software Versions

Pro Tools makes it easy to share sessions between different software versions of a particular Pro Tools system (such as sharing sessions between Pro Tools HD 7.x and Pro Tools HD 6.x).

## Sharing Pro Tools HD 7.4 Sessions with Lower Versions of Pro Tools HD

### Opening Pro Tools HD 7.4 Sessions with Pro Tools HD 7.3.x or 7.2

A Pro Tools HD 7.4 session can be opened with Pro Tools HD 7.3.x or 7.2, but certain session components open differently or not at all.

⚠ *When opening a Pro Tools 7.4 session with Pro Tools 7.3.x, you are warned that you are opening a session created with a newer version of Pro Tools and that not all session components will be available.*

**When opening a Pro Tools HD 7.4 session with Pro Tools HD 7.3.x or 7.2, the following occurs:**

*Tracks*

- Elastic Audio–enabled tracks open without Elastic Audio region durations revert to the timing of the original source file.

- Sessions with mixed language characters supported in Unicode may not open or, if they do open, Pro Tools displays "garbage" text.

### Opening Pro Tools HD 7.2 or Higher Sessions with Pro Tools HD 7.1 or 7.0

A Pro Tools HD 7.2 or higher session without video tracks or VCA Masters can be opened with Pro Tools HD 7.1 or 7.0, but certain session components open differently or not at all.

⚠ *When opening a Pro Tools 7.4 session with Pro Tools 7.2, 7.1, or 7.0, you are not be warned that not all session components will be available.*

⚠ *Pro Tools HD 7.2 or higher sessions that contain video tracks or VCA Masters can only be opened with Pro Tools HD 7.1cs3 and higher.*

**When opening a Pro Tools HD 7.4 session with a version of Pro Tools HD 7.1 or 7.0 the following occurs:**

- All that occurs when opening a Pro Tools HD 7.4 session with Pro Tools HD 7.3.x or 7.2.

*Tracks*

- VCA Master tracks are removed and any uncoalesced VCA automation is dropped.

- Any uncoalesced Trim automation is dropped.

*Groups*

- All groups beyond the first 26 (Bank 1, Groups a–z) are dropped.

- Mix Groups keep only Main Volume information.

- Mix/Edit Groups keep only Main Volume and Automation Mode information.

- Automation overflow information for grouped controls is not preserved.

- Group behavior of Solos, LFEs, Mutes, Send Levels, Send Mutes is not preserved.

- Solo Mode and Solo Latch settings are dropped.

*Video*

- Only the main video track is displayed.

- Only the first QuickTime movie in the session is displayed or played back.

- If the session contains QuickTime movies in the Region List but no video track, the session opens with a new QuickTime Movie track containing the first QuickTime movie from the Region List.

- The Timeline displays and plays back only the video playlist that was last active. Alternate video playlists are not available.

- Video regions and video region groups are not shown or saved.

## Saving Pro Tools HD 7.4 Sessions to Pro Tools 5.1 -> 6.9 Format

Pro Tools 7.x sessions cannot be opened with Pro Tools versions 6.9.x through 5.1.

To save a Pro Tools 7.4 session so it is compatible with Pro Tools version 6.9.x through 5.1, use the File > Save Copy In command to choose the "Pro Tools 5.1 -> 6.9" session format.

**When saving a Pro Tools HD 7.4 session to Pro Tools HD 5.1 -> 6.9 format, the following occurs:**

*Tracks*

- Elastic Audio–enabled tracks are saved unwarped and region durations revert to the timing of the original source file.

- Instrument tracks are split into separate Auxiliary Input and MIDI tracks.

- VCA Master tracks are removed and VCA automation is coalesced to the corresponding slave tracks.

- Trim automation playlists are coalesced to their corresponding automation playlists.

- Fader Gain levels and automation breakpoints higher than +6 dB are changed to +6 dB.

- Long names are shortened to 31 characters.

- The following attributes are dropped:
  - Region groups
  - Region loops
  - Sample-based MIDI regions
  - Sample-based MIDI tracks
  - Sends F–J and any associated automation
  - Marker/Memory Locations 201–999

*Groups*

- All groups beyond the first 26 (Bank 1, Groups a–z) are dropped.

- Mix Groups keep only Main Volume information.

- Mix/Edit Groups keep only Main Volume and Automation Mode information.

- Automation overflow information for grouped controls is not preserved.

- Group behavior of Solos, LFEs, Mutes, Send Levels, Send Mutes is not preserved.

- Solo Mode and Solo Latch settings are dropped.

*Video*

- Only the main video track is displayed.

- Only the first QuickTime movie in the session is displayed or played back.

- If the session contains QuickTime movies in the Region List but no video track, the session opens with a new QuickTime Movie track containing the first QuickTime movie from the Region List.

- The Timeline displays and plays back only the video playlist that was last active. Alternate video playlists are not available.

- Video regions and video region groups are not shown or saved.

*Language Compatibility*

- The Limit Character Set option must be enabled and you must select a single language and character set.

## Saving Pro Tools HD 7.4 Sessions to Pro Tools 5.0 Format

Pro Tools 7.x sessions cannot be opened with Pro Tools version 5.0.

To save a Pro Tools 7.4 session so it is compatible with Pro Tools version 5.0, use the File > Save Copy In command to choose the "Pro Tools 5.0" session format.

**When saving a Pro Tools HD 7.4 session to Pro Tools 5.0 format, the following occurs:**

- All that occurs when saving a Pro Tools HD 7.4 session to Pro Tools HD 5.1->6.9 format.
- Multichannel surround tracks are removed from the session.
- Inactive tracks are removed from the session.
- Tracks assigned to "No Output" are routed to Busses 31 and 32.
- Tracks or sends assigned to Busses 33–64 are routed to Busses 31 and 32.
- Tracks assigned to multichannel paths or sub-paths of multichannel paths are routed to Busses 31 and 32.
- Sends assigned to multichannel paths or sub-paths of multichannel paths are dropped.
- Tracks or sends assigned to stereo paths referring to even/odd channels (such as 2–3) are routed to Busses 31 and 32.
- Multi-mono plug-in instances are dropped

## Sharing Pro Tools LE 7.4 Sessions with Lower Versions of Pro Tools LE

### Opening Pro Tools LE 7.4 Sessions with Pro Tools LE 7.3.x

**When opening a Pro Tools LE 7.4 session with Pro Tools LE 7.3.x, the following occurs:**

*Tracks*

- Any Elastic Audio–enabled tracks open without Elastic Audio and all audio regions on those tracks are at their original duration. All warping is lost.
- Sessions with mixed language characters supported in Unicode may not open or, if they do open, Pro Tools displays "garbage" text.

⚠ *When opening a Pro Tools 7.4 session with Pro Tools 7.3.x, you are warned that you are opening a session created with a newer version of Pro Tools and that not all session components will be available. When opening a Pro Tools 7.4 session with Pro Tools 7.1, or 7.0, you will not be warned that not all session components will be available.*

## Opening Pro Tools LE 7.4 Sessions with Pro Tools LE 7.1 or 7.0

A Pro Tools LE 7.4 session that does not contain video tracks can be opened with Pro Tools LE 7.1 or 7.0, but certain session components open differently or not at all.

**When opening a Pro Tools LE 7.4 session with a version of Pro Tools LE 7.1 or 7.0, all items that occur when opening a Pro Tools LE 7.4 session with Pro Tools LE 7.3.x or 7.2 occur, plus the following:**

*Groups*

• All groups beyond the first 26 (Bank 1, Groups a–z) are dropped.

• Mix Groups keep only Main Volume information.

• Mix/Edit Groups keep only Main Volume and Automation Mode information.

*Video*

• Only the main video track is displayed.

• Only the first QuickTime movie in the session is displayed or played back.

• If the session contains QuickTime movies in the Region List but no video track, the session opens with a new QuickTime Movie track containing the first QuickTime movie from the Region List.

• The Timeline displays and plays back only the video playlist that was last active. Alternate video playlists are not available.

• Video regions and video region groups are not shown or saved.

## Sharing Pro Tools LE 7.4 Sessions with Pro Tools LE 6.9 or Lower

Pro Tools 7.x format sessions cannot be opened on Pro Tools versions 6.9.x or lower, but they can be saved to a lower compatible version. Some session components in the new copy open differently or not at all.

### Saving Pro Tools LE 7.4 Sessions to Pro Tools LE 5.1 -> 6.9 Format

To save a Pro Tools 7.4 session so it is compatible with Pro Tools version 6.9.x through 5.1, use the File > Save Copy In command to choose the "Pro Tools 5.1 -> 6.9" session format.

**When saving a Pro Tools LE 7.4 session to Pro Tools 5.1 -> 6.9 format, the following occurs:**

• Elastic Audio–enabled tracks are saved un-warped and region durations revert to the timing of the original source file.

• All groups beyond the first 26 (Bank 1, Groups a–z) are dropped.

• Mix Groups keep only Main Volume information.

• Mix/Edit Groups keep only Main Volume and Automation Mode information.

• Only the main video track is displayed.

• Only the first QuickTime movie in the session is displayed or played back.

• If the session contains QuickTime movies in the Region List but no video track, the session opens with a new QuickTime Movie track containing the first QuickTime movie from the Region List.

• The Timeline displays and plays back only the video playlist that was last active. Alternate video playlists are not available.

- Video regions and video region groups are not shown or saved.

- Fader Gain levels and automation breakpoints higher than +6 dB are changed to +6 dB.

- Long names are shortened to 31 characters.

- Instrument tracks are split into separate Auxiliary Input and MIDI tracks.

- The following attributes are dropped:
  - Region groups
  - Region loops
  - Sample-based MIDI regions
  - Sample-based MIDI tracks
  - Sends F–J and any associated automation
  - Marker/Memory Locations 201–999
  - Busses 17–32 (Pro Tools LE)

- The Limit Character Set option must be enabled and you must select a single language and character set.

### Saving Pro Tools LE 7.4 Sessions to Pro Tools LE 5.0 Format

To save a Pro Tools LE 7.4 session so it is compatible with Pro Tools version 5.0, use the File > Save Copy In command to choose the "Pro Tools 5.0" session format.

**When saving a Pro Tools LE 7.4 session to Pro Tools 5.0 format, the following occurs:**

- All that occurs when saving a Pro Tools LE 7.4 session to Pro Tools 5.1->6.9 format.

- Fader Gain levels and automation breakpoints higher than +6 dB are changed to +6 dB.

- Multi-mono plug-in instances are dropped.

- Sends assigned to multichannel paths or sub-paths of multichannel paths are dropped.

- Tracks assigned to "No Output" are routed to Busses 31 and 32.

- Tracks/sends assigned to Busses 33–64 are routed to Busses 31 and 32.

- Tracks assigned to multichannel paths or sub-paths of multichannel paths are routed to Busses 31 and 32.

- Tracks/sends assigned to stereo paths referring to even/odd channels (such as 2–3) are routed to Busses 31 and 32.

## Language Compatibility

### Unicode Support for Languages

Pro Tools supports entry and display of any language characters supported in Unicode anywhere in the Pro Tools application. This lets you:

- Use multiple languages in session names, and in path names, file names and region names within the same session.

- Search for terms in multiple languages in DigiBase browsers.

### Pro Tools Automatic Naming Language

When working in a language other than English, you can set Pro Tools to automatically name session elements (such as regions, tracks, and I/O paths) in English. This is useful when sharing sessions with other users working in English.

**To set the Automatic Naming Language to match the language selected for the Pro Tools application:**

**1** Choose Setup > Preferences and click the Display tab.

**2** Choose the language you want to use in Pro Tools from the Language pop-up menu.

**3** Deselect the "Default Automatic Naming to English" option.

## Pro Tools Application Language

### (Windows Only)

You can choose the language you want to use in the Pro Tools application, independently of what language version of Windows you are using.

**To select the language for Pro Tools:**

**1** Choose Setup > Preferences and select the Display tab.

**2** Choose the language you want to use in Pro Tools from the Language pop-up menu.



*Language options in the Display Preferences page*

## Multilingual Application Support for Pro Tools Systems

### (Localized OS on Mac OS X Only)

Localized versions of Pro Tools (such as Pro Tools Korean, simplified Chinese, or Japanese) can be opened on a Digidesign-qualified Mac that supports English and the localized language versions of Mac OS X. You can also select a different language in any localized version of Pro Tools (including English) in the Apple System Preferences.

**To change to a different language version of Pro Tools:**

**1** Close Pro Tools if it is currently open.

**2** Launch Apple System Preferences.

**3** Click International (the "flag" icon).

**4** Click the Language tab.

**5** In the Languages column, click the language you want, and drag it to the top of the list.

**6** Close the International window.

**7** Do one of the following:

- If you are changing from a localized language to English, launch Pro Tools.

– or –

- If you are changing from one localized language to another (or from English to a localized language), log out and log in from the Apple menu, then launch Pro Tools.

⚠ *If you want your computer to start with the previous language (after working on a different language version) follow the above steps and change the International preference back to the previous language.*

# Part IV: Playback and Recording

# Chapter 16: Playing Back Track Material

## Playing Tracks

After importing or recording audio or MIDI to tracks, you will want to play back the material to listen to it for editing and mixing.

### Starting and Stopping Playback

**To start playback, do one of the following:**

- Click Play in the Transport.
- Press the Spacebar.
- With the Numeric Keypad mode set to Transport or Shuttle, press 0 on the numeric keypad.
- If the Numeric Keypad mode is set to Transport, and the Use Separate Play and Stop Keys option is enabled, press Enter on the numeric keypad.
- If you have a worksurface or MIDI control surface connected and configured, press the Play button.
- If Pro Tools is online and slaved to another deck, press play on the master deck (see "Putting Pro Tools Online" on page 894).

📑 *For more information about the Numeric Keypad modes, see "Numeric Keypad Modes" on page 21.*

**To stop playback, do one of the following:**

- Click Stop in the Transport.
- Press the Spacebar.
- With the Numeric Keypad mode set to Transport or Shuttle, press 0 on the numeric keypad.
- If you have a worksurface or MIDI control surface connected and configured, press the Stop button.
- If Pro Tools is online and slaved to another deck, press stop on the master deck (see "Putting Pro Tools Online" on page 894).

### Example: Playing Back Audio

**To play back audio:**

**1** Import or record audio to a track.

**2** Assign the track's Output selector to your main monitoring path.

**3** To have playback start from the beginning of the session, click Return to Zero in the Transport.

**4** The audio plays through the selected Output Path. Adjust the track's volume and pan faders as necessary.

**5** Start playback.

**6** When you are done, stop playback.

## Example: Playing Back MIDI

**To play back MIDI (and monitor the audio):**

**1** Import, record, or enter MIDI to a MIDI or Instrument track.

**2** For an Instrument track, do the following:

- Set the Instrument track's audio Output selector to the main monitoring path.
- If you are using an external MIDI device (not an Instrument plug-in), set the Instrument track's audio Input selector to the Input path to which your MIDI device's audio outputs are connected.
- Set the MIDI Output selector in Instrument view to the MIDI device (port) and channel you want to play back.

**3** For a MIDI track, do the following:

- Create an Auxiliary Input or Instrument track to monitor the audio from an external MIDI device or Instrument plug-in.
- Set the Auxiliary Input or Instrument track's audio Output selector to the main monitoring path.
- If you are using an external MIDI device (not an Instrument plug-in), set the Auxiliary Input or Instrument track's audio Input selector to the Input path to which your MIDI device's audio outputs are connected.
- Set MIDI track's output selector to the MIDI device (port) and channel you want to play back.

**4** To have playback start from the beginning of the session, click Return to Zero in the Transport.

**5** Start playback.

**6** The MIDI plays the selected MIDI device, and the audio from the MIDI device is monitored through the selected Output Path on the Auxiliary Input or Instrument track. Adjust the MIDI, Auxiliary Input, or Instrument track's volume and pan faders as necessary.

**7** When you are done, stop playback.

# Playback Location

The playback location is the point in the Pro Tools Timeline where you can begin playing back audio or MIDI in your session.

The playback location is displayed in counters and indicators in the Edit window, Transport window, and Big Counter. The playback location (or Edit selection) is also indicated by a playback or edit cursor in the Timeline or playlist of the Edit window.

Pro Tools also provides a pre-roll control for setting playback to begin before the playback location. See "Basic Transport Controls and Counters" on page 116.

## Counters and Indicators that Display the Playback Location

### Main and Sub Counters and Edit Selection Indicators

At the top of the Edit window, the playback location is displayed in the Main and Sub counters, and the Edit Selection Start indicator. If no selection is made, the playback location is also displayed in the End Selection End indicator.
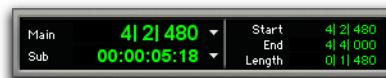


*Main and Sub Counters, Edit Selection indicators*

Counters and Edit Selection indicators can also be displayed in the Transport window.



*Transport with Counters displayed*

### To display the Main Counter in the Transport window:

■ Choose View > Transport > Counters. The Sub Counter will only display i

⇧ *Start-click (Windows) or Control-click (Mac) the Expand/Collapse button in the Transport window to show or hide counters.*

⇧ *Alt-click (Windows) or Option-click (Mac) the Expand/Collapse button in the Transport window to show or hide counters and MIDI controls.*

### To display the Sub Counter in the Transport window:

■ Choose View > Transport > Counters.

### To display Edit Selection indicators in the Transport window:

■ Choose View > Transport > Expanded.

### The Big Counter

The current playback location can also be displayed as a Big Counter.



*Big Counter window*

### To display the Big Counter:

■ Choose Window > Big Counter.

## Cursors that Indicate the Playback (or Edit) Location

There are two types of cursors in the Pro Tools Edit window for indicating the current playback or Edit selection:

### Playback Cursor

The *playback cursor* is a solid unblinking line that moves across the Edit window to indicate the current playback location.

The selected Scrolling Option determines how the Edit window scrolls during playback, and how the playback cursor functions. See "Scrolling Options" on page 310 for details.

### Edit Cursor

The *edit cursor* is a flashing line that appears when you click with the Selector tool in a track's playlist. The blinking edit cursor indicates the start point for any editing tasks performed. If you make a selection and perform an edit, the selection is the target of the edit.

### Locating the Playback Cursor when It Is Off-Screen

Use the Playback Cursor locator to locate the playback cursor when it is off-screen.

The Playback Cursor locator appears on the right edge of the Main Timebase ruler if the playback cursor is located beyond the time visible in the Edit window. If the playback cursor is located before the time visible in the Edit window, the Playback Cursor locator appears on the left edge of the Main Timebase ruler.
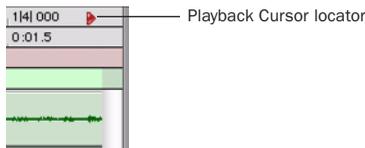


*Playback Cursor locator, recording enabled (playback cursor located after currently viewed audio)*

For example, if the Scrolling option is set to None, the playback cursor will move off-screen after it has played past the time currently visible in the Edit window. The Playback Cursor locator will appear on the right edge of the Main Timebase ruler after the playback cursor moves beyond the time visible in the Edit window.

The Playback Cursor locator is red when a track is record-enabled and blue when no track is record-enabled.

**To locate the playback cursor when it is off-screen:**

■ Click the Playback Cursor locator in the Main Timebase ruler.

The Edit window changes to center the playback cursor on-screen.

# Setting the Playback Location

There are multiple ways to set or move the playback location for Pro Tools material. You can use these commands for different tasks, including finding a passage in a song, moving to a different section of a song, or comparing different sections.

## Setting Playback Location Using the Selector Tool

To set where playback begins, you can click anywhere in a track with the Selector tool (as long as the Timeline and Edit selections are linked). See "Linking or Unlinking Timeline and Edit Selections" on page 447).
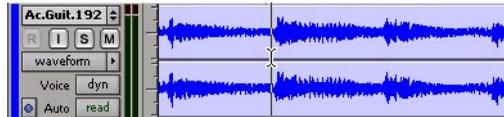


*Setting a playback point with the Selector tool*

**To begin playing from a specific point within a track:**

**1** Make sure that Options > Link Timeline and Edit Selection is enabled.

**2** With the Selector tool, click in the track where you want playback to begin.

**3** Start playback.

**4** Stop playback.

**To jump to a different location and begin playing from there, do one of the following:**

■ When playback is stopped, click with the Selector tool at that point and click Play in the Transport window.

– or –

■ Click the desired location in a Timebase Ruler during playback.

With the Timeline and Edit selections linked, you can click a region or MIDI note with the Time Grabber tool to automatically update the Timeline with the selection's start time, letting you play from that point.

## Setting Playback Location with Basic Transport Controls

Transport controls in the Transport window and top of the Edit window can be used to move the playback location. These include Rewind, Fast Forward, and Return to Zero (to move playback location to the beginning of the session). For more information, see "Basic Transport Controls and Counters" on page 116.

## Setting Playback Location with the Main Counter or Edit Selection Start Indicator

**To set the playback location using a Main Counter (or the Edit Selection Start indicator):**

**1** Do one of the following:

- Click in one of the counters.

– or –

- Press asterisk (*) on the numeric keypad to highlight the Main Counter in the Edit window (or the Main Counter in the Transport window or Big Counter window, if either are displayed).

**2** Type in the new location. Press Period (.) to cycle through to the different time fields.

**3** Press Enter to accept the new value and automatically locate there.

## Setting Playback Location with Fast Forward/Rewind

You can use the Fast Forward and Rewind buttons in the Transport window to move the playback location. If the Operation preference for "Audio During Fast Forward/Rewind" is selected, the scanned audio is heard (similar to a CD player) when clicking the Fast Forward and Rewind buttons.

You can also fast forward or rewind incrementally by repeatedly clicking the appropriate button. The size of these increments is determined by the Main Time Scale:

**Bars:Beats** Moves to the beginning of the previous or next bar.

**Min:Sec** Moves back or forward in one-second steps.

**Time Code** Moves back or forward in one-second steps (while adjusting for current SMPTE format).

**Feet+Frames** Moves back or forward in one-foot steps.

**Samples** Moves back or forward in one-second steps.

## Setting Playback Location with Back and Forward Commands
### (Pro Tools HD Only)

Pro Tools provides four Back/Forward commands (sometimes called "rollback") for moving the playback location in the Edit window.

You can also move the playback location in multiple increments by repeating the command (See "Repeating Back/Forward Commands" on page 308).

📄 *Back/Forward commands also work when controlling a 9-pin device. See the Machine-Control Guide for details.*

**Back** Moves the playback location backward by the Back/Forward Amount.

**Back and Play** Moves the current playback location backward by the Back/Forward Amount *and* automatically begins playback.

**Forward** Moves the playback location forward by the Back/Forward Amount.

**Forward and Play** Moves the current playback location forward by the Back/Forward Amount *and* automatically begins playback.

### Setting the Back/Forward Amount

The length of the Back/Forward move is determined by the Back/Forward Amount preference in the Operation page (Setup > Preferences).

**To configure the Back/Forward Amount:**

**1** Choose Setup > Preferences and click the Operation tab.

The timebase of the Back/Forward Amount settings follows the Main Time Scale by default, or you can deselect Follow Main Time and select any of the following timebase formats:

- Bars:Beats
- Min:Sec
- Time Code
- Feet+Frames
- Samples

**2** Do one of the following:

- Select a preset amount in the Back/Forward Amount pop-up menu.

– or –

- In the Back/Forward Amount field, enter a custom amount.

### Using Back or Forward Commands

**To move the playback location backward by the Back/Forward Amount:**

■ Press Control (Windows) or Command (Mac), and click Rewind in the Transport window.

**To move the playback location forward by the Back/Forward Amount:**

■ Press Control (Windows) or Command (Mac), and click Fast Forward in the Transport window.

**To move the playback location backward by the Back/Forward Amount and then begin playback:**

■ Press Control+Alt (Windows) or Command+Option (Mac), and click Rewind in the Transport window.

**To move the playback location forward by the Back/Forward Amount and then begin playback:**

■ Press Control+Alt (Windows) or Command+Option (Mac), and click Fast Forward in the Transport window.

### Repeating Back/Forward Commands

All the Back/Forward commands can be repeated in order to increase the amount of the total Back or Forward move.

**To repeat Back/Forward moves:**

**1** Press and hold Control (Windows) or Command (Mac).

**2** Click Rewind or Fast Forward the number of times you want to repeat moving the playback location backwards or forwards by the Back/Forward Amount.

### Extending Selections with Back or Back and Play Commands

The Back or Back and Play commands can be used to extend a selection backwards by the length of the Back/Forward Amount.

💡 *Although you cannot extend a selection with the Forward or Forward and Play commands, you can use the following procedures with Forward or Forward and Play to move the start point of a current selection.*

**To extend a selection with Back or Back and Play commands:**

**1** Configure the Back/Forward Amount. (See "Setting the Back/Forward Amount" on page 308.)

**2** With the Selector tool, drag within a track to make a selection.

**3** Do one of the following:

- To extend the selection backwards by the Back/Forward Amount, press Shift+Control (Windows) or Shift+Command (Mac) and click Rewind in the Transport window.

– or –

- To extend the selection backwards by the Back/Forward Amount and then begin playback, press Shift+Control+Alt (Windows) or Shift+Command+Option (Mac) and click Rewind in the Transport window.

## Additional Ways of Moving the Playback Location

You can also move the playback location with the following:

**Shuttle Lock Modes** With either Shuttle Lock mode (Classic or Transport) you can use the numeric keypad to shuttle forward or backwards at specific speeds. For more information, see "Shuttle Lock Modes" on page 21.

**Memory Locations** Memory Locations can be used to move the playback location (or Edit selection). When a Memory Location is recalled, the playback location (or Edit selection) updates. Memory Locations can be recalled from the Memory Locations window and from the numeric keypad. In addition, Marker Memory Selections can be recalled by clicking them in the Markers ruler. For more information, see "Memory Locations and Markers" on page 637.

**Tabbing to Transients** With the Tab to Transients button enabled, you can automatically navigate to transients in audio waveforms, placing the cursor just before the detected transient peak. For more information, see "Tabbing to Transients" on page 457.

# Scrolling Options

You can configure how contents of the Edit window scroll during playback and recording.

**To configure Scrolling options:**

■ Choose Options > Scrolling and select one of the following options:

**None** The Edit window does not scroll during or after playback. The playback cursor moves across the Edit window, indicating the playback location.

**After Playback** The playback cursor moves across the Edit window, indicating the playback location. When playback has stopped, the Edit window scrolls to the final playback location.

**Page** The playback cursor moves across the Edit window, indicating the playback location. When the right edge of the Edit window is reached, its entire contents are scrolled, and the playback cursor continues moving from the left edge of the window. For more information, see "Page Scrolling During Playback" on page 310.

**Continuous (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)** See "Continuous Scrolling During Playback" on page 310.

**Center Playhead (Pro Tools HD Only)** See "Center Playhead Scrolling" on page 311.

*Making a selection in the Timeline or a playlist, or manually scrolling the Timeline while in Page Scroll or Continuous Scroll mode suspends page scrolling. To resume page scrolling and jump to the current playback location, click the Playback Cursor locator in the Main Timebase ruler (see "Locating the Playback Cursor when It Is Off-Screen" on page 306).*

## Page Scrolling During Playback

You can set Pro Tools to scroll the track display while playing, and also have the edit cursor appear wherever playback stops.

**To make the track display and the edit cursor follow playback:**

**1** Select Options > Scrolling > Page.

**2** Choose Setup > Preferences and click the Operation tab.

**3** Select the option for "Timeline Insertion/Play Start Marker Follows Playback," then click OK.

*Press Start+N (Windows) or Control+N (Mac) to toggle the Timeline Insertion/Play Start Marker Follows Playback preference on and off.*

**4** Make sure to select Options > Link Timeline and Edit Selection.

**5** With the Selector tool, click in the track where you want playback to begin.

**6** Start playback. The playback cursor scrolls across the Edit window, indicating the current playback location.

**7** Stop playback. The edit cursor appears at the location where playback stops.

## Continuous Scrolling During Playback

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

When this scrolling option is selected, the Edit window's contents scroll continuously past the playback cursor, which remains in the center of the window. With this option, playback is always based on the Timeline selection (unlike the Center Playhead Scrolling option). Continu-

ous Scrolling During Playback uses host processing power, so use this option with Pro Tools LE with DV Toolkit 2 only when absolutely necessary.

## Center Playhead Scrolling

### (Pro Tools HD Only)

When this scrolling option is selected, the Edit window's contents scroll continuously past the *Playhead*, which is a blue line in the center of the window (red when recording).

The Playhead indicates where playback begins when clicking Play in the Transport window.
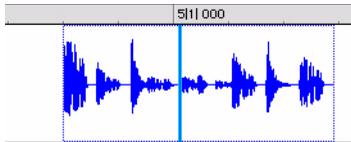


*Center Playhead Scrolling option*

To move the Playhead to a particular location for playback, you can scroll there in a ruler (see "Scrolling in a Timebase Ruler" on page 460), use the Edit window's horizontal scroll bar, or type the location into one of the Edit Selection indicators or one of the Counters.

Moving the Playhead with these methods does not update the Timeline selection. However, updating the Timeline selection automatically moves the Playhead to the Timeline insertion point.

With the Playhead enabled, you can jump to and play an Edit or Timeline selection. For details, see "Playing Timeline and Edit Selections with the Playhead" on page 313.

⚠ *Center Playhead Scrolling and Dynamic Transport mode cannot be used at the same time. Selecting Center Playhead Scrolling disables Dynamic Transport mode (if it is enabled). Likewise, enabling Dynamic Transport mode when Center Playhead Scrolling is selected automatically changes the Scrolling option to No Scrolling.*

## Half-Screen Edit Window

When the Scrolling option is set to Continuous or Center Playhead, a half-screen appears at the far left of the Edit window (before the beginning of the session).
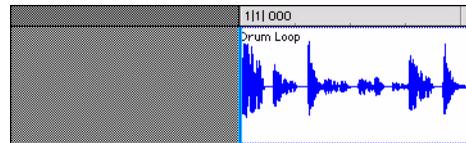


*Half-screen for Center Playhead Scrolling option*

# Playing Selections

Once an Edit selection is made, you can audition it by clicking Play in the Transport window. If enabled, the pre- and post-roll amounts play as well.

**To play a selection:**

**1** Enable Link Timeline and Edit Selection (Options > Link Timeline and Edit Selection).

**2** With the Selector or Time Grabber tool, make a track selection.

**3** If you want to use pre-roll or post-roll, enable and set the pre-roll and post-roll amounts. For details, see "Setting Pre- and Post-Roll" on page 357.

**4** Click Play in the Transport window, or press the Spacebar.

All tracks play for the range of the selection, including pre-roll and post-roll if enabled.

**To play an Edit selection with Link Timeline and Edit Selection disabled, do one of the following:**

- Choose Edit > Selection > Play Edit.

**To play a Timeline selection with Link Timeline and Edit Selection disabled:**

- Choose Edit > Selection > Play Timeline.

## Auditioning Pre-Roll and Post-Roll

You can audition and play *just* the pre-roll or post-roll material for a selection.

**To play from the pre-roll point to the start of a selection, or to the current Cursor location:**

- Press Alt+Left Arrow (Windows) or Option+Left Arrow (Mac).

**To play to the post-roll point from the end of a selection, or from the current Cursor location:**

- Press Control+Right Arrow (Windows) or Command+Right Arrow (Mac).

## Auditioning Start and End Points for Selections

There may be times when you want to audition the start or end of an audio selection without hearing the entire selection. This allows you to check, for instance, whether the beginning or end of a selection includes any unwanted clicks or pops.
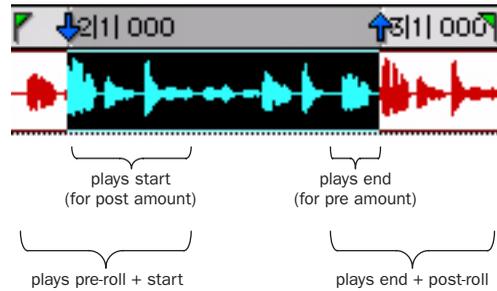


*Playback ranges for auditioning start/end points*

**To audition a selection start point:**

- Press Control+Left Arrow (Windows) or Command+Left Arrow (Mac).

When auditioning the beginning of a selection, the selection plays from the start point for a duration equal to the post-roll amount.

**To audition a selection start point with pre-roll:**

- Press Control+Alt+Left Arrow (Windows) or Command+Option+Left Arrow (Mac).

**To audition a selection end point:**

- Press Alt+Right Arrow (Windows) or Option+Right Arrow (Mac).

When auditioning the end of a selection, playback begins before the end point by the pre-roll amount.

**To audition a selection end point with post-roll:**

- Press Control+Alt+Right Arrow (Windows) or Command+Option+Right Arrow (Mac).

# Playing Timeline and Edit Selections with the Playhead

### (Pro Tools HD Only)

When the Scrolling option is set to Center Playhead, selections in the Timeline do not determine when playback begins. The Playhead, itself, denotes where playback begins when clicking Play in the Transport.

The Timeline and Edit selections, however, can still be played when the Playhead is enabled.

**To play an Edit selection with the Playhead enabled:**

**1** Deselect Options > Link Timeline and Edit Selections.

**2** Select Options > Scrolling > Center Playhead.

**3** With the Selector or Time Grabber tool, make a track selection.

**4** Choose Edit > Selection > Play Edit.

The Playhead jumps to the Edit selection and plays it from beginning to end, and then stops.

**To play a Timeline selection with the Playhead enabled:**

**1** Deselect Options > Link Timeline and Edit Selections.

**2** Select Options > Scrolling > Center Playhead.

**3** Drag with the Selector tool in any Timebase ruler to set the play range.

**4** Choose Edit > Selection > Play Timeline.

The Playhead jumps to the Timeline selection and plays it from beginning to end, and then stops.

## Moving the Playhead

When the Scrolling option is set to Center Playhead, the Playhead can be moved forward or back to the next region boundary in the selected track.

**To move the Playhead through a track's region boundaries:**

**1** Make sure the Tab to Transients button is not enabled (see "Tabbing to Transients" on page 457).

**2** Click in the track with the Selector tool.

**3** Do one of the following:

- Press Tab to move the Playhead forward to the next region boundary.

– or –

- Press Control+Tab (Windows) or Option+Tab (Mac) to move the Playhead back to the previous region boundary.

## Playback Modes

Pro Tools provides several Playback modes:

- Normal Playback mode
- Half-Speed Playback mode
- Play Pause mode (Prime for Playback)
- Loop Playback mode
- Dynamic Transport mode

### Normal Playback Mode

Normal Playback mode is simply when none of the other Playback modes are selected. In Normal Playback mode, Pro Tools plays back at the session sample rate.

## Half-Speed Playback Mode

Use Half-Speed Playback mode to learn or transcribe difficult passages in recorded tracks.

**To play at half-speed:**

**1** Do one of the following:

- Shift-click the Play button in the Transport.
- Right-click the Play button in the Transport and select Half-Speed. Then click Play to start Half-Speed Playback.

*You can also play at half-speed by pressing Shift+Spacebar.*

**2** Click Stop in the Transport to stop playback.

## Play Pause Mode

When playing back a large number of tracks, Pro Tools may take a little longer to actually start playback. To avoid this delay, put Pro Tools in Play Pause mode before starting playback.

**To enable Play Pause mode and start playback:**

**1** Do one of the following:

- Alt-click (Windows) or Option-click (Mac) Play in the Transport to put Pro Tools in Play Pause mode.
- Right-click the Play button and select Prime for Playback.

The Stop button lights and the Play button flashes.

**2** To begin playback instantaneously, click Play.

**3** Click Stop to stop playback.

*When synchronizing to time code, use Play Pause mode to play back large numbers of tracks. This decreases the time it takes to lock to time code.*

## Loop Playback Mode

When Loop Playback is enabled, the selected track range repeats on playback. If there is no selection, playback occurs normally from the current Cursor location.

*A selection must be at least 500 ms in length for it to loop on playback.*

Looping playback is a useful way to check the rhythmic continuity of a selection when working with musical material. If you're working with one-bar selections, you can loop playback to see if the material loops cleanly. If it seems to skip, you should then adjust the length of the selection until it works "musically" within the context of the playlist and the other tracks.

**To loop playback of a selection:**

**1** Enable Link Timeline and Edit Selection (Options > Link Timeline and Edit Selection).

**2** With the Selector tool, select the track range you want to loop.

**3** Enable Loop Playback by doing one of the following:

- Select Options > Loop Playback.
- Right-click the Play button in the Transport window and select Loop from the pop-up menu.
- Start-click (Windows) or Control-click (Mac) the Play button in the Transport window.
- Press Control+Shift+L (Windows) or Command+Shift+L (Mac).
- With the Numeric Keypad mode set to Transport, press 4 on the numeric keypad.

When enabled, a loop symbol appears in the Play button in the Transport window.



*Loop Playback enabled*

**4** Click Play in the Transport window.

Playback begins from the pre-roll point (if enabled) and continues to the selection's end point, where it loops back to the selection's start point.

**5** Click Stop in the Transport window to stop playback.

## Loop Playback and Audio Recording

When Loop Playback is enabled, Pro Tools will not loop when attempting to record audio tracks with QuickPunch, Destructive Record, or Nondestructive Record mode.

To loop record audio tracks in Pro Tools, you must enable Loop Record mode (see "Loop Recording Audio" on page 350).

## Dynamic Transport Mode

Dynamic Transport mode lets you decouple the playback location from the Timeline selection. This means that you can start playback from anywhere on the Timeline without losing your Timeline or Edit selections. For example, you can use Dynamic Transport mode in conjunction with Loop Playback mode to quickly audition loop transitions.

When Dynamic Transport mode is enabled, the Main Timebase ruler expands to double-height and reveals the new Play Start Marker. The Play Start Marker determines where playback starts when the Transport is engaged. You can posi-

tion the Play Start Marker independently of the Timeline Selection. The Play Start Marker can be repositioned during playback and playback continues from the new location.

**To enable or disable Dynamic Transport mode:**

■ Select or deselect Options > Dynamic Transport.

🔲 *Press Control+Start+P (Windows) or Command+Control+P (Mac) to toggle Dynamic Transport mode on or off.*

⚠ *Enabling Dynamic Transport mode automatically disables Link Timeline and Edit Selection, and automatically enables Loop Playback mode.*

⚠ *Center Playhead Scrolling (Pro Tools HD only) and Dynamic Transport mode cannot be used at the same time. Selecting Center Playhead Scrolling disables Dynamic Transport mode (if it is enabled). Likewise, enabling Dynamic Transport mode when Center Playhead Scrolling is selected automatically changes the Scrolling option to No Scrolling.*
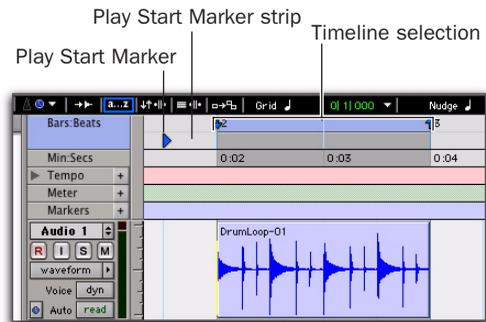


*Dynamic Transport mode, Play Start Marker shown in expanded Main Timebase ruler*

**To reposition the Play Start Marker, do one of the following:**

■ With any Edit tool selected, click in the Play Start Marker strip in the Main Timebase ruler.

■ With any Edit tool selected, click and drag the Play Start Marker to a new location.

■ Click Fast Forward or Rewind in the Transport to relocate the Play Start Marker forward or backward by the standard Fast Forward and Rewind increment amount.

*Double-click anywhere in the Play Start Marker strip in the Main Timebase ruler to move the Play Start Marker to that location and start playback.*

**To change the Timeline Selection Start or End Markers:**

**1** Make a Timeline selection with the Selector tool by clicking and dragging in the Main Timebase ruler. If Link Timeline and Edit Selection is enabled (Options > Link Timeline and Edit Selection), you can make an Edit selection with the Selector or any of the Grabber tools.

**2** With any Edit tool selected, click and drag either the Timeline Selection Start or End Markers left or right, extending or constricting the Timeline selection.

⚠ *Changes to the Timeline selection during playback temporarily interrupt playback. To minimize this interruption, reduce the DAE Playback Buffer size in the Playback Engine dialog.*

**To move the Timeline selection:**

■ With any Edit tool selected, click and drag the selection on the Main Timeline ruler to another location.
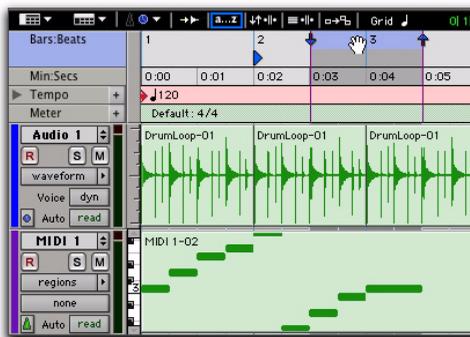


*Dynamic Transport mode, moving the Edit selection*

⇧ *When the Link Timeline and Edit Selection option is disabled, press Alt-click (Windows) or Option-click (Mac) and drag the Timeline selection to snap the Edit selection to the Timeline selection and move both in tandem.*

### Play Start Marker Follows Timeline Selection

When enabled, the Play Start Marker snaps to the Timeline Selection Start Marker when you move the Timeline Selection, draw a new Timeline Selection, or adjust the Timeline Selection Start. When disabled, the Play Start Marker doesn't move with the Timeline selection.

**To have the Play Start Marker always snap to the Timeline Selection Start Marker:**

**1** Choose Setup > Preferences.

**2** Click the Operation tab.

**3** Select Play Start Marker Follows Timeline Selection.

**4** Click OK.

### Timeline Insertion/Play Start Marker Follows Playback

When enabled, the Play Start Marker moves to the point in the Timeline when playback stops. When disabled, the Play Start Marker does not follow playback.

When not in Dynamic Transport mode, the Timeline Insertion follows playback.

**To have the Timeline Insertion and the Play Start Marker follow playback:**

**1** Choose Setup > Preferences.

**2** Click the Operation tab.

**3** Select Timeline Insertion/Play Start Marker Follows Playback.

**4** Click OK.

⌑ *Press Start+N (Windows) or Control+N (Mac) to toggle the Timeline Insertion/Play Start Marker Follows Playback preference on and off.*

## Using Dynamic Transport Mode with Loop Playback

Use Dynamic Transport mode in conjunction with Loop Playback to specify the loop start and end points with the Timeline selection while using the Play Start Marker to specify where playback begins. This is especially useful for auditioning loop transitions.

Enabling Dynamic Transport mode automatically enables Loop Playback mode.

**To audition a loop transition:**

**1** Enable Dynamic Transport mode (Options > Dynamic Transport).

**2** Ensure that Loop Playback mode is enabled (Options > Loop Playback).

**3** Make a Timeline selection to loop. If Link Timeline and Edit Selection is enabled (Options > Link Timeline and Edit Selection), you can make an Edit selection instead.

**4** Reposition the Play Start Marker before the Timeline Selection End Marker.



*Dynamic Transport mode, auditioning the loop transition*

**5** Start playback.

Playback starts before the loop end point and continues across the loop point through the loop start. You can reposition the Timeline Selection Start and End Markers by clicking and dragging them left or right, even during playback.

## Using Separate Play and Stop Keys

When enabled, the Use Separate Play and Stop Keys option lets you start playback with the Enter key and stop playback with the 0 key on the numeric keypad. This is useful for quickly starting and stopping playback when auditioning loop transitions.

**To use separate play and stop keys on the numeric keypad:**

1 Choose Setup > Preferences.

2 Click the Operation tab.

3 Select Transport for the Numeric Keypad.

4 Select Use Separate Play and Stop Keys.

⚠ *When this option is enabled, it overrides using the Enter key to add Memory Location markers. Press Period (.) and then Enter on the numeric keypad to add a Memory Location marker.*

5 Click OK.

The Enter key starts playback. The Zero key stops playback. Pressing Zero twice locates the Play Start Marker to the Timeline Selection start.

## Keyboard Shortcuts for Relocating the Play Start Marker

In Dynamic Transport mode, you can use keyboard shortcuts to quickly relocate the Play Start Marker either during playback or when the Transport is stopped.

**To move the Play Start Marker to the Timeline Selection Start:**

▪ Press Period (.) on the numeric keypad and then the Left Arrow.

**To move the Play Start Marker to the Timeline Selection End:**

▪ Press Period (.) on the numeric keypad and then the Right Arrow.

**To move the Play Start Marker to the Edit Selection Start:**

▪ Press Period (.) on the numeric keypad and then the Down Arrow.

**To move the Play Start Marker to location of the Playhead:**

▪ Press Period (.) on the numeric keypad and then the Up Arrow.

**To nudge the Play Start Marker backward (rewind):**

▪ Press 1 on the numeric keypad.

**To nudge the Play Start Marker forward (fast forward):**

▪ Press 2 on the numeric keypad.

**To move the Play Start to a specific bar:**

▪ With Bars:Beats selected as the Main Timebase ruler, do the following on the numeric keypad:

- Press Asterisk (*).
- Type the bar number.
- Press Enter.

## Recording in Dynamic Transport Mode

Recording in Dynamic Transport mode lets you start playback independently of the Timeline selection. Recording punches in and out based on the Timeline selection.

# Chapter 17: Record Setup

Before you start recording in Pro Tools, you need to set up your Pro Tools system, a session, and one or more tracks for recording. You will also need to configure how Pro Tools monitors the input you intend to record. For information on recording audio, see Chapter 18, "Audio Recording."

While some of the information in this chapter is relevant to preparing to record MIDI, there are more specific setup details for MIDI recording in Chapter 19, "MIDI Recording."

📄 *For information on digitizing (recording) video in Pro Tools, see Chapter 43, "Working with Video in Pro Tools" or the Avid Video Peripherals Guide.*

## Record Setup Overview

Record setup includes the following:

**Hardware Setup for Recording**

- "Configuring Pro Tools Hardware I/O for Recording" on page 320

- "Connecting a Sound Source" on page 321

**Session Setup for Recording**

- Configuring a new or existing session for recording:
  - "Allocating Hard Drive Space for Recording" on page 321
  - "Recording with a Click (Optional)" on page 322
  - "Setting the Default Meter and Tempo (Optional)" on page 325
  - Setting a Record Mode. See "Record Modes" on page 327

**Track Setup for Recording**

- Configuring one or more tracks for recording:
  - "Configuring Default Names for Audio Files and Regions (Optional)" on page 330
  - "Assigning Hardware I/O on a Track" on page 332
  - "Record Enabling Tracks" on page 333
  - "Recording with Multiple Hard Drives (Optional)" on page 335

**Monitoring Setup for Recording**

- "Selecting a Record Input Monitoring Mode" on page 338

- "Setting Monitor Levels for Record and Playback" on page 340

- On Pro Tools LE, "Reducing Monitoring Latency" on page 341

- On Pro Tools HD, "Disabling Delay Compensation During Recording" on page 342

# Configuring Pro Tools Hardware I/O for Recording

Before you start recording, make sure your Pro Tools system hardware is connected and configured properly. For details on connecting Pro Tools to your studio and configuring your Hardware in the Hardware Setup dialog, refer to the *Getting Started Guide* that came with your system. For information on how to route signal paths in Pro Tools, see Chapter 6, "I/O Setup."

## Input Connections and Audio Levels

Pro Tools|HD audio interfaces operate as line-level devices and offer no pre-amplification. Low-level sources like microphones and electric guitars need to be pre-amplified. You can do this with a quality mixing board or dedicated preamp (such as the Digidesign PRE).

> ☆ *The Digidesign PRE can be used as a stand-alone preamp with all Pro Tools systems, or it can be remote-controlled from within a Pro Tools session when used with a Pro Tools|HD system.*

003, 003 Rack, Digi 002, and Digi 002 Rack have four inputs with preamps, to which you can connect low-level signals, and four additional line-level inputs with switchable gain.

Mbox 2, Mbox 2 Pro, Mbox 2 Mini, and Mbox each have two inputs with preamps, to which you can connect low-level signals.

For input information on Digidesign-qualified M-Audio units, refer to your M-Audio documentation.

For all systems, volume and pan controls for tracks in Pro Tools only affect monitoring levels—not the recording input gain. The LED meters on Digidesign audio interfaces indicate both full-code (highest level before clipping) and true clipping of Pro Tools output signals. The on-screen meters in Pro Tools indicate only true clipping.

### Digital Clipping

Clipping occurs when you feed a signal to a recorder or mixer that is louder or "hotter" than the device allows. On many analog tape decks, a little clipping adds a perceived warmth to the sound due to tape compression. In digital recording, however, clipping causes digital distortion, which is undesirable and should always be avoided.

### Set Input Levels

When you feed a signal into any audio recording system, including Pro Tools, make sure to adjust the input level to optimize the dynamic range and signal-to-noise ratio of the recorded file. If the input level is too low, you will not take full advantage of the dynamic range of your Pro Tools system. If the input level is too high, the waveform can clip and distort the recording. Set the input levels high, but not high enough to clip.

As a general rule of thumb, try to set levels so that they peak within –6 dB to –12 dB on the input meter without triggering the clipping indicator on your audio interface. Depending on the type of material you are recording and its dynamic range and peak content, you may want to record with higher or lower levels.

You can display a track's input levels in its Volume/Peak/Delay indicator. Normally, this indicator is set to be a Volume indicator. When you change it into a Peak indicator, it can function as a headroom indicator based on the last peak playback level.

### To display a track's peak level:

■ Control-click (Windows) or Command-click (Mac) a track's Volume indicator to step through the different indicator modes (Volume, Peak, and Channel Delay) until the indicator displays peak (pk) level.

## Calibration Mode

### (Pro Tools HD Only)

You can use the Calibration mode in Pro Tools to adjust the input and output levels for your audio interface so they match those of your mixing console and other audio devices in your studio.

The 192 I/O has two sets of adjustable trim pots for its inputs, and two sets of adjustable trim pots for its outputs. Additionally, the reference level for the input can be set to +4 dBu or –10 dBV. For more information on calibrating 192 I/O, see the *192 I/O Guide*.

The 888|24 I/O has adjustable trim pots for its inputs and outputs. For more information, see the *888|24 I/O Guide*.

There are no input or output trims on the following audio interfaces: 192 Digital I/O, 96 I/O, 96i I/O, 882|20 I/O, 1622 I/O, and 24-bit ADAT Bridge I/O. Some Digidesign I/Os that do not have output trims (such as the 96i I/O) offer software-controllable input levels, adjustable from Setup > Hardware (refer to the guide for your particular I/O).

## Connecting a Sound Source

Depending on your Pro Tools hardware I/O, you can connect different types of sound sources (such as musical instruments, mics, and mixer outputs). Refer to the *Getting Started Guide* for your Pro Tools system. For additional information, refer to the documentation that came with your sound source.

If you connect a sound source to a Pro Tools input that was not previously configured to accept input, you will need to reconfigure you hardware in the Hardware Setup dialog (see your *Getting Started Guide*). You may also need to reset your I/O signal paths in I/O Setup (see Chapter 6, "I/O Setup.").

## Allocating Hard Drive Space for Recording

The Operation preference for Open Ended Record Allocation determines how much of your available hard drive space is allocated whenever you record into one or more tracks in Pro Tools.

When this allocation preference is set to Use All Available Space, the drive's entire available space is allocated. This setting lets you record lengthy takes, or longer sessions.

However, when allocating all available space, Pro Tools may take a little longer to begin recording. You can reduce this delay by allocating a specific amount of time for recording.

☼ *You can also avoid recording delays by putting Pro Tools in Record Pause mode before beginning to record. See"Record Pause Mode" on page 346.*

In general, the Use All Available Space preference makes hard drives work harder. In addition to record and punch lag times, many systems see better overall recording performance when the Open Ended Record Allocation is limited.

**To allocate a specific amount of time to recording:**

**1** Choose Setup > Preferences and click the Operation tab.

**2** Under the Open Ended Record Allocation option, select Limit To and enter the number of minutes to be allocated.

*Open Ended Record Allocation, Operation preference*

The number of minutes specified is allocated for each record-enabled track.

**3** When you are finished, click OK.

## Monitoring Drive Space

Pro Tools lets you check how much drive space is available.

**To monitor available space on your drive during a Pro Tools session:**

■ Choose Window > Disk Space.

**To display available drive space in different view formats:**

■ Choose View > Disk Space, and select a format (Text View or Gas Gauge).

# Recording with a Click (Optional)

If you intend to work with MIDI or Instrument tracks in your session, or if the audio you're working with is bar and beat-oriented, you can record your tracks while listening to a *click*. This ensures that recorded material, both MIDI and audio, aligns with the session's bar and beat boundaries.

When your track material lines up with the beats, you can take advantage of some very useful editing functions in Pro Tools, such as quantizing MIDI and audio events or regions, quantizing individual MIDI notes, and copying and pasting measures and song sections in Grid mode.

☼ *Material that is recorded without listening to a click can still be aligned to bar and beat boundaries in Pro Tools with Beat Detective (see Chapter 34, "Beat Detective"), or use the Identify Beat command to determine the tempo (see "Identify Beat Command" on page 620).*

☼ *You can record MIDI with or without a click and manually add Bar|Beat markers or generate a tempo and meter map from it by using Beat Detective. See Chapter 34, "Beat Detective."*

## Creating a Click Track

Pro Tools lets you create a Click track using the DigiRack Click plug-in. You can also create a click track using MIDI.

▤ *For more information on the Click plug-in, see the DigiRack Plug-ins Guide.*

**To create a click track using the DigiRack Click plug-in:**

■ Choose Track > Create Click Track.

Pro Tools creates a new Auxiliary Input track named "Click" with the Click plug-in already inserted. In the Edit window, the click track's Track Height is set to Mini. You can create more than one click track and each subsequent click track is named in sequence. For example, Click 1, Click 2, and Click 3.

To hear the click during playback and recording, configure the Click Options (see "Click Options" on page 323) and ensure that Click is enabled (see "Enabling Click" on page 324).

**To create a click track using MIDI:**

**1** Create a new (mono) Auxiliary Input or Instrument track.

**2** Do one of the following:

• From the track's Input selector, select the path to which the MIDI device is connected.

– or –

• Insert an instrument plug-in on the track (such as Digidesign's Xpand!).

**3** Configure the Click/Countoff options, and be sure to select the port for the MIDI device or instrument plug-in from the Output pop-up menu (see "Click Options" on page 323).

**4** Enable Click (see "Enabling Click" on page 324).

## Click Options

Pro Tools provides options and controls for driving a click. The following steps are for configuring and enabling a click using the DigiRack Click plug-in or MIDI.

**To configure click options:**

**1** Open the Click/Countoff Options dialog by doing one of the following:

• Choose Setup > Click.

– or –

• Double-click the Metronome Click or Countoff button in the Transport window.

**2** In the Click/Countoff Options dialog, do one of the following:

• If using the DigiRack Click plug-in, select None in the Output pop-up menu.

– or –

• If playing a click using MIDI, select the port number (device) and channel for the click from the Output pop-up menu.
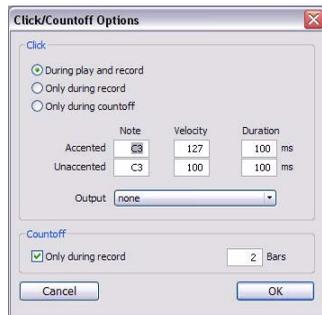


*Click/Countoff Options dialog*

**3** Specify the note, velocity, and duration for the accented and unaccented notes.

🔆 *If one is connected, you can also play new note values on a MIDI controller keyboard.*

When listening to the click in your Pro Tools sessions, the accented note sounds on the first beat of each measure and the unaccented note sounds on the remaining beats.

**4** Select whether the click is heard "During play and record," or "Only during record," or "Only during countoff."

**5** If using a countoff, specify the number of Bars to be counted off. To hear the countoff only when recording, select that option.

**6** Click OK.

## Enabling Click

Click tracks must be enabled to be heard during playback or recording.

**To enable click from the MIDI menu:**

■ Select Options > Click.

**To enable click in the Transport:**

**1** Display the MIDI controls in the Transport by doing one of the following:

- Select View > Transport > MIDI Controls.
- Control-click (Windows) or Command-click (Mac) the Expand/Collapse "+" button in the Transport window to display the MIDI controls.
- Alt-click (Windows) or Option-click (Mac) the Expand/Collapse "+" button in the Transport window to display the MIDI controls and the Counters.

Expand/Collapse "+" button



*Transport Window with MIDI Controls*

**2** In the Transport, click the Metronome Click button so it is highlighted.



Metronome Click button
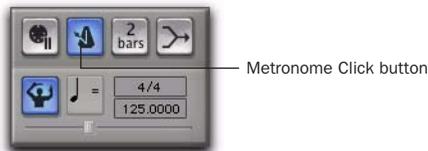
*Metronome Click enabled*

**3** To use a *countoff* when recording or playing, click the Countoff button in the Transport so it is highlighted.



Countoff button

*Countoff enabled*

Hearing the countoff before recording helps musicians to start playing at the right time and in tempo. The Countoff button in the Transport window displays the number of bars counted off.

💡 *The countoff is ignored when Pro Tools is online and synchronized to SMPTE time code.*

# Setting the Default Meter and Tempo (Optional)

## Setting the Default Meter

When opening a new session in Pro Tools, the meter defaults to 4/4. If you intend to record with a click in a meter other than 4/4, make sure to set the default meter accordingly.

If a session's meter does not match the music you're recording, the accented clicks will not line up with what you're playing, and, as a result, the recorded material may not align with the bars and beats in the Edit window.

Meter events, which can occur anywhere within a Pro Tools session, appear in the Meter ruler. For more information on inserting and editing meter events, see "Meter Events" on page 623.

**To set the default meter for a session:**

**1** Double-click the Current Meter button in the Transport window.



Current Meter button
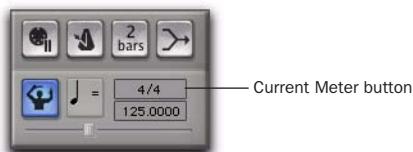
**2** Enter the Meter for the session and set the Location to 1|1|000 (to ensure that the inserted meter event replaces the default).
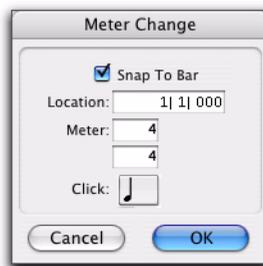


*Meter Change window*

**3** From the Click pop-up menu, select a note value for the beat. (For example, if you are in 6/8, select a dotted-quarter note for the Click).

**4** Click OK to insert the new meter event.

## Setting the Default Tempo

When opening a new session in Pro Tools, the tempo defaults to 120 BPM. If you intend to record with a click at a tempo other than 120 bpm, make sure to set the default tempo accordingly.

📄 *Tempo events, which can occur anywhere within a Pro Tools session, appear in the Tempo ruler. For more information on inserting and editing tempo events, see "Tempo" on page 602.*

**To insert a default tempo event:**

**1** Double-click the Song Start Marker in the Edit window (see "Song Start Marker" on page 602).

**2** Enter the BPM value you will use for the session.

**3** Set the Location to 1|1|000 (to ensure that the inserted tempo event replaces the default).
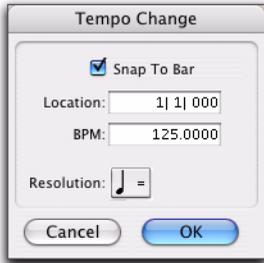


*Tempo Change window*

**4** From the Resolution pop-up menu, select the note value for the beat. (For example, if you are in 6/8, select a dotted-quarter note for the Resolution.)

**5** Click OK.

## Using Manual Tempo Mode

In *Manual Tempo* mode, Pro Tools ignores tempo events in the Tempo track and instead plays back a Manual Tempo. This tempo can be set with the Tempo slider, or if you are not sure of the actual tempo, by tapping in the tempo.

While you can adjust the Manual Tempo during playback, doing so momentarily interrupts playback.

**To set the Manual Tempo with the Tempo slider:**

**1** To view the MIDI controls in the Transport window, select View > Transport > MIDI Controls.

**2** In the Transport window, click the Tempo Ruler Enable button (Conductor) button so it becomes unhighlighted. Pro Tools switches to Manual Tempo mode. In this mode, any tempo events in the Tempo track are ignored.
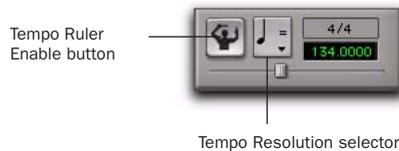


*Manual Tempo mode enabled*

**3** To base the BPM value on something other than the default quarter-note, click the Tempo Resolution selector and select a different note value. (For example, if you are in 6/8, select a dotted-quarter note for the Tempo Resolution.)

**4** To enter a new tempo, drag the horizontal Tempo slider in the Transport window.



*Tempo slider*

For finer resolution with the Tempo slider, press Control (Windows) or Command (Mac) while dragging.

**To exit Manual Tempo mode and enable the Tempo track:**

▪ Click the Tempo Ruler Enable (Conductor) button in the Transport window so it becomes highlighted.

**To set the Manual Tempo by tapping:**

**1** To view the MIDI controls in the Transport window, select View > Transport > MIDI Controls.

**2** In the Transport window, click the Tempo Ruler Enable (Conductor) button so it becomes unhighlighted. Pro Tools switches to Manual Tempo mode. In this mode, any tempo events in the Tempo track are ignored.

**3** Do one of the following:

- Click in the Tempo field so it becomes highlighted and tap the "T" key on your computer keyboard repeatedly at the new tempo.

  – or –

- Click in the Tempo field so it becomes highlighted and tap in the tempo by playing a note repeatedly at the new tempo on your MIDI keyboard controller.

To compute the new tempo, Pro Tools averages the last eight (or fewer) taps to determine the correct tempo. The computed BPM value appears in the Transport window's Tempo field.

**To lock in the new tempo:**

- Take Pro Tools out of Manual Tempo mode by clicking the Tempo Ruler Enable (Conductor) button, then set the default tempo for the Song Start Marker to the new tempo.

# Record Modes

For recording audio, Pro Tools provides the following Record modes:

- Normal (Nondestructive)
- Destructive
- Loop
- QuickPunch
- TrackPunch (Pro Tools HD only)
- DestructivePunch (Pro Tools HD only)

**To select the Record mode, do one of the following:**

■ Select the Record mode in the Options menu. If no Record mode is selected, Pro Tools is in Normal (Nondestructive) Record mode.

  – or –

■ Right-click the Record button in the Transport and select the Record mode from the pop-up menu.

*You can also cycle through the Pro Tools record modes with the Transport stopped, by Start-clicking (Windows) or Control-clicking (Mac) the Record button.*

The Record button changes to indicate the selected Record mode as follows:

- Blank for Normal (Nondestructive)
- "D" for Destructive
- Loop symbol for Loop Record
- "P" for QuickPunch
- "T" for TrackPunch (Pro Tools HD only)
- "DP" for DestructivePunch (Pro Tools HD only)



*Destructive Record mode enabled*

*When recording, you can preserve disk space by removing unwanted record takes (see "Removing Unwanted Regions" on page 198) and compacting audio files (see "Compacting an Audio File" on page 476).*

## Normal (Nondestructive) Record Mode

In Normal, Nondestructive Record mode, Pro Tools records audio nondestructively, which means that if you record over a track's existing regions, the audio is not erased from your hard drive. Both the new and old audio files remain on your hard drive, available as regions from the Region List.

In Normal Record mode, the record range can be defined by selecting a range in a ruler or in a track's playlist, or by specifying start and end points in the Transport window. If there is no selection, recording begins from the current Cursor location and continues until the Transport's Stop button is clicked.

*To set a record range by selecting within a track's playlist, the Timeline and Edit selections must be linked. See "Linking or Unlinking Timeline and Edit Selections" on page 447.*

The pre- and post-roll settings allow material to be heard up to and after the start and end points, which is useful when punch recording (see "Audio Punch Recording Over a Specified Range" on page 349).

## Destructive Record Mode

In Destructive Record mode, recording over existing regions replaces the original audio permanently, which allows you to keep disk use to a minimum. However, if you have sufficient drive space, it is usually best to use Pro Tools in Nondestructive Record mode, to avoid losing any previously recorded material.

When defining the record range and setting pre- and post-roll, Destructive Record mode works the same as Normal (Nondestructive) mode.

Unlike the other record modes, it is not possible to cancel or Undo record takes when using Destructive Record mode (see "Canceling a Record Take" on page 345).

*In Destructive Record mode, the waveform overview is not redrawn until you stop recording.*

## Loop Record Mode

Loop Record mode lets you record take after take (nondestructively) while the same section of audio repeats. This is a convenient technique for quickly recording multiple takes of a part without losing spontaneity.

The time range that is looped and recorded—which must be at least one second in length—is defined by selecting a range in a ruler or in a track's playlist, or by specifying start and end points in the Transport window. The pre-roll setting, if enabled, is used during the first record pass, but on each successive loop the pre- and post-roll times are ignored.

*To set a record range by selecting within a track's playlist, enable the Link Timeline and Edit Selection option. See "Linking or Unlinking Timeline and Edit Selections" on page 447.*

When using Loop Record mode, each successive take appears as a region in the Region List and each is numbered sequentially. The various takes, which are identical in length and start time, are easily auditioned and placed in the track at the correct location with the Matches pop-up menu (see "Auditioning Different Record Takes in the Timeline" on page 351).

⚠ *In Loop Record mode, the waveform overview is not redrawn until you stop recording.*

## QuickPunch

QuickPunch gives you the ability to manually and instantaneously *punch in* (initiate recording) and *punch out* (stop recording) on record-enabled audio tracks during playback by clicking the Record button in the Transport. Recording with QuickPunch is nondestructive.

When using QuickPunch, Pro Tools begins recording a new file when playback begins, automatically generating regions in that file at each punch in/out point. These regions appear in the track's playlist; and the complete audio file appears in the Region List along with the Quick-Punch created regions. Up to 200 of these "running punches" can be performed in a single pass.

Though you can punch record in the other record modes by manually specifying the record range, only QuickPunch provides instantaneous monitor switching on punch-out.

📃 *For more information on QuickPunch, see "QuickPunch Audio Recording" on page 379.*

## TrackPunch

### (Pro Tools HD Only)

TrackPunch lets individual tracks be punched in, punched out, and taken out of record enable without interrupting online recording and playback.

TrackPunch is a nondestructive recording mode. When a track is TrackPunch-enabled, Pro Tools begins recording a new file when playback begins. During playback, you may record arm or disarm, or punch in or out a combination of any or all TrackPunch enabled tracks.

TrackPunch automatically creates regions in that file at each punch-in and punch-out point. These regions appear in the track's playlist, and the complete audio file appears in the Region List along with the TrackPunch created regions. Up to 200 of these "running punches" can be performed in a single pass.

📃 *For more information on TrackPunch, see "TrackPunch Audio Recording" on page 383.*

## DestructivePunch

### (Pro Tools HD Only)

Destructive Punch is a destructive recording mode that lets you instantaneously *punch in* (start recording) and *punch out* (stop recording) on individual audio tracks during playback, while preserving a contiguous audio file on each punched track.

📃 *For more information on DestructivePunch, see "DestructivePunch Audio Recording" on page 392.*

## Record Modes and MIDI

In addition to the various record modes, there is also a MIDI Merge button in the Transport window that determines how MIDI is recorded. When enabled (*Merge* mode), recording over existing MIDI regions results in the new data being merged with the old. When the MIDI Merge button is disabled (*Replace* mode), the new material replaces the old.
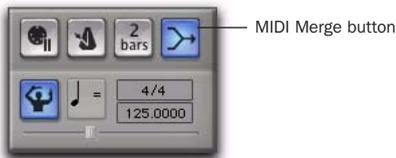


*MIDI Merge enabled*

MIDI recording works the same whether using Nondestructive or Destructive Record mode. In addition, neither QuickPunch nor TrackPunch need to be enabled to punch on-the-fly with MIDI—this capability is available in Nondestructive and Destructive Record modes.

Unlike audio loop recording, the state of the MIDI Merge toggle determines whether existing material is replaced or merged.

Unless MIDI Merge is enabled, MIDI recording is destructive (though you can undo a MIDI record pass), either overwriting or adding to region material. One exception to this rule is when Loop Record mode is enabled; in this mode, existing track regions are replaced with new regions when new material is recorded. The old regions remain intact and available from the Region List, and from the Matches pop-up menu. In Loop Record mode, MIDI Merge has no effect, so its button is dimmed.

## Configuring Default Names for Audio Files and Regions (Optional)

Track names define new file and region names when recording to a track (see "Naming Tracks" on page 145*).*

When recording to an audio track, the resulting file and region names are based on the name of the track. For example, after recording for the first time on a track called "Electric Gtr," an audio file is created with the name "Electric Gtr_01." In addition, a region appears in the Region List with the name "Electric Gtr_01." This region is a whole-file region.

Subsequent record takes on the same track are named identically, but the digits (indicating the take number) are incremented (for example, "Electric Gtr_02.") A second set of digits (such as used in "Electric Gtr_01-01") indicates that the region was *auto-created* from an edit.

> *QuickPunch, TrackPunch, and Destructive Punch modes use a different method for numbering regions. For details, see "Region and Take Numbering with QuickPunch" on page 382.*

When recording MIDI tracks, a similar naming scheme is used, though with only one set of digits. For example, after recording to a track called "Synth 1," a region is created called "Synth 1-01." Subsequent regions for that track, generating either from additional record takes or region edits, are numbered sequentially (for example, "Synth 1-02").

**To rename a track:**

1 Do one of the following:

• In the Mix or Edit window, double-click the Track Name button for the track you want to rename.

– or –

• In the Track List, or Mix or Edit window, Right-click the track name for the track you want to rename.

2 In the Track Name/Comments dialog, type a new track name.

3 Click OK.

## Names for Stereo Audio Tracks

When recording to stereo audio tracks, audio file and region names for the left and right channels are appended with a ".L" and ".R" suffix.

## Names for Multichannel Tracks

### (Pro Tools HD Only)

When recording to multichannel surround tracks, audio file and region names for each channel are appended with the following suffixes:

| Multichannel Format | File and Region Suffixes |
|---|---|
| LCR | L, C, R |
| Quad | L, R, Ls, Rs |
| LCRS | L, C, R, S |
| 5.0 | L, C, R, Ls, Rs |
| 5.1 | L, C, R, Ls, Rs, LFE |
| 6.0 | L, C, R, Ls, Cs, Rs, LFE |
| 6.1 | L, C, R, Ls, Cs, Rs |
| 7.0 | L, Lc, C, R, Rc, Ls, Rs |
| 7.1 | L, Lc, C, R, Rc, Ls, Rs, LFE |

# Assigning Hardware I/O on a Track

Before recording to a track, you must specify the input and output signal path for the material you are recording. You will do this by assigning a hardware input (recording source) and output (for monitoring recording) on the track.

**To assign I/O on a track:**

**1** Assign a hardware input (recording source) by doing one of the following:

- In the Mix window, select the corresponding hardware input for your source from the track's Input Path selector.



*Input Path selector, Mix window*

– or –
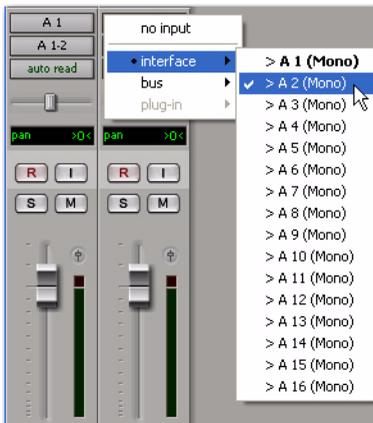
- In the Edit window, with I/O View enabled, select the corresponding hardware input for your source from the track's Input Path selector.
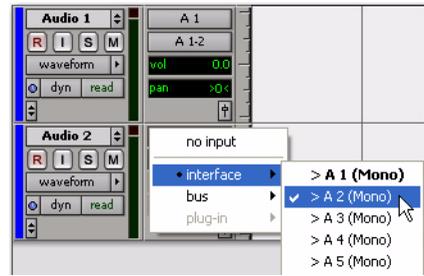


*Input Path selector, Edit window*

**2** Assign a hardware output (for monitoring recording) by doing one of the following:

- In the Mix window, select the corresponding hardware output for monitoring (such as A 1–2) from the track's Output Path selector.



*Output Path selector, Mix window*

– or –
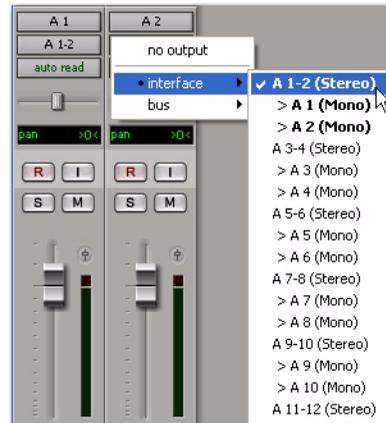
- In the Edit window, with I/O View enabled, select the corresponding hardware output for monitoring (such as A 1–2) from the track's Output Path selector.
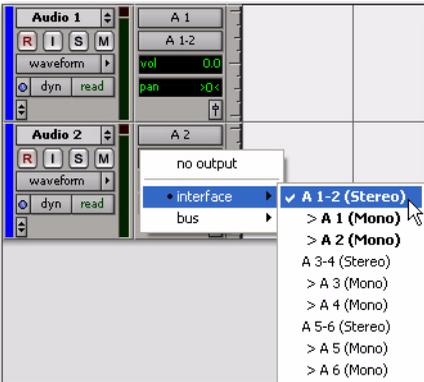
*Output Path selector, Edit window*

# Record Enabling Tracks

To record audio or MIDI to a track you must first enable the track's Record Enable button. To record simultaneously to multiple tracks, record enable multiple audio, Instrument, or MIDI tracks.

When one or more tracks are record-enabled, click the Record button in the Transport to arm recording, and then click the Play button in the Transport to start recording.

💡 *MIDI and Instrument tracks can be record-enabled during playback or record. To record enable audio tracks, the Transport must be stopped, or QuickPunch, Track-Punch, or DestructivePunch must be enabled. For more information on Quick-Punch, TrackPunch, and DestructivePunch, see "Record Modes" on page 327.*

**To record enable an audio, MIDI, or Instrument track:**

■ From either the Mix or Edit window, click the track's Record Enable button to toggle record enable on or off for the track. The track's Record Enable button flashes red, the track's fader is solid red, and the Track Record Enabled indicator in the Transport turns red (indicating at least one track is record-enabled).



Edit window

Mix window

*Record-enabled audio track in Mix and Edit windows*

**To record enable multiple audio tracks:**

■ From either the Mix or Edit window, click each audio track's Record Enable button to toggle record enable on or off for each track.

⌨ *If Latch Record mode is not enabled, Shift-click each track's Record Enable button to toggle record enable on or off for each track. See "Latch Record Enable Buttons Preference" on page 334.*

**To record enable multiple MIDI and Instrument tracks:**

■ From either the Mix or Edit window, Shift-click each MIDI or Instrument track's Record Enable button to toggle record enable on or off for each track.

**To record enable MIDI and Instrument tracks using the Up/Down Arrows:**

▪ While pressing Control (Windows) or Command (Mac), press the Up/Down Arrows to record enable the previous or next MIDI or Instrument track. The previous (or next) record track is no longer record-enabled.

🔳 *To keep the previous track record-enabled while enabling new tracks, press Control+Shift+Up/Down (Windows) or Command+Shift+Up/Down (Mac).*

**To record enable all audio tracks, or all MIDI and Instrument tracks:**

▪ Alt-click (Windows) or Option-click (Mac) the Record Enable button to toggle record enable on or off for all audio tracks, or all Instrument and MIDI tracks.

For record-enable, Pro Tools treats MIDI and Instrument tracks as the same type. Consequently, Alt-clicking (Windows) or Option-clicking (Mac) the Record Enable button on any MIDI or Instrument track will record enable all MIDI and Instrument tracks.

**To record enable all selected audio tracks, or all selected MIDI and Instrument tracks:**

▪ Alt-Shift-click (Windows) or Option-Shift-click (Mac) the Record Enable button on any selected audio, or MIDI or Instrument track to toggle record enable on or off for all selected audio, or MIDI and Instrument tracks.

💡 *Record enabling a track that is part of a Mix Group does not record enable the other tracks in the Group. To record enable all tracks in a group, click directly to the left of the group's name in the Group List to select all tracks in the group, and then Alt-Shift-click (Windows) or Option-Shift-click (Mac) the Record Enable button of one of the tracks to record enable the selected tracks.*

## Latch Record Enable Buttons Preference

When the Latch Record Enable Buttons preference is selected, record enable additional audio tracks by clicking their Record Enable buttons. Previously record-enabled tracks remain enabled. The Latch Record Enable Buttons preference affects audio tracks only.

When the Latch Record Enable Buttons preference is deselected, record enabling a subsequent audio track disables the previously record-enabled audio track.

**To enable the Latch Record Enable Buttons preference:**

**1** Choose Setup > Preferences and click the Operations tab.

**2** Select Latch Record Enable Buttons.

## Record Safe Mode

Pro Tools provides a *Record Safe* mode on a per track basis that prevents tracks from being record-enabled. Use Record Safe mode to protect important audio or MIDI data on a track from being recorded over.

**To put an audio, MIDI, or Instrument track in Record Safe mode:**

■ Control-click (Windows) or Command-click (Mac) the track's Record Enable button. The Record Enable button is grayed out.

Control-click (Windows) or Command-click (Mac) again to take the track out of Record Safe mode.

**To put all audio, MIDI, and Instrument tracks in Record Safe mode:**

■ Control-Alt-click (Windows) or Command-Option-click (Mac) the Record Enable button on any track.

Control-Alt-click (Windows) or Command-Option-click (Mac) again to take all tracks out of Record Safe mode.

**To put all currently selected tracks into Record Safe mode:**

■ Control-Alt-Shift-click (Windows) or Command-Option-Shift-click (Mac) the Record Enable button on any of the selected tracks to toggle them in and out of Record Safe mode.

## Recording with Multiple Hard Drives (Optional)

By default, Pro Tools records audio files to the Audio Files folder inside the session folder. If you have multiple hard drives for recording, you can use the Disk Allocation window to specify other hard drive locations to record audio files on a track-by-track basis.

Hard drives that are full do not appear in the Disk Allocation window.

To increase system performance, Pro Tools can record and play each track from a different hard drive. You can also automatically distribute any newly created tracks to multiple audio drives with Round Robin Allocation.

**Navigating in the Disk Allocation Window**

**To resize the Disk Allocation window:**

■ Drag the lower-right corner of the window according to standard convention for your operating system (Windows or Mac).

**To scroll up or down in the Disk Allocation window:**

■ Press Page Up or Page Down.

## Allocating Audio Drives in Your System

**To allocate the audio drives in your system:**

**1** Choose Setup > Disk Allocation.

**2** In the Disk Allocation window, assign a hard drive for each track by clicking in the Root Media Folder column and selecting a volume from the Disk Allocation pop-up menu.
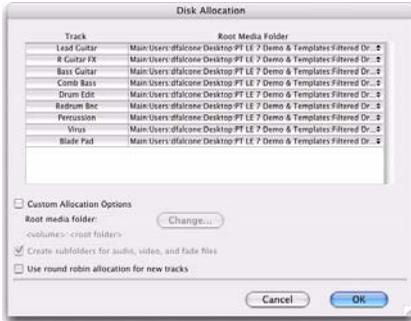


*Disk Allocation window*

Only drives designated as R (Play and Record) can be selected in the Disk Allocation window. For more information, see "Performance and Transfer Volumes" on page 204.



*Disk Allocation pop-up menu*

A folder with the session name is created on each hard drive, containing subfolders for audio and fade files.

- To assign a track to a different hard drive, click the track and select a drive name.
- To assign all tracks to the same hard drive, press Alt (Windows) or Option (Mac) while selecting a drive name.
- To make a continuous selection, Shift-click a track name (in the Track column) to extend the selection to include already-selected tracks and all tracks in between.
- To make a noncontiguous selection, Control-click (Windows) or Command-click (Mac) a track name in the Track column to extend the selection to include already-selected tracks without including tracks in-between.

**3** To save recorded audio files to an existing folder (without creating another session folder), select Customize Allocation Options, then click the Change button and choose the folder. To create subfolders in this folder, select "Create Subfolders for audio, video, and fade files."

**4** To automatically distribute any newly created tracks among the drives connected to your system, select "Use Round Robin Allocation for New Tracks."

If you are using Round Robin Allocation and want audio to be recorded to your system's start-up drive, do the following:

- Open the Workspace browser (Window > Workspace) and set the Volume Designator for your system volume to R (Record and Playback). See "Workspace Volume Designation" on page 338.

⚠ *Round Robin Allocation is not supported with partitioned hard drives.*

🔆 *If you want to exclude individual, valid, mounted volumes from Round Robin Allocation passes, open the Workspace browser and make the volume safe, by designating it as P (Playback only) or T (Transfer). For more information, see "Audio and Video Volume Designators" on page 239.*

**5** When you are finished, click OK.

### Saving Disk Allocation Settings

To save Disk Allocation settings for use with future sessions, save the session as a template. For details, see "Creating Custom Session Templates" on page 105.

### Disk Allocation and Cross-Platform Sessions

To ensure cross-platform operation, it is required that Mac Pro Tools sessions and their associated audio files be on Mac-formatted (HFS or HFS+) drives. Windows Pro Tools sessions and their associated audio files must be on Windows-formatted NTFS drives.

📖 *See "Saving Copies of Mac Sessions to be Compatible with Windows" on page 290 and "Sharing Sessions Created on Different Computer Platforms" on page 288.*

🔆 *On Windows, with the Digidesign HFS+ Disk Support option installed, you can record to and play back from Mac-formatted HFS+ drives. For more information, see the Mac HFS+ Disk Support Option Guide.*

### Reallocating Tracks

When opening a session where some of the previously assigned hard drives are no longer available (or do not match the current session platform), Pro Tools automatically reassigns tracks to the volume where the session file is stored. In such cases, use Disk Allocation if you need to reallocate tracks to other drives.

🔆 *Reallocating tracks does not affect the previously recorded audio. Reallocating tracks only affects where new audio recording is saved.*

### Workspace Volume Designation

The Workspace volume designation can alter disk availability, thus affecting Disk Allocation. From the Workspace browser, you can designate volumes as Record, Playback, or Transfer. If you change a drive's designation, making it read-only (Play Only or Transfer), check the Disk Allocation window for any tracks formerly allocated to that drive. For more information, see "Audio and Video Volume Designators" on page 239.

## Recording to the System Volume

Although Pro Tools lets you record to your system volume, this is generally not recommended. Performance for audio recording and playback on system drives is not as good as on non-system hard drives.

Record to system drives only when absolutely necessary, such as if your computer system has only one hard drive, or if your other hard drives are completely full.

By default, the system volume is not included in Round Robin Allocation (regardless of volume designation in the Workspace browser). To include the System Volume in Round Robin Allocations, see "Allocating Audio Drives in Your System" on page 336.

# Selecting a Record Input Monitoring Mode

Pro Tools offers two modes of input monitoring: *Auto Input* and *Input Only*. These monitoring modes determine how input signals are monitored during playback, recording, or while the transport is stopped.

### Auto Input Monitoring

In Auto Input mode, when session playback is stopped, Pro Tools monitors audio input. When playback is started for a punch-in, Pro Tools monitors existing track material up until the punch point. While punched in, the input signal is monitored. On punch-out, monitoring switches back to the existing track material. This is similar to the auto-switching logic found on digital and analog multitrack tape machines.

⚠ *When in Auto Input mode, the switch back to monitoring track material on punch-out is not instantaneous.*

🔆 *With Pro Tools HD, tracks are in Auto Input mode by default, and a monitoring control (TrackInput button) is provided for each track. See "Selecting Record Monitor Modes with TrackInput Monitoring" on page 339.*

## Input Only Monitoring

In Input Only mode, when a track is record-enabled, Pro Tools monitors audio input only, regardless of any punch-in/out selection or state.

For Pro Tools LE, the Input Monitor Enabled Status indicator (in the Transport window) lights green when Input Only mode is enabled.



Input Monitor Enabled Status indicator

*Transport window*

For Pro Tools HD, the indicator lights green when one or more tracks have TrackInput enabled (see "Selecting Record Monitor Modes with TrackInput Monitoring" on page 339).

## Selecting a Record Monitor Mode in Pro Tools LE

**For record-enabled tracks to use Auto Input Monitoring:**

■ Select Track > Auto Input Monitoring.

**For record-enabled tracks to use Input Only Monitoring:**

■ Select Tracks > Input Only Monitoring.

🔲 *To toggle between Auto Input and Input Only monitoring, press Alt+K (Windows) or Option+K (Mac).*

## Selecting Record Monitor Modes with TrackInput Monitoring

### (Pro Tools HD Only)

TrackInput monitoring lets you toggle *individual* audio tracks between Auto Input and Input Only monitoring modes at any time, during playback, recording, while stopped, and even when a track is not record-enabled. TrackInput monitoring provides the necessary monitoring flexibility for overdubbing and mixing, and is similar to input switching on analog multitrack recorders and similar machines.

When the TrackInput button in a track is enabled (green), the track monitors audio in Input Only mode.

When the TrackInput button in a track is disabled, the track monitors in Auto Input mode.
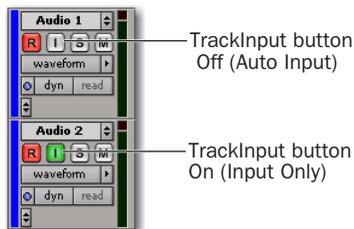


*TrackInput Monitor buttons in the Edit Window*

**To toggle the monitoring mode of audio tracks, do one of the following:**

■ To toggle individual tracks, click the Track-Input Monitor button for each track you want to toggle.

■ To toggle all tracks in the session, Alt-click (Windows) or Option-click (Mac) a TrackInput Monitor button.

■ To toggle all selected tracks in the session, Alt-Shift-click (Windows) or Option-Shift-click (Mac) a selected track's TrackInput Monitor button.

**To toggle the TrackInput button states of all record-enabled tracks, do one of the following:**

▪ To change all record-enabled tracks to Auto Input monitoring, select Track > Set Record Tracks to Auto Input.

▪ To change all record-enabled tracks to Input Only monitoring, select Tracks > Set Record Tracks to Input Only.

⌨ *To toggle record-enabled tracks between Auto Input and Input Only monitoring, press Alt+K (Windows) or Option+K (Mac).*

### Disable "Input" When Disarming Track

With this Operation preference checked, TrackInput monitoring is disabled whenever a track is taken out of record enable. This is useful for certain workflows, such as when you are recording on a series of tracks, one at a time.

Disabling this option allows TrackInput buttons to remain enabled when deselecting the track's Record Enable button.

## Setting Monitor Levels for Record and Playback

Pro Tools remembers two different fader levels for monitoring each audio track: one for when the track is record-enabled, and one for when it is *not* record-enabled.

Pro Tools keeps track of these two states for fader levels automatically. If you adjust a fader when a track is record-enabled and then turn off record enable for the track, the fader returns to its playback level.

When audio tracks are record-enabled, their volume faders in the Mix window turn red, indicating that the record monitor level is active.

### Link Record and Play Faders

When the Operation preference for "Link Record and Play Faders" is selected, Pro Tools does not keep track of record and play levels for audio tracks. In this case, record enabling an audio track has no effect on the fader level for the track. This lets you maintain a consistent mix regardless of whether you're recording or just listening.

# Reducing Monitoring Latency

Because Pro Tools LE uses the host processor in your computer for all audio processing, playback, and recording, there is a small amount of audio delay, or latency, in the system. For example, there my be some audible delay between the incoming signal and outgoing signal when monitoring recording through Pro Tools.

Pro Tools HD systems have latency when using RTAS plug-ins because these plug-ins also use your computer's host processor.

With Pro Tools, latency occurs as follows:

- All Pro Tools systems can have RTAS MIDI-to-audio latency (such as when playing an RTAS virtual instrument live and monitoring the instrument's output).
- Pro Tools LE systems have input-to-output monitoring latency on any record-armed tracks or Auxiliary Inputs with live inputs.
- Pro Tools HD systems have monitoring latency on tracks that have one or more RTAS plug-ins.

The latency amount is related to the H/W Buffer Size—the larger the buffer size the greater the latency. You can reduce the amount of monitoring latency by reducing the H/W Buffer Size. However, even at the smallest buffer size, there is still some latency.

In addition, reducing the buffer size limits the number of simultaneous audio tracks you can record without encountering performance errors.

While there may be times when you want a larger buffer size, such as when you have higher track counts with more plug-ins, you will generally want the smallest possible buffer size when latency is present during recording and monitoring.

For more information on the Hardware Buffer Size setting, see "Hardware Buffer Size" on page 35.

If you are monitoring the recording source with an external mixer before it is routed to Pro Tools, you will not hear any latency.

**To set the Hardware Buffer Size:**

**1** Choose Setup > Playback Engine.

**2** Choose the number of samples from the H/W Buffer Size pop-up menu.

**3** Click OK.

⚠ *Computers with slower CPUs may not be able to use the 128 buffer size without encountering performance errors.*

## Zero Latency Monitoring

**(Mbox 2, Mbox 2 Mini, and Mbox Only)**

Mbox 2, Mbox Mini, and Mbox give you the ability to monitor your analog input signals while recording, without hearing any latency. This zero-latency analog monitoring is controlled by the front panel Mix knob, which you can use to blend and adjust the mix between the interface's analog input and Pro Tools playback. For more information, refer to your system's *Getting Started Guide*.

## Low Latency Monitoring

### (003, 003 Rack, Digi 002, Digi 002 Rack, and Mbox 2 Pro Only)

003, 003 Rack, Digi 002, Digi 002 Rack, and Mbox 2 Pro systems can use the Low Latency Monitoring option to record with an extremely small amount of monitoring latency, to as many tracks as each system supports. Only tracks with inputs set to an audio interface (not a bus) use Low Latency Monitoring.

**To use Low Latency Monitoring:**

**1** Record enable audio tracks by clicking their Record Enable buttons.

**2** From the Output Path selector, assign each track to either Output 1 or Output 2 (mono), or both (stereo). Only tracks assigned to these outputs use Low Latency Monitoring.

**3** Select Options > Low Latency Monitoring.

When Low Latency Monitoring is enabled, any plug-ins and sends assigned to record-enabled tracks (routed to Outputs 1–2) are automatically bypassed, and must remain bypassed. Also, these tracks do not register on meters for Master Faders.

### Low Latency Monitoring and Bounce To Disk

With Low Latency Monitoring enabled, only audio tracks are included with the Bounce to Disk command—Auxiliary Input and Instrument tracks are ignored. To include Auxiliary Input and Instrument tracks, disable Low Latency Monitoring before using Bounce to Disk.

⚠ *External input cannot be recorded during a Bounce to Disk. To include external input in your bounce, it must be recorded to new audio tracks before using Bounce to Disk (see "Bounce to Disk" on page 836).*

## Disabling Delay Compensation During Recording

### (Pro Tools HD Only)

When recording, you should usually disable Delay Compensation to keep recorded tracks time-aligned with other tracks in the session. However, if you are overdubbing in a complex mix, you probably do want to use Delay Compensation and monitor recording through the main mix.

If Delay Compensation is enabled, when a track is monitoring input during recording, Pro Tools automatically suspends Delay Compensation on the track to provide a low latency monitor path. Tracks that are not record enabled still apply Delay Compensation. Pro Tools automatically compensates for any timing discrepancies between the recorded material and the delay-compensated mix. When the track is played back (with both Record Enable and TrackInput disabled) it is correctly time-aligned with the other delay-compensated tracks.

📄 *For more information, see "Delay Compensation" on page 741.*

**To disable Delay Compensation on all tracks:**

■ Deselect Options > Delay Compensation.

# Chapter 18: Audio Recording

## Recording an Audio Track

In Pro Tools, you record audio to audio tracks. Audio tracks can be mono, stereo, or multi-channel as appropriate for the recording source.

When recording a mono source, record to a single, mono audio track in Pro Tools. A single, mono audio file is written to disk, and the file appears as a region both in the track's playlist and in the Region List.

When recording a stereo audio source, record to a single, stereo audio track in Pro Tools. A single, mono audio file is written to disk for each channel of a stereo track: one for the left channel, and one for the right channel. These files appear as a stereo region both in the track's playlist and in the Region List.

Recording a multichannel source to a multi-channel track (Pro Tools HD only) is similar to recording stereo audio tracks. A single, mono audio file is written for each channel in the track, and these files appear as multichannel regions in both the track's playlist and in the Region List.

📄 For more information on multichannel tracks, see "Multichannel Audio Tracks" on page 855.

📄 For detailed record setup information, see Chapter 17, "Record Setup."

## Before Recording

Before you start recording in Pro Tools, you need to set up your Pro Tools system, a session, and one or more tracks for recording. You will also need to configure how Pro Tools monitors the input you intend to record. For information, see Chapter 17, "Record Setup."

## Basic Recording Steps

**To record an audio track:**

**1** Click the Record Enable button for the audio track so that it is selected (lit).



*Record enabling a track in the Mix window*

**2** Adjust the output level of your sound source (instrument, mixer, or preamp). Monitor the track's meter levels in Pro Tools to ensure that levels peak within –6 dB to –12 dB on the input meter without triggering the clipping indicator on your audio interface.

**3** Do one of the following:

- In the Mix window, adjust the track's volume and pan faders. These settings are for monitoring purposes only and do not affect the recorded material.

– or –

- In the Output window for the track, adjust the track's Volume fader and Pan sliders. These settings are for monitoring purposes only and do not affect the recorded material. (See "Output Windows for Tracks and Sends" on page 730.)

**4** Choose Window > Transport to display the Transport window. Click Return to Zero to go to the beginning of the session.
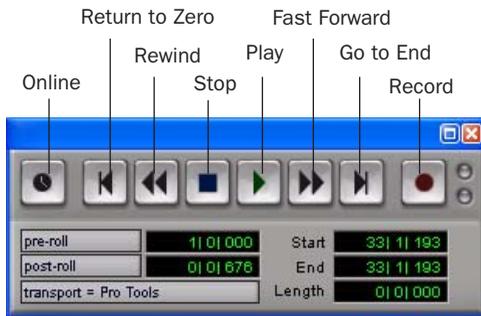


*Transport window*

**5** Click Record in the Transport window to arm Pro Tools for recording. The Record button flashes red to indicate that Pro Tools is ready to record.

**6** Select a Record Mode by doing one of the following:

- In the Options menu, ensure that the following options are deselected: Destructive Record, Loop Record, QuickPunch, Track-Punch, and DestructivePunch.

– or –

- Right-click the Record button in the Transport and select Normal.

**7** When you are ready to start recording, click Play or press the Spacebar.

If using Countoff, Pro Tools counts off the specified number of measures and then begins recording. See "Recording with a Click (Optional)" on page 322.

**8** Record your performance.

**9** Click Stop in the Transport window or press the Spacebar when you are finished recording.

The newly recorded audio is written to disk and appears as an audio region both in the track's playlist and in the Region List.

**To play back the audio track:**

**1** Click the Record Enable button for the audio track so that it is no longer record-enabled. Track volume faders now function as playback level controls.

☼ *If a record-enabled track is in Auto Input Monitor mode, you will hear "through" the input while the Transport is stopped. The track automatically switches to playback when you press play, then back to Input mode when you either stop, or punch into record. For more information, see "Auto Input Monitoring" on page 338.*

**2** To have playback start from the beginning of the session, click Return to Zero in the Transport.

**3** To start playback, click Play in the Transport. Adjust the track's volume and pan faders.

## Undo or Cancel Audio Recording

Once you have recorded an audio track and the transport is stopped, you can undo the record take.

**To undo an audio recording:**

■ Once the Transport has been stopped, choose Edit > Undo Record Audio.

The track's playlist is restored to its previous state and material is discarded as follows:

- When in normal Record mode, only the most recent take is discarded.
- When in Loop Record mode, all takes from each record pass are discarded.
- When using QuickPunch, TrackPunch, or DestructivePunch mode, all punches from the last recording pass are discarded.

⚠ *If you undo a record pass during recording, Pro Tools removes any previously undone record pass from the session and lets you delete the previous record pass from your hard drive.*

If no actions are available to undo, the menu displays a grayed out Can't Undo.

## Canceling a Record Take

While recording, it is possible to discard the current record take. This removes the audio (recorded up to that point) from your hard drive and deletes the region from the track's playlist and the Region List. When using Loop Record mode, all takes from each record pass are discarded. Canceling recording when in Destructive Record mode is prohibited.

**To cancel a record take while recording:**

■ Press Control+Period (.) (Windows) or Command+Period (.) (Mac) before the Transport is stopped.

## Recording Multiple Audio Tracks

Pro Tools can record multiple audio tracks simultaneously, up to the track recording limits of your system. To record to multiple tracks, configure and record enable each track, then record. Follow the same steps as in "Recording an Audio Track" on page 343.

For each record-enabled track, a new audio file is written to disk, and a new region is created that appears both in the track's playlist and in the Region List.

# Record Shortcuts

In addition to clicking the Record button in the Transport or Edit window to arm Pro Tools recording, you can arm and start recording with the following keyboard shortcuts:

- Press F12 to start recording immediately.

⚠ *On Mac systems, to use F12 for recording, the Mac "Dashboard" feature must be disabled or remapped. See your Getting Started Guide for details.*

- Press Control+Spacebar (Windows) or Command+Spacebar (Mac) to start recording.

⚠ *On Mac systems, to use Command+Spacebar for recording, the Mac "Spotlight" feature must be disabled or remapped. See your Getting Started Guide for details.*

- Press 3 on the numeric keypad (when the Numeric Keypad mode is set to Transport) to start recording.

⇧ *To initiate recording at half-speed, press Control+Shift+Spacebar (Windows) or Command+Shift+Spacebar (Mac). For details, see "Half-Speed Recording" on page 360.*

## Record Pause Mode

When recording a large number of tracks or channels, or playing back a large number of tracks while recording, Pro Tools may take a little longer to begin recording. To avoid this delay, put Pro Tools in Record Pause mode before beginning to record.

**To enable Record Pause mode and start recording:**

**1** Click Record in the Transport. The Record button flashes.

**2** Do one of the following:

- Alt-click (Windows) or Option-click (Mac) Play in the Transport to put Pro Tools in Record Pause mode.
- Right-click the Play button and select Prime for Record.

The Stop button lights and both the Play and Record buttons flash.

**3** To begin recording instantaneously, click Play.

**4** Click Stop to stop recording.

💡 *When synchronizing to time code, use Record Pause mode to record or play back large numbers of tracks. This decreases the time it takes to lock to time code.*

## Recording Additional Takes

After recording to an audio track, you can record additional takes to the same track. However, if you record these additional takes in Destructive Record mode, the audio residing on your hard drive from the previous takes is permanently lost.

To keep the audio from previous takes, record the new takes in Normal (Nondestructive) Record mode.

📄 *For information on audio file and region names for new takes, see "Configuring Default Names for Audio Files and Regions (Optional)" on page 330.*

**To nondestructively record a new take on the same track:**

**1** Do one of the following:

- In the Options menu, ensure that the following options are deselected: Destructive Record, Loop Record, QuickPunch, Track-Punch, and DestructivePunch.

- Right-click the Record button in the Transport and select Normal.

**2** Record enable the track.

**3** Do one of the following:

- To record from the beginning of the session, click Return to Zero in the Transport.

– or –

- If Options > Link Timeline and Edit Selection is enabled, click anywhere in the track's playlist to begin recording from that point.

*To record a specific track range, with precise start and end points, see "Audio Punch Recording Over a Specified Range" on page 349.*

**4** Click Record in the Transport to arm Pro Tools for recording.

**5** Click Play to start recording.

**6** Click Stop to stop recording.

An audio file for the new take is written to disk and appears as an audio region both in the track's playlist and in the Region List.

The audio from the original take remains on your hard drive, and is still available as a region in the Region List.

**To destructively record over a previous take:**

**1** Do one of the following:

- Select Options > Destructive Record. When in Destructive Record mode, a "D" appears in the Record button.

- Right-click the Record button in the Transport and select Destructive.



Destructive Record

*Destructive Record mode enabled*

**2** Record enable the track.

**3** Do one of the following:

- To record from the beginning of the track, click Return to Zero in the Transport.

– or –

- If Options > Link Timeline and Edit Selection is enabled, click anywhere in the track's playlist to begin recording from that point.

*To record a specific track range, with precise start and end points, see "Audio Punch Recording Over a Specified Range" on page 349.*

**4** Click Record in the Transport to arm Pro Tools for recording.

**5** Click Play to start recording.

**6** When finished, click Stop to stop recording.

The audio for the new take is written to disk, permanently overwriting the original. The new material replaces the original material within the existing region and the region is not renamed.

## Appending New Material to the End of a Track

You can also append new material to the end of a track.

**To append new material to the end of a track:**

**1** Do one of the following:

- Click the Go to End button in the Transport to locate to the end of the track (this locates the end of the session).

  – or –

- Tab to the end point of the last region on the track.

**2** From there, begin recording.

Pro Tools adds the new material to the end of the track. If using Destructive Record mode, the new audio is appended to the audio file and region from the first take. In Nondestructive Record mode, a new file and region are created.

## Recording to a New Playlist

Instead of recording over existing audio regions, there is another way to nondestructively record new takes to the same track. Do this by creating a new playlist for the track, then record just as before.

Tracks can have multiple edit playlists, each of which stores a list of regions strung together in a particular order. Also, since playlists follow groups, duplicating or selecting alternate playlists for a track in an enabled group will affect all tracks in the group.

**To record to a new playlist for a track:**

**1** From the track's Playlist selector, choose New.



*Playlist selector*

**2** Enter a name for the new playlist.

**3** Click OK.

When a new playlist is created, its name replaces the track name. Names for new audio files and regions are based on the track name.

**4** Record enable the track.

**5** To start from the beginning of the session, click Return to Zero in the Transport.

**6** Click Record in the Transport to arm Pro Tools for recording.

**7** Click Play to start recording.

**8** Click Stop to stop recording.

An audio file for the new take is written to disk and appears as an audio region both in the track's new playlist and in the Region List.

Selecting a previous playlist from track's Playlist selector recalls its regions as they previously appeared in the track. At any time, all regions from all playlists are available in the Region List, and can be mixed and matched between playlists and tracks.

*For more information on playlists and playlist editing, see "Playlists" on page 410.*

# Audio Punch Recording Over a Specified Range

You can set Pro Tools to automatically *punch* record over a specific range in an audio track (for example, to replace a portion of a recorded track). The range's start (*punch in*) and end (*punch out*) points must be specified before recording.

📖 *To manually punch in and out on record-enabled audio tracks during playback, refer to Chapter 20, "Advanced Punch Recording."*

Though there are several ways to set record and play ranges (see "Setting Punch and Loop Points" on page 354), perhaps the easiest is to select within the track's playlist the range for recording.

💡 *To set a record or play range by selecting within a playlist, the Edit and Timeline selections must be linked (select Options > Link Timeline and Edit Selection).*

During the recording process, playback begins at the pre-roll time (if enabled) and proceeds to the start time (the punch-in point), where recording begins. When the end time (the punch-out point) is reached, Pro Tools automatically switches out of Record mode and continues playing through the specified amount of post-roll. This automated punch-in/out feature is a powerful and precise way of recording or re-recording on a track.
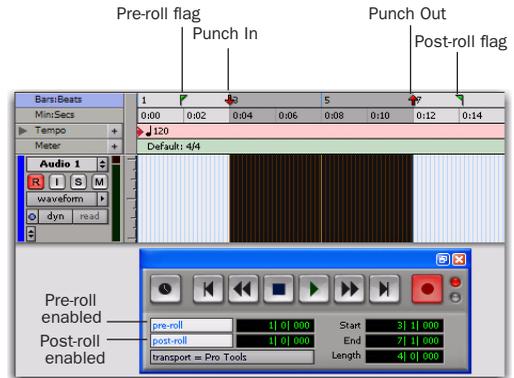


*Timeline selection for punch recording with Pre-roll and Post-roll*

**To punch record on an audio track:**

**1** Do one of the following:

- To record nondestructively, make sure that Options > Destructive Record is not selected.

– or –

- If you *do* want to permanently record over the specified record range, select Options > Destructive Record.

💡 *If you are recording in any mode other than Destructive Record mode, punches do not permanently replace previously recorded material. If you do want to permanently record over the specified record range (and keep only the most recent take), select Options > Destructive Record.*

**2** Record enable the track.

**3** Select Options > Link Timeline and Edit Selection.

**4** With the Selector tool, drag in the track's playlist or in one of the Timebase rulers until the selection encompasses the punch range (see "Setting Punch and Loop Points" on page 354).

**5** To hear any existing track material up to the start point, or after the end point, enable and set pre- and post-roll times (see "Setting Pre- and Post-Roll" on page 357).

**6** Click Record in the Transport to arm Pro Tools for recording.

**7** Click Play to start recording.

Pro Tools starts recording from the punch-in (start) point. If there is any pre-roll, recording starts when the punch-in (start) point is reached. Recording continues until the punch-out (end) point is reached (unless you manually stop recording first). If post-roll is enabled, playback continues for the specified post-roll amount.

If recording nondestructively, a new audio file is written to your hard drive and a new audio region appears both in the track and the Region List.

If recording in Destructive Record mode, the new audio overwrites the previous material in the existing audio file and region.

### Monitoring During Punch-Ins

Pro Tools provides two monitoring modes for recording: Auto Input monitoring and Input Only monitoring.

📄 *For more information, see "Auto Input Monitoring" on page 338.*

# Loop Recording Audio

Pro Tools provides a loop recording feature that lets you record take after take while the same section of audio repeats over and over. This is a convenient technique for quickly recording multiple takes of a part without losing spontaneity.

When loop recording, you must first specify the start and end points for the loop. Though there are several ways to set record and play ranges (see "Setting Punch and Loop Points" on page 354), the easiest is to select the range to be looped in the track's playlist (ensure that Options > Link Timeline and Edit Selection is selected).

The pre-roll setting, if enabled, is used only during the first record pass, and the post-roll setting, if enabled, is used only on the last record pass. Pre- and post-roll times are ignored on each successive loop. To compensate for this, you may want to make the loop range slightly longer. Later, you can trim back the recorded takes to the proper length with the Trim tool (see "Using the Trimmer Tools" on page 433).

When loop recording audio, Pro Tools creates a single audio file that includes all takes. Takes appear as individual regions in the Region List and are numbered sequentially. Once you stop recording, you can audition any of the recorded takes.

⚠ *To use alternate takes created with Loop Record in other sessions (such as when using Import Session Data), export region definitions (see "Exporting Region Definitions" on page 265). If region definitions are not exported, alternate takes created with Loop Record will be inaccessible when imported into another session.*

**To loop record an audio track:**

**1** Do one of the following:

- Select Options > Loop Record. When Loop Record mode is enabled, a loop symbol appears in the Record button.

– or –

- Right-click the Record button in the Transport and select Loop.



*Loop Recording enabled*

**2** Record enable the audio track by clicking its Record Enable button.

**3** Select Options > Link Timeline and Edit Selection.

**4** With the Selector tool, select the loop range on the track. For other methods of setting the record range, see "Setting Punch and Loop Points" on page 354.

**5** To hear track material up to the start point of the loop, enable pre-roll and set the pre-roll time (see "Setting Pre- and Post-Roll" on page 357).

**6** Click Record in the Transport to arm Pro Tools for recording.

**7** Click Play to start recording.

The Record button flashes during the pre-roll. When the start point is reached, Pro Tools begins recording. When the end point is reached, Pro Tools loops back to the start time and continues recording.

**8** To cancel all recorded takes while loop recording, press Control+Period (.) (Windows) or Command+Period (.) (Mac).

**9** When finished, click Stop to stop recording.

If you stop recording before you reach the midpoint of the loop, Pro Tools discards that take. If you record more than half of the looped take, Pro Tools will leave the take in the track when you stop recording.

The recorded takes appear as regions in the Region List and are numbered sequentially. The most recently recorded take appears in the active playlist on the track. For details on auditioning the different takes, see "Auditioning Different Record Takes in the Timeline" on page 351.

### Loop Playback and Audio Recording

Pro Tools ignores "loop playback" when recording. The only way to loop while recording is to enable Loop Record mode.

# Auditioning Different Record Takes in the Timeline

After recording multiple takes with loop or punch recording, you can replace the current take in the track's active playlist with any of the previous takes. (Takes must have the same start time to be available.) Different takes (regions) can also be auditioned by Alt-clicking (Windows) or Option-clicking (Mac) them in the Region List.

All takes are numbered sequentially.

## Selecting a Different Take from the Region List

**To select a take from the Region List:**

**1** In the Edit window, select the current take with the Time Grabber tool.

**2** Control-drag (Windows) or Command-drag (Mac) another take from the Region List into the playlist.

The region replaces the previous take and snaps precisely to the correct location.

**3** Repeat the above steps to audition other takes.

## Selecting an Alternate Take on a Track

Each region resulting from a punch or loop record pass has an identical start time (the *User Time Stamp*). You can select and audition alternate takes from the Right-click Matches submenu or the Alternate Takes pop-up menu—even during playback.

**To select an alternate take, do one of the following:**

■ Right-click the region with the Selector or the Grabber tool, and select an alternate take from the Matches submenu in the pop-up menu.
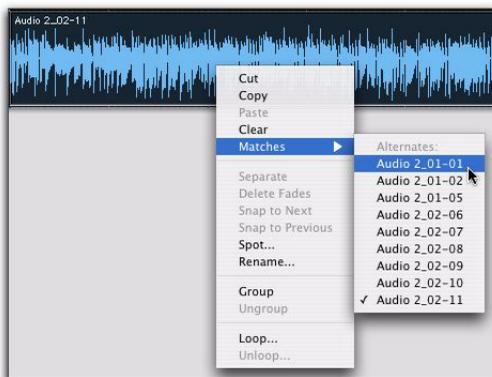


*Right-click Matches submenu*

■ With the Selector tool, Control-click (Windows) or Command-click (Mac) at the precise beginning of the loop or punch range and select a different take from the Alternate Takes pop-up menu.

■ If the take currently residing in the track is selected, with the Selector tool, Control-click (Windows) or Command-click (Mac) anywhere on the selected take and select a different take from the Alternate Takes pop-up menu.



*Alternate Takes pop-up menu*

The selected take (region) replaces the previous take and snaps precisely to the correct location.

One way to ensure that future takes have the same *User Time Stamp* (and appear in the Matches pop-up menu) is to store punch and loop record selections as Memory Locations. Then, if you later need to record additional takes, recall the Memory Location. For more information, see "Memory Locations" on page 356.

To change the User Time Stamp of other regions so that they appear in the Matches pop-up menu for a specific location, use the Time Stamp command in the Region List pop-up menu. For more information, see "Time Stamping" on page 903.

### Matches and Multiple Tracks

If you have recorded in Loop Record mode on multiple tracks, and each contains multiple takes with identical User Time Stamps, you can change all takes simultaneously.

**To switch takes for multiple tracks:**

**1** Choose Setup > Preferences and click the Editing tab.

**2** Enable the following options under "Matching Start Time" Takes List:

- Includes Take Region Name(s) that Match Track Names

– and –

- Includes Take Regions Lengths That Match

**3** Click OK to close the Preferences dialog.

**4** With the Selector tool, select the take range for each track you want to replace.

**5** Do one of the following:

- Right-click any of the selected takes and select a different take from the Matches submenu.

– or –

- Control-click (Windows) or Command-click (Mac) any of the selected takes and select a different take from the Alternate Takes pop-up menu.

The selected take replaces the previous take and snaps precisely to the correct location on each track.

## Editing Preferences for Takes

In addition to having the same User Time Stamp, regions that appear in the Matches submenu and the Alternate Takes pop-up menu are also restricted according to options in the Preferences dialog.

**To set Editing preferences for takes:**

**1** Choose Setup > Preferences and click the Editing tab.

**2** Enable or disable the following options in the "Matching Start Time" Takes List section:

**Includes Take Region Name(s) That Match Track Names** When selected, only regions that share the same root name with the track/playlist appear in the Matches submenu and the Alternate Takes pop-up menu. For example, the Matches for a track named "Gtr.L" would show the regions "Gtr.L_01" and "Gtr.L_02-01," but not "Guitar.L_01."

**Includes Take Region Lengths That Match** When selected, only regions that match the length of the *current selection* (even if it is not an entire region) appear in the Matches submenu and the Alternate Takes pop-up menu. If there is no selection, all takes with the same User Time Stamp are displayed.

**"Separate Region" Operates On All Related Takes** When selected, editing a region with the Separate Region command also affects all other related takes with the same User Time Stamp.

This option helps you compare different sections from a group of related takes. For example, you can quickly separate an entire group of related vocal takes into sections, then audition and select the best material from each section independently.

If this option is selected, make sure the Include Take Region Names That Match Track Name(s) and Include Take Region Lengths That Match options are also selected. If they are not, *all* regions in the session that have the same User Time Stamp will be affected.

In most instances, you'll want to deselect the Separate Region Operates On All Related Takes option, to prevent a large number of regions from being created when you use the Separate Region command.

# Setting Punch and Loop Points

The start and end points of a record range for punch and loop recording can be set by the following methods:

- Select a range in a track's playlist (with Options > Link Timeline and Edit Selection enabled).
- Select a range in a Timebase ruler.
- Drag the Timeline Selection Markers in the ruler.
- Enter start and end times in the Transport window.
- Recall a Memory Location that includes an Edit selection (with Options > Link Timeline and Edit Selection enabled).

**To set the record range in a track's playlist:**

**1** If you want to constrain the selection to the current Grid value, set the Edit mode to Grid.

**2** Select Options > Link Timeline and Edit Selection.

**3** Do one of the following:

- With the Selector tool, select the record range in a track's playlist.



*Playlist selection*

– or –

- If a region's start and end points define the record range, select the entire region.

*You can also enter a start and end point during playback. Press the Down Arrow to set the start point, and press the Up Arrow to set the end points. Note that when in Grid mode, start and end point when entered in this manner do not snap to the grid.*

**To set the record range in a Timebase ruler:**

**1** If you want to constrain the selection to the current Grid value, set the Edit mode to Grid.

**2** Select the record range in any Timebase ruler.
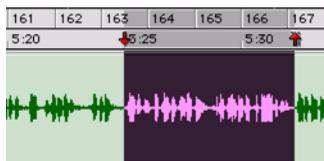


*Timeline selection*

*If the Selector tool is not active, you do not need to manually select it. Other Edit tools (such as the Time Grabber tool) automatically turn into the Selector tool when used in Timebase rulers.*

## Timeline Selection Markers

When tracks are record-enabled, Timeline Selection Markers for start and end times appear as red up and down arrows in the Main Timebase ruler. If no tracks are record-enabled, the Timeline Selection Markers are blue.
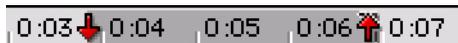


*Timeline Selection Markers in the Main Timebase ruler*

The Timeline Selection Markers can be moved, either separately or at the same time, to set record and play ranges.

**To set the record range by dragging the Timeline Selection Markers:**

**1** If you want the Timeline Selection Markers to snap to the current Grid value, set the Edit mode to Grid

**2** Drag the first Timeline Selection Marker (down arrow) to the start point of the range.
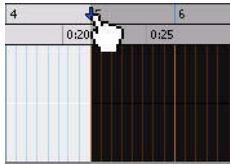


*Dragging a Timeline Selection Marker (start time) in the Main Timebase ruler*

**3** Drag the second Timeline Selection Marker (up arrow) to the end point of the range.

☼ *If the current record range is already the right length and the range needs only to be moved to a new location, Alt-drag (Windows) or Option-drag (Mac) either Timeline Selection Marker to move both to a new location (while keeping the same length).*

## Start, End, and Length Fields

In its Expanded View, the Transport window can display start, end, and length times, and pre- and post-roll settings. When setting a record or play range, the range is reflected in these fields.



*Transport window with Start, End, and Length fields displayed*

You can enter locations in the start and end fields to set the record or play range. The Timeline Selection Markers in the Main Timebase ruler are updated accordingly.

**To set the record range by entering start and end times in the Transport window:**

**1** To see the start, end, and length times, do one of the following:

- Select View > Transport > Expanded.

– or –

- Shift-click the Expand/Collapse "+" button in the Transport window.

**2** Do one of the following:

- In the Transport window, click in the Start field.

– or –

- Press Alt+Forward Slash (/) (Windows) or Option+Forward Slash (/) (Mac) on the numeric keypad to select the start field in the Transport window.

**3** Type in the start location and press Alt+Forward Slash (/) (Windows) or Option+Forward Slash (/) (Mac) on the numeric keypad to enter the value and automatically move to the end field.

**4** Type in the end location and press Enter to accept the value.

⇧ *Use the Period (.) or Left/Right Arrow keys to move through the different time fields for Start and End. Use the Up/Down Arrow keys to increase or decrease the numerical values.*

## Memory Locations

You can store Edit selections as Memory Locations, which can also include current pre- and post-roll values.

📋 *For more information on Memory Locations, see "Memory Locations and Markers" on page 637.*

**To save an Edit selection with a Memory Location:**

**1** Ensure that Options > Link Timeline and Edit Selection is selected.

**2** Set the record range by making an Edit or Timeline selection, or by entering start and end times in the Transport window.

**3** To save the pre- and post-roll values, enable and set the pre- and post-roll amounts by entering them in the Transport window, or by dragging the Pre- and Post-Roll Flags in the ruler that represents the Main Time Scale (see "Setting Pre- and Post-Roll" on page 357).

**4** Press Enter on the numeric keypad or click the Add Marker/Memory Location button in the Edit window.

**5** In the New Memory Location dialog, set Time Properties to Selection, and if saving pre- and post-roll values, select the General Properties option for Pre/Post Roll Times.
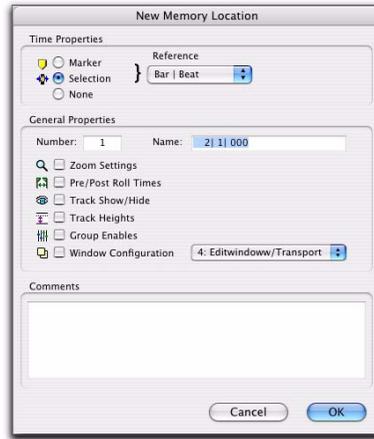


*New Memory Location dialog*

**6** Enter a name for the new Memory Location.

**7** Click OK.

**To recall an Edit selection with a Memory Location:**

**1** Make sure to select Options > Link Timeline and Edit Selection.

**2** Choose Windows > Memory Locations.
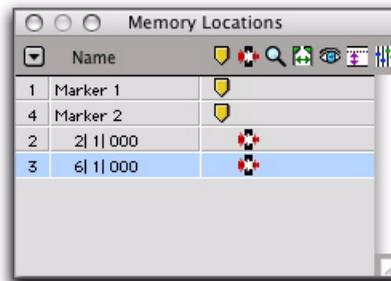


*Memory Locations window*

**3** Do one of the following:

- In the Memory Locations window, click the name or number of the Memory Location.

– or –

- Recall the Memory Location by typing Period (.), the Memory Location number, and Period (.) again on the numeric keypad. (See "Numeric Keypad Modes" on page 21).

The start and end times and pre- and post-roll settings stored with the Memory Location are recalled.

## Setting Pre- and Post-Roll

Pre- and post-roll times appear as flags in the ruler that represents the Main Time Scale. When pre- and post-roll are enabled, the flags are green, otherwise they are gray.
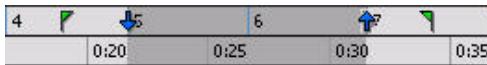


*Green Pre- and Post-Roll Flags (enabled) in the Main Timebase ruler*

Pre- and post-roll amounts can be entered in the Transport window, set from a track's playlist or Timebase ruler, or by recalling a Memory Location.

### Setting Pre- and Post-Roll in the Transport Window

Pre- and post-roll can be enabled and set in the Transport window.

**To set and enable the pre- and post-roll times in the Transport window:**

**1** Select View > Transport > Expanded.

**2** In the Transport window, click in the pre-roll field.

**3** Type in the pre-roll amount and press Forward Slash (/) on the numeric keypad to enter the value and automatically move to the post-roll field.

**4** Type in the post-roll amount and press Enter to accept the new value.

**5** To enable either pre- or post-roll, click the appropriate button so it is highlighted.

*Use the Period (.) or Left/Right Arrow keys to move through the different time fields for pre and post-roll. Use the Up/Down Arrow keys to increase or decrease the numerical values.*

### Setting Pre- and Post-Roll in a Playlist

You can use the Selector tool to enable and disable pre- and post-roll by clicking in a track's playlist.

**To set and enable the pre- and post-roll by clicking in a playlist:**

**1** Select Options > Link Timeline and Edit Selection.

**2** With the Selector tool, select the record range in the track's playlist.

**3** With the Selector tool, Alt-click (Windows) or Option-click (Mac) in the track's playlist before the selection to enable the pre-roll at that location.

**4** With the Selector tool, Alt-click (Windows) or Option-click (Mac) in the track's playlist after the selection to enable the post-roll at that location.

**To disable the pre- and post-roll by clicking in a playlist:**

**1** With the Selector tool, Alt-click (Windows) or Option-click (Mac) in the Edit selection near the start to disable the pre-roll.

**2** With the Selector tool, Alt-click (Windows) or Option-click (Mac) in the Edit selection near the end to disable the post-roll.

💡 *In the Timeline, you can reset the pre- and post-roll to zero. First, drag the Pre-Roll Flag to the Timeline Selection Start Marker, then drag the Post-Roll Flag to the Timeline Selection End Marker.*

**3** Drag the Pre-Roll Flag to the Timeline Selection Start Marker.

**4** Drag the Post-Roll Flag to the Timeline Selection End Marker.

## Enabling Pre/Post-Roll from the Options Menu

Pre- and post-roll (as a pair) can be enabled and disabled from the Options menu.

**To enable both pre/post-roll from the Options menu:**

▪ Select Options > Pre/Post-Roll.

## Dragging Pre- and Post-Roll Flags in the Timebase Ruler

The Pre- and Post-Roll Flags can be moved in the Main Timebase ruler, either separately or at the same time, to set their location.

**To set the pre- and post-roll amounts by dragging in the Main Timebase ruler:**

**1** If you want the Pre- and Post-Roll flags to snap to the current Grid value, set the Edit mode to Grid.

**2** Drag the Pre-Roll Flag to a new location in the ruler.
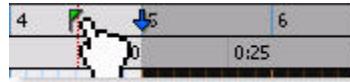


*Dragging a Pre-Roll Flag in a Timebase ruler*

**3** Drag the Post-Roll Flag to a new location in the Timebase ruler.

⬚ *To set pre- and post-roll values to the same amount, Alt-drag (Windows) or Option-drag (Mac) either the Pre- or the Post-Roll Flag in the ruler. The deselected flag will immediately reset to the same value, and will adjust accordingly as you drag the selected flag.*

# Recording from a Digital Source

If you plan to use a DAT player, digital-output CD recorder, or other digital device with your Pro Tools system, make sure it supports the correct digital format. For example, your Pro Tools audio interface's AES/EBU inputs and outputs should only be connected to another AES/EBU device.

📄 *For additional information on configuring your particular Pro Tools system for recording from a digital source, see your Getting Started Guide.*

## Pro Tools|HD Digital Options

The 192 I/O, 192 Digital I/O, and 96 I/O include AES/EBU, S/PDIF, and ADAT digital options. Additionally, the 192 I/O and 192 Digital I/O include TDIF digital I/O options. The 96i I/O includes only the S/PDIF digital option.

On a 192 I/O, 192 Digital I/O, or 96 I/O, Pro Tools can receive digital audio from the factory-installed Optical (ADAT) I/O at any time (if it is not set to S/PDIF). However, Pro Tools can only receive digital audio from one of its enclosure [Encl] digital sources—AES/EBU, S/PDIF, or Optical (S/PDIF) at a time.

Enclosure digital sources come standard with Pro Tools|HD I/Os and are labelled on-screen as [Encl] versions, to differentiate them from digital inputs and outputs available on the 192's Digital I/O card. For example, the AES/EBU inputs and outputs that come standard in the 192 I/O enclosure are identified as AES/EBU [Encl].

The additional digital ports on the 192 I/O and 192 Digital I/O are TDIF, AES/EBU, and ADAT. Pro Tools can only receive digital audio from one of these ports at a time.

However, inputs on both the 192 I/O enclosure I/O and Digital card can be used simultaneously. For example, on a 192 I/O, it is possible to clock off a source from one of the enclosure inputs and have another digital input from the digital ports doing a sample rate conversion, thus having two digital sources.

## Pro Tools LE Digital Options

003, 003 Rack, Digi 002, and Digi 002 Rack include S/PDIF and ADAT digital I/O.

Mbox 2, Mbox 2 Pro, and Mbox include only the S/PDIF digital option.

All digital outputs are active at all times, so you can actually send digital audio to different digital devices simultaneously at mix time.

## Recording from Digital Sources

### To record from a digital source with Pro Tools:

**1** Connect the digital output of the recording source to the appropriate digital input of your audio hardware.

**2** If you want to start a new session with a different sample rate, do the following:

- Choose File > New Session
- Select the sample rate.
- Configure the rest of the New Session dialog accordingly.
- Click Save.

**3** Specify the format (digital) of the inputs of the audio interface to which the digital recording source is connected:

- Choose Setup > Hardware.
- Choose the audio interface.
- Select the digital format for the appropriate channel pair (such as AES/EBU or S/PDIF).

☼ *Some Digidesign I/O units only have two channels that can be set for analog or digital. For example, Mbox 2 has S/PDIF L–R (Stereo) digital inputs and In 1–2 analog inputs. Mbox 2 can record through analog and digital inputs simultaneously.*

**4** or PT|HD systems, select the appropriate Clock Source in the Session Setup window or Hardware Setup dialog.

**5** Create a new stereo audio track.

**6** Assign the Input Path selector for the track to the appropriate input. Since this is a digital transfer, you do not need to worry about input levels.

**7** Assign the Output Path selector for the track to the appropriate output for monitoring (such as A 1–2).

**8** In the Options menu, ensure that the following options are deselected: Destructive Record, Loop Record, QuickPunch, TrackPunch, and DestructivePunch.

**9** To have recording start from the beginning of the session, click Return to Zero in the Transport.

**10** Record enable the new audio track.

**11** Click Record in the Transport to arm Pro Tools for recording.

**12** Click Play to start recording.

**13** Start playback on the recording source.

**14** When the material from the source has finished, click Stop in the Transport.

**15** Stop playback on the recording source.

### After a Digital Transfer

After you have finished recording digitally, set the Clock Source pop-up menu in the Session Setup window back to Internal. Otherwise, Pro Tools will not switch back to its own internal clock and may not record or play audio properly. Failure to switch back to Internal synchronization typically results in pitch problems (fast or slow playback), clicks and pops, or DAE errors, since a DAT machine or CD Recorder that is idle can default to a different sample rate or stop outputting a sample rate clock altogether.

# Half-Speed Recording

Pro Tools lets you play and record at half-speed. This capability is similar to that of a tape deck where you can record material at half-speed and then play it back at normal speed (faster and up an octave), or record material at normal speed and play it back at half-speed (slower and down an octave), for special effects.

### Half-Speed Recording

Use half-speed recording to record difficult to play MIDI tracks or to record complex automation moves.

**To record at half-speed:**

**1** Record enable the tracks you want to record at half-speed.

**2** Click Record in the Transport to arm Pro Tools for recording.

**3** Press Control+Shift+Spacebar (Windows) or Command+Shift+Spacebar (Mac). Recording begins and all existing track material plays at half-speed.

**4** When you have finished recording, click Stop.

# Chapter 19: MIDI Recording

Although recording MIDI in Pro Tools is similar to recording audio, there are some important differences:

◆ Unlike audio, MIDI recording is almost always destructive. See "Record Modes and MIDI" on page 330 for details.

◆ Unlike audio tracks, MIDI and Instrument tracks can be record-enabled on-the-fly during playback or recording.

◆ MIDI and Instrument tracks have an Input selector that determines which port on your MIDI interface (devices) and which MIDI channel is routed and recorded to the track. If the MIDI Input selector is set to All, all channels for all devices are routed to the track.

◆ Similar to Auxiliary Inputs, Instrument tracks have audio Input and Output selectors. These selectors are different than the Instrument track's selectors for MIDI Input and Output and are primarily used for monitoring audio from MIDI instruments or instrument plug-ins.

◆ It is not necessary to use QuickPunch, TrackPunch, or DestructivePunch to punch in on-the-fly with MIDI or Instrument tracks. This capability is available both in Normal (Nondestructive) Record mode and Destructive Record mode.

## Recording from MIDI Devices

The MIDI Inputs for record-enabled MIDI and Instrument tracks determine what MIDI data is recorded in Pro Tools. MIDI Inputs can be set to a specific device (port) and channel, or they can be set to All, where all channels for all devices are merged to the track.

MIDI and Instrument tracks in Pro Tools do not contain multiple channels and always play back on the track's assigned MIDI output device and channel. Multiple MIDI devices and channels can be simultaneously recorded to multiple tracks.

The following Pro Tools options determine whether you can record from a MIDI controller (such as a MIDI keyboard or drum pad):

◆ Devices that are assigned as a MIDI Controller in the Peripherals dialog (Setup > Peripherals) are ignored when MIDI tracks are recorded. This is to avoid recording data from MIDI control surfaces (such as the Digidesign Command|8).

◆ To record and play MIDI, the device must be enabled in the Input Devices dialog. For more information, see "Enabling Input Devices" on page 362.

In addition, the following options affect how MIDI data is recorded in Pro Tools:

◆ The MIDI Input Filter can filter out MIDI messages that you may not want to record, such as Polyphonic Aftertouch or System Exclusive data. For more information, see "MIDI Input Filter" on page 364.

◆ Input Quantize, when enabled, automatically quantizes (time corrects) all MIDI notes that are recorded. For more information, see "Input Quantize" on page 364.

# Enabling Input Devices

To record from a MIDI device (such as a MIDI keyboard) in Pro Tools, the device must be enabled in the Input Devices dialog. You can also use this dialog to make sure unwanted notes from certain devices, such as drum machines or arpeggiators, are not recorded.

**MIDI Control Surfaces** In order to use any MIDI control surfaces (such as the Digidesign Command|8), they must be enabled in the Input Devices dialog.

**MMC** In order for Pro Tools to synchronize to MMC, the MMC source must be enabled in the Input Devices dialog.

**To enable input devices:**

**1** Choose Setup > MIDI > Input Devices.

**2** In the MIDI Input Enable dialog, do the following:

- Select the MIDI devices you want to record. Also, select any device to be used as a control surface.
- Deselect any input devices you want to ignore while recording MIDI.



*MIDI Input Enable dialog*

☼ *Devices do not need to be selected to receive MIDI data from Pro Tools. For example, a device used exclusively as a sound module does not need to be selected in the MIDI Input Enable dialog.*

**3** Click OK.

# MIDI Thru

To monitor MIDI tracks while recording, enable MIDI Thru. When enabled, Pro Tools routes MIDI from your controllers to the device and channels assigned to the MIDI track currently record-enabled.

*The MIDI preference for Global MIDI Play-back Offset and individual MIDI track off-sets do not affect MIDI routed with MIDI Thru.*

*When MIDI Thru is enabled, System Exclu-sive (Sysex) events are echoed to the MIDI device assigned to the record-enabled track—but only if the Sysex events are smaller than 256 bytes.*

**To enable MIDI Thru:**

■ Select Options > MIDI Thru.

*When using MIDI Thru, you should disable Local Control, if present, on your MIDI de-vices. Otherwise, your MIDI device may re-ceive double MIDI notes, which can lead to stuck notes. If you are unsure how to disable Local Control for your instrument, refer to the manufacturer's documentation.*

# The Default Thru Instrument

In addition to any MIDI tracks that are record-enabled, you can also route MIDI to the Default Thru Instrument. This saves the extra steps of creating a MIDI track and record enabling it to hear a particular MIDI device and channel.

Unlike MIDI tracks, which only receive MIDI from the device and channel assigned to its MIDI Input selector, all incoming MIDI data is routed to the Default Thru Instrument.

If the Default Thru Instrument is assigned to a record-enabled MIDI track, Pro Tools only routes incoming MIDI to the record-enabled track.

**To configure a default Thru instrument:**

**1** Choose Setup > Preferences.

**2** Click the MIDI tab.

**3** Do one of the following:
- Select a specific device from the Default Thru Instrument pop-up menu to play MIDI through on that device by default.
- Select "Follows First Selected MIDI Track" to have MIDI preview assignment follow MIDI track selection. When multiple MIDI tracks are selected, previewing uses the top track or left track in the Edit or Mix win-dows.
- To disable the Default Thru Instrument, se-lect None.

*The Default Thru Follows First Selected MIDI Track Selection option also lets you play an instrument without having to create and record-enable a MIDI or Instrument track.*

## MIDI Input Filter

Use the MIDI Input Filter to prevent certain types of MIDI messages from being recorded. The MIDI Input Filter can be set to record All messages, Only the specified messages, or All Except the specified messages.

**For example, to filter out program changes:**

**1** Choose Setup > MIDI > Input Filter.

**2** In the MIDI Input Filter dialog, select the All Except option.

**3** Select the option for Program Changes. Leave all other messages deselected.
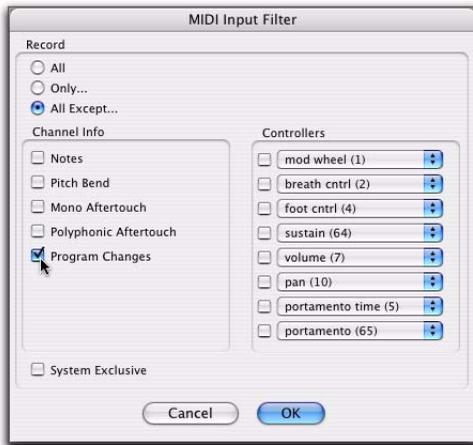


*MIDI Input Filter dialog*

**4** Click OK.

When using the All Except option, the selected types of MIDI messages are not recorded. Conversely, when using the Only option, only the selected types of MIDI messages are recorded.

## Input Quantize

When Input Quantize is enabled, all recorded MIDI notes are quantized automatically. Input Quantize is often useful for achieving rhythmically precise MIDI recordings. However, to preserve all of the original nuance of your recorded MIDI tracks (such as *rubato* phrasing), disable this option.

📄 *For more information on Input Quantize, see "Input Quantize" on page 580.*

## Wait for Note

The Wait for Note button, located in the Transport window, determines how Pro Tools begins recording. When enabled, Pro Tools does not start recording until a MIDI event is received. This ensures that recording begins only when you start playing, and that the first note, or other MIDI data, is recorded precisely at the beginning of the record range (start time).

Wait for Note can be used when recording normally, when punching in, or when loop recording. If pre-roll is enabled, it occurs after the MIDI event is received and before recording begins.

⚠ *Wait for Note and Countoff are mutually exclusive and cannot both be enabled at the same time. If, for instance, Countoff is enabled and you click the Wait for Note button, Countoff is disabled. Furthermore, Wait for Note starts recording immediately, ignoring any specified Pre-roll.*

**To enable Wait for Note:**

**1** To view the MIDI controls in the Transport window, select View > Transport > MIDI Controls.



*Transport window with MIDI Controls*

**2** In the Transport window, click the Wait for Note button so it becomes highlighted.



Wait for Note button

*Wait for Note enabled*

☐ *With the Operation preference for "Use F11 for Wait for Note" enabled, you can press F11 to turn on Wait for Note. (On Mac systems, the Mac "Desktop" keyboard shortcut must be disabled or remapped.)*

# MIDI Merge/Replace

The MIDI Merge button, located in the Transport window, determines how MIDI is recorded when overdubbing or punching in. When MIDI Merge is on (*Merge* mode), recorded MIDI is merged with existing track material. When MIDI Merge is off (*Replace* mode), existing data within the punched region is replaced by the newly recorded material.

The MIDI Merge button can be turned on and off during playback and recording. In Loop Record mode, MIDI Merge has no effect, and the button is dimmed.

☐ *To enable MIDI Merge with a keyboard shortcut, set the Numeric Keypad mode to Transport, and press the 9 key on the numeric keypad.*

☐ *You can also paste and merge MIDI notes using Paste Special commands. See "Special Paste Function for Automation Data" on page 809.*

**To enable MIDI Merge:**

**1** To view the MIDI controls in the Transport window, select View > Transport > MIDI Controls.

**2** In the Transport window, click the MIDI Merge button so it becomes highlighted.



MIDI Merge button

*MIDI Merge enabled*

# Configuring MIDI or Instrument Tracks for Recording

**To configure one or more MIDI or Instrument tracks for recording:**

**1** Create a new MIDI or Instrument track, or use an existing MIDI or Instrument track.

**2** For Instrument tracks, select View > Mix Window > Instruments or View > Edit Window > Instruments.

**3** From the track's MIDI Input selector, select the device and channel to be recorded. (For Instrument tracks, the MIDI Input selector is available in Instruments View.)



*MIDI track Input selector, Mix window*
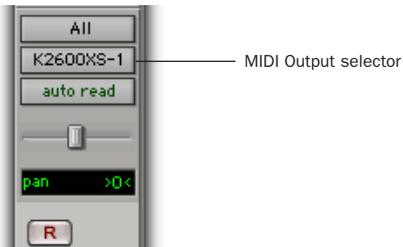


*Instrument track MIDI Input selector, Mix window*



*MIDI track MIDI Input selector, Edit window*



*Instrument track MIDI Input selector, Edit window*

**4** From the MIDI Output selector, select the device and channel for MIDI play back.



*MIDI track MIDI Output selector, Mix window*



*Instrument track MIDI Output selector, Mix window*

MIDI Output selector



*MIDI track MIDI Output selector, Edit window*
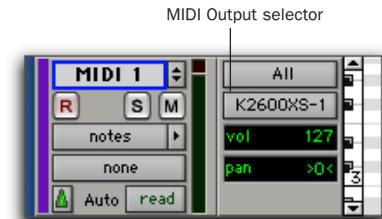
MIDI Output selector
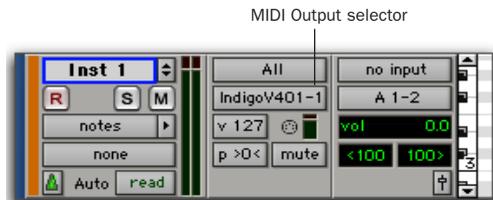


*Instrument track MIDI Output selector, Edit window*

**5** To assign multiple destinations to a single MIDI or Instrument track, Start-click (Windows) or Control-click (Mac) the MIDI Output selector and select additional channels from any device. When multiple destinations are selected for a single MIDI track, an Asterisk (*) appears next to the first destination name in the track's MIDI Output selector.

**6** To assign a default program change to the track, do the following:

- Click the Patch Select button.
- Make the necessary selections for program and bank select.
- Click Done.

📖 *Default program changes are sent whenever the track is played. For more information, see "Patch Select (Program and Bank Changes)" on page 541.*

**7** If recording to multiple MIDI or Instrument tracks, repeat the preceding steps for each track, then continue to the next step.

**8** To use a click, enable and configure the click, and set a default tempo and meter for the session (see "Recording with a Click (Optional)" on page 322).

**9** Enable either Wait for Note or Countoff in the Transport window as appropriate.

**10** To replace existing track material, disable MIDI Merge in the Transport window (see "MIDI Merge/Replace" on page 365).

**11** To automatically quantize material as it is recorded, enable Input Quantize (see "Input Quantize" on page 364).

**12** To start recording from the beginning of the session, click Return to Zero in the Transport.

**13** Record enable the MIDI or Instrument track by clicking its Record Enable button.

**14** Select Options > MIDI Thru is selected, then play your MIDI controller. The MIDI device or instrument plug-in assigned to the track's MIDI Output sounds, and the track's meters register MIDI activity.

You are now ready to record MIDI data to the record-enabled MIDI and Instrument tracks.

# Recording MIDI and Instrument Tracks

In Pro Tools, you can record to one or more MIDI and Instrument tracks. Recording simultaneously to multiple tracks lets you:

- Record from multiple MIDI devices at the same time, such as when recording several performers.

- Record multiple channels from the same device, such as recording from a split keyboard.

- Transfer MIDI tracks from an external MIDI sequencer.

*To take full advantage of the MIDI editing capabilities in Pro Tools, make sure to record tick-based MIDI tracks with a click. This ensures that recorded data aligns with the session's bar and beat boundaries. You can also record to sample-based MIDI tracks without a click and derive the tempo and meter from the performance.*

*To record audio from a MIDI instrument or instrument plug-in, bus the audio output of the Instrument or Auxiliary Input track that is monitoring the instrument to an audio track. Record enable the audio track and start recording. See "Recording Audio from a MIDI Instrument" on page 377.*

**To record to one or more MIDI or Instrument tracks:**

**1** With Pro Tools HD, make sure that Delay Compensation is disabled in the Options menu.

⚠ *Digidesign recommends recording without Delay Compensation in most cases. For more information, see "Delay Compensation" on page 741.*

**2** Configure a MIDI or Instrument track for recording (see "Configuring MIDI or Instrument Tracks for Recording" on page 366).

**3** Record enable the track you want to record by clicking its Record Enable button.

*To record enable additional MIDI and Instrument tracks, Shift-click their Record Enable buttons.*

**4** Ensure that Pro Tools is in Normal (Nondestructive) Record mode. If necessary, do one of the following:

- Deselect the following in the Options menu: Destructive Record, Loop Record, QuickPunch, TrackPunch (Pro Tools HD only), and DestructivePunch (Pro Tools HD only).

- Right-click the Record button in the Transport and select Normal.

**5** Check your MIDI Merge settings.

**6** Check the pre-roll and Countoff settings.

**7** To have recording start from the beginning of the session, click Return to Zero in the Transport.

**8** Click Record in the Transport to arm Pro Tools for recording (Record Ready mode). The Track Record Enabled indicator lights red.



*Record button in Record Ready mode*

**9** Click Play to start recording.

If using Countoff, Pro Tools counts off the specified number of measures and then begins recording.

If Wait for Note is enabled, do not click the Play button; recording will begin automatically as soon as you start playing (when a MIDI event is received).

**10** Play your MIDI controller.

**11** When you are finished playing, click Stop in the Transport to stop recording.

For each record-enabled track, a new MIDI region is created and appears both in the playlist and in the Region List.

⧉ *Press F12 to start recording immediately. You can also Press Control+Spacebar (Windows) or Command+Spacebar (Mac) to start recording. For more information, see "Record Shortcuts" on page 346.*

### MIDI Regions Created on Barlines

When recording MIDI, or when manually entering MIDI notes, the beginning and ending of MIDI regions are created on bar boundaries. This greatly facilitates arranging MIDI regions in a musically meaningful way, in whole bar lengths.

The beginning of a recorded MIDI region always starts on the barline immediately before the first MIDI note (note on) of the region. Likewise, the MIDI region ends on the barline immediately following the last note (note off) of the region.

### Recording Over Exisiting MIDI Regions

Unlike audio regions, existing MIDI regions are never overwritten even though MIDI data within regions can be overwritten. When MIDI Merge mode is disabled and recording MIDI on a track with existing regions, newly recorded MIDI data overwrites existing MIDI data within existing regions, but the existing region boundaries remain. New MIDI regions are only created to fill the gaps between existing MIDI region boundaries. Typically, new MIDI regions are always created on barlines. However, if existing region boundaries are not on barlines, newly created regions are bound by the existing regions.

⚠ *It is possible to have the note on of a MIDI note be in one MIDI region, and its note off be in a subsequent MIDI region. It is also possible to have the region end before the note off, resulting in notes that extend beyond the region boundary. However, note ons can never precede the beginning of a region.*

## Playing Back Recorded MIDI

**To play back recorded MIDI and Instrument tracks:**

**1** To start from the beginning of the session, click Return to Zero in the Transport.

**2** Click Play in the Transport to begin playback.

The recorded MIDI data plays back through each track's assigned Output device (port) and channel.

## Undoing MIDI Recording

You can undo previous MIDI record takes.

**To undo a MIDI recording:**

■ Once the Transport has been stopped, choose Edit > Undo MIDI Recording.

The track's playlist is restored to its previous state. However, the following conditions apply:

- If you punched in and out several times before stopping the Transport, only the last punch is undone.
- When using Loop Record mode, all takes from each record pass are discarded.

## Canceling a Record Take

It is also possible to discard the current record take *before* the Transport is stopped.

**To cancel a take while recording:**

■ Press Control+Period (.) (Windows) or Command+Period (.) (Mac) before the Transport is stopped.

When in Loop Record mode, all takes from each record pass are discarded.

# MIDI Punch Recording Over a Specified Range

You can set Pro Tools to automatically *punch* record over a specific range in a MIDI or Instrument track. The range's start (*punch in*) and end (*punch out*) points must be specified before recording.

**To punch in on a MIDI or Instrument track:**

**1** Configure a MIDI or Instrument track for recording (see "Configuring MIDI or Instrument Tracks for Recording" on page 366).

**2** Ensure that Pro Tools is in Normal (Non-destructive) Record mode. If necessary, do one of the following:

- Deselect the following in the Options menu: Destructive Record, Loop Record, QuickPunch, TrackPunch (Pro Tools HD only), and DestructivePunch (Pro Tools HD only).
- Right-click the Record button in the Transport and select Normal.

**3** In the Transport window, disable Wait for Note and Countoff.

**4** Select Options > Link Timeline and Edit Selection.

**5** With the Selector tool, select the punch range in the track's playlist.

*For other methods of setting the record range, see "Setting Punch and Loop Points" on page 354.*

**6** To hear existing track material up to the start point, or after the end point, enable and set pre- and post-roll times (see "Setting Pre- and Post-Roll" on page 357).

**7** Record enable the track containing the previous take.

**8** Click Record in the Transport to arm Pro Tools for recording. The Record button flashes.

**9** Click Play to start recording.

If pre-roll is enabled, the track material leading up to the punch-in point plays. You can start playing during the pre-roll to get the "feel." MIDI is not recorded until the start point is reached.

When the start point is reached, Pro Tools begins recording. Recording continues until the end point is reached. If post-roll is enabled, playback continues for the specified post-roll amount.

**10** When you have finished recording, click Stop in the Transport.

The newly recorded MIDI data appears in the track.

### Punch Recording During Playback with MIDI

You do not have to set a record range to punch in on a MIDI or Instrument track. In fact, you can punch in and out on-the-fly at any time during playback. Unlike audio tracks, it is not necessary to enable QuickPunch to perform real-time punch recording.

**To punch record on-the-fly with MIDI:**

**1** Configure a MIDI or Instrument track for recording (see "Configuring MIDI or Instrument Tracks for Recording" on page 366).

**2** Ensure that Pro Tools is in Normal (Non-destructive) Record mode. If necessary, do one of the following:

- Deselect the following in the Options menu: Destructive Record, Loop Record, QuickPunch, TrackPunch (Pro Tools HD only), and DestructivePunch (Pro Tools HD only).

- Right-click the Record button in the Transport and select Normal.

**3** In the Transport window, disable Wait for Note and Countoff.

**4** Record enable the track containing the previous take.

**5** Click Play in the Transport to start playback.

**6** When you reach the punch-in point, do one of the following:

- Click Record in the Transport.

– or –

- For Pro Tools systems using a Digidesign control surface, 003, 003 Rack, Digi 002, Digi 002 Rack, Mbox 2 Pro with a connected footswitch, press the footswitch at the punch-in point.

The Record button in the Transport and the track's Record Enable button stop flashing and stay lit during recording.

**7** To punch out, click Record again (or press the footswitch).

Pro Tools exits Record mode and continues playing. You can perform additional punches during the same pass.

## Regions and Punch Recording

Depending on the record range, new regions may be created after punch recording. For example, Figure 19 shows two existing regions before recording. If MIDI Merge mode is disabled, recording overwrites any existing MIDI data within the record range. Since the start and end times for recording are located within both of the existing regions, newly recorded notes are written into both of the existing regions, and into a new region created to fill the space between them.

before punch record



after punch record



newly recorded material    new region
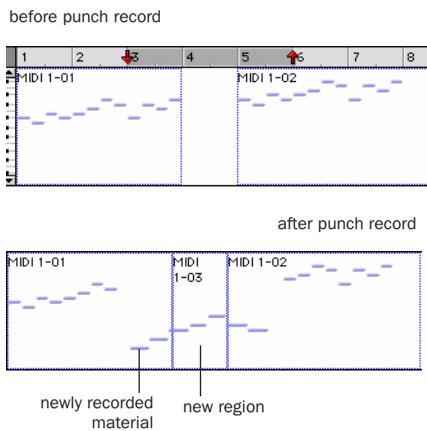
*Figure 19.  Region added after punch record*

When selecting an entire region, or a section within a region, before punching, no new regions are created. In this instance, only the material residing within the existing region changes, with no new material recorded outside the region.

Unlike audio recording, MIDI recording in this scenario is destructive. Newly recorded MIDI data overwrites existing MIDI data while leaving the existing region boundaries intact.

If the MIDI data within a region is altered because of a record take, the original material is either lost (unless you choose Edit > Undo MIDI Recording) or combined with new material (if MIDI Merge was enabled during recording). If an existing region contains material you want to keep, use Duplicate to make a copy of the region ("Duplicating Regions" on page 669), or duplicate the track's playlist or record in a new playlist to keep a backup (see "Working with Playlists" on page 410).

## Loop Recording MIDI

Loop recording with MIDI is supported by two methods:

• In Normal (Nondestructive) Record mode, enable Loop Playback and MIDI Merge for drum machine style loop recording.

– or –

• Use Loop Record mode to record multiple takes on each record pass. This is similar to loop recording audio.

### Loop Recording in MIDI Merge Mode

For MIDI loop recording, use Normal (Nondestructive) Record mode with Loop Playback and MIDI Merge enabled. With this method, MIDI is recorded and merged to the same region with each new record pass—for example, you can record hi-hats on the first pass and kick and snare on the next.

*For drum machine style step entry, use Step Input (see "Step Input" on page 581).*

Make sure that MIDI Merge is enabled in the Transport window, otherwise (in Replace mode) each subsequent take destructively replaces the previous take.

💡 *You can record enable a different MIDI or Instrument track on-the-fly while loop recording. While pressing Control (Windows) or Command (Mac), use the Up/Down Arrows to record enable the previous or next MIDI or Instrument track.*

**To loop record in MIDI Merge mode:**

**1** Configure a MIDI or Instrument track for recording (see "Configuring MIDI or Instrument Tracks for Recording" on page 366).

**2** Ensure that Pro Tools is in Normal (Non-destructive) Record mode. If necessary, do one of the following:

- Deselect the following in the Options menu: Destructive Record, Loop Record, QuickPunch, TrackPunch (Pro Tools HD only), and DestructivePunch (Pro Tools HD only).
- Right-click the Record button in the Transport and select Normal.

**3** Select Options > Loop Playback. When Loop Playback is enabled, a loop symbol appears in the Play button.



*Loop Playback enabled*

**4** Record enable the MIDI or Instrument track. Ensure that no audio tracks are record-enabled.

**5** In the Transport window, click the MIDI Merge button so it is highlighted.

**6** Disable Wait for Note and Countoff in the Transport window.

**7** Select Options > Link Timeline and Edit Selection.

**8** With the Selector tool, select the loop range in the track's playlist.

📄 *For other methods of setting the record range, see "Setting Punch and Loop Points" on page 354.*

**9** To hear track material up to the start point of the loop, enable and set the pre-roll time (see "Setting Pre- and Post-Roll" on page 357).

**10** Click Record in the Transport to arm Pro Tools for recording. The Record button flashes.

**11** Click Play to start recording.

The Record button flashes during pre-roll. When the start point is reached, Pro Tools begins recording. When the end point is reached, Pro Tools loops back to the start point and continues playing and recording.

**12** Play your MIDI controller. Newly recorded MIDI data appears as a region in the record track. On each successive take, recorded material shows up in the region, without replacing material from previous takes.

**13** To switch to a new record track, press Control (Windows) or Command (Mac), and press the Up/Down Arrow keys to record enable the previous or next MIDI or Instrument track.

**14** When you are finished recording, click Stop in the Transport.

The newly recorded MIDI data appears as a MIDI region in the track's playlist, and in the Region List.

## Loop Recording Multiple Takes

When recording MIDI in Loop Record mode, new regions are created each time new material is received during a record pass. This differs somewhat from loop recording audio, where Pro Tools creates a single audio file that comprises all takes, which appear as individual regions in the Region List.

You can use MIDI loop recording to record successive takes without stopping the record process, thereby capturing your creative spontaneity. Another advantage with this method of recording MIDI, which is nondestructive, is that all existing and newly recorded regions remain intact (and available in the Region List).

**To record MIDI in Loop Record mode:**

**1** Configure a MIDI or Instrument track for recording (see "Configuring MIDI or Instrument Tracks for Recording" on page 366).

**2** Select Options > Loop Record. When Loop Record mode is enabled, a loop symbol appears in the Record button.



*Loop Recording enabled*

**3** If you have not done so already, record enable the MIDI or Instrument track by clicking its Record Enable button. Make sure no audio tracks are record-enabled.

**4** Disable Wait for Note and Countoff in the Transport window.

**5** Select Options > Link Timeline and Edit Selection.

**6** With the Selector tool, select the loop range in the track's playlist.

📄 *For other methods of setting the record range, see "Setting Punch and Loop Points" on page 354.*

**7** To hear track material up to the start point of the loop, enable and set the pre-roll time (see "Setting Pre- and Post-Roll" on page 357).

**8** Click Record in the Transport to arm Pro Tools for recording. The Record button flashes.

**9** Click Play to start recording.

The Record button flashes during the pre-roll. When the start point is reached, Pro Tools begins recording. When the end point is reached, Pro Tools loops back to the start point and continues playing and recording.

**10** Play your MIDI controller. A new MIDI region containing the newly recorded material is automatically created and appears in the track's playlist, replacing the previous region.

Regions are replaced (nondestructively) during subsequent record passes when new MIDI material is received.

**11** When you are finished recording, click Stop in the Transport.

The recorded takes appear as regions in the Region List and are numbered sequentially. The takes, which are the same length and easily interchangeable, can be auditioned from the Matches pop-up menu—even while the session plays or loops.

**To audition the various record takes, do one of the following:**

■ Right-click the region with the Selector or Grabber tools, and select the desired take from the Matches submenu in the pop-up menu.

■ With the Selector tool, Control-click (Windows) or Command-click (Mac) at the precise beginning of the loop or punch range and select a different take from the Alternate Takes pop-up menu.

■ If the take currently residing in the track is selected, with the Selector tool, Control-click (Windows) or Command-click (Mac) anywhere on the selected take and select a different take from the Alternate Takes pop-up menu.
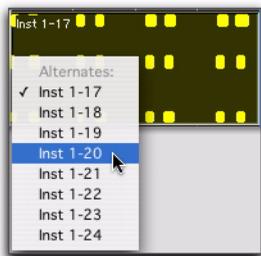


*Selecting an alternate MIDI take*

The selected take (region) replaces the previous take and snaps precisely to the correct location.

📖 *For more information on auditioning and managing takes, see "Auditioning Different Record Takes in the Timeline" on page 351.*

# MIDI Step Input

Step Input lets you use a MIDI keyboard (or any other MIDI controller that sends MIDI note data) to enter notes individually, one step at a time. This gives you precise control over note placement, duration, and velocity. With MIDI Step Input you can also create musical passages that might be difficult to play accurately, or at faster tempos.

📖 *For more information on Step Input, see "Step Input" on page 581.*

# Recording System Exclusive Data

Pro Tools supports recording and playing System Exclusive data (Sysex) with MIDI tracks. This allows you to use MIDI tracks in Pro Tools to store patch and configuration data for your MIDI devices, or to record real-time Sysex changes for a particular parameter of a MIDI device that cannot be controlled by a standard MIDI controller.

**To record a Sysex dump at the beginning of a MIDI track:**

**1** Make sure that the MIDI OUT for the device sending the Sysex is connected to your MIDI interface's MIDI IN.

**2** In the MIDI Input Filter dialog, enable Only and System Exclusive.

**3** Configure a MIDI track for recording (see "Configuring MIDI or Instrument Tracks for Recording" on page 366).

**4** Ensure that Pro Tools is in Normal (Non-destructive) Record mode. If necessary, do one of the following:

- Deselect the following in the Options menu: Destructive Record, Loop Record, QuickPunch, TrackPunch (Pro Tools HD only), and DestructivePunch (Pro Tools HD only).

- Right-click the Record button in the Transport and select Normal.

**5** Record enable a MIDI track.

**6** Enable Wait for Note in the Transport window.

**7** To start recording from the beginning of the session, click Return to Zero in the Transport.

**8** When you are ready to begin recording, click Record in the Transport window.

The Record, Play, and Wait for Note buttons flash, indicating that Pro Tools is waiting for MIDI data.

**9** Initiate the Sysex transfer from the MIDI device, according to the manufacturer's instructions. Pro Tools automatically begins recording as soon as it starts to receive Sysex data.

**10** When the Sysex transfer is complete, click Stop in the Transport.

The newly recorded MIDI data appears as a MIDI region in the track's playlist, and in the Region List. MIDI regions that contain System Exclusive data appear blank when the MIDI Track View is set to Regions.

To see the Sysex event blocks, which indicate the location of the data, set the MIDI Track View to display Sysex (see "Regions View for MIDI and Instrument Tracks" on page 407).

📖 *For information on moving and copying of Sysex data, see "System Exclusive Events" on page 545.*

**To send Sysex data from Pro Tools to an external MIDI device:**

**1** For the device receiving the System Exclusive data, make sure its MIDI IN is connected to the MIDI interface's MIDI OUT. Also, make sure the device is set to receive Sysex. Some devices require that memory protect be off. For more information, refer to the manufacturer's instructions.

**2** Make sure that the MIDI track containing the Sysex data is not record enabled.

**3** Click the track's MIDI Output selector and assign the device from the pop-up menu.

**4** Configure the external MIDI device to receive Sysex data according to the manufacturer's instructions.

**5** Click Play in the Transport to begin playback. Pro Tools begins playing and transmits the previously recorded Sysex to the assigned MIDI device.

# Recording Audio from a MIDI Instrument

Typically, you will monitor the audio from MIDI instruments (both hardware and plug-ins) using Instrument and Auxiliary Input tracks. During the final mixdown, audio from Instrument and Auxiliary Input tracks can be included when using Bounce to Disk, or on a bussed recording path if recording to a new track.

�A *When using instrument plug-ins, you may want to record the audio from a MIDI instrument to a new track before mixing in order to free up DSP resources.*

## Recording Audio from an Instrument Plug-in

**To record audio from an instrument plug-in:**

**1** Create a new Instrument track.

**2** Insert an instrument plug-in on that track.

**3** Do one of the following:
- Record your MIDI performance on the Instrument track.
- Manually enter MIDI data in the Instrument track.

☆ *You can also record both the MIDI and audio from your performance at the same time.*

**4** Create a new audio track with the same number of channels as the Instrument track.

**5** Set the Instrument track's Audio Output Path selector to a bus (for example, Bus 1–2).

**6** Set the audio track's Audio Input Path selector to the same bus.

**7** Set the audio track's Audio Output Path selector to the main monitoring path (for example, A 1–2).

**8** Record enable the audio track.

**9** Do one of the following:
- To record from the beginning of the session, click Return To Zero in the Transport.

– or –

- Make a Timeline selection for the record range.

**10** Click Record in the Transport to arm Pro Tools for recording.

**11** Click Play in the Transport to start recording.
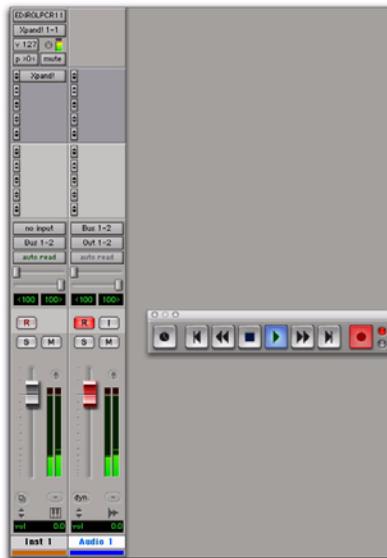


*Bus recording audio from an instrument plug-in*

**12** When your previously recorded MIDI performance is finished playing, click Stop in the Transport to stop recording.

## Recording Audio from an External MIDI Instrument

You can record audio from an external MIDI instrument in one of two ways:

- By bussing audio from the output of the Instrument (or Auxiliary Input) track used to monitor the MIDI instrument to an audio track for recording.

- By setting the audio track's Audio Input Path selector to the same Audio Input Path as the Instrument (or Auxiliary Input) track used for monitoring the external MIDI instrument.

This second method avoids any additional latency associated with bussing. However, be sure to mute the Instrument (or Auxiliary Input) track used for monitoring while recording the same audio path to the audio track.

# Chapter 20: Advanced Punch Recording

Pro Tools provides different manual punch recording methods, depending on your system.

**QuickPunch** A nondestructive Record mode that lets record-enabled tracks be punched in and punched out during playback by clicking the Record button in the Transport.

**TrackPunch (Pro Tools HD Only)** A nondestructive Record mode that lets individual tracks be punched in, punched out, and taken out of record enable without interrupting online recording and playback.

**DestructivePunch (Pro Tools HD Only)** A destructive Record mode that maintains a single continuos audio file, and lets individual tracks be punched in, punched out, and taken out of record enable without interrupting online recording and playback.

📓 *To automatically punch in and out on record-enabled audio tracks over a specific range, refer to "Audio Punch Recording Over a Specified Range" on page 349*

## QuickPunch Audio Recording

Pro Tools features an on-the-fly punch capability called QuickPunch. QuickPunch lets you instantaneously punch in and out on record-enabled audio tracks during playback by clicking the Record button in the Transport.

💡 *For Pro Tools systems with Digidesign control surfaces, 003, 003 Rack, Digi 002, Digi 002 Rack, and Mbox 2 Pro, you can use a footswitch to punch in and out when recording with QuickPunch.*

When using QuickPunch, Pro Tools begins recording a new file when playback begins, automatically generating regions in that file at each punch-in and punch-out point. These regions appear in the track's playlist. The complete audio file appears in the Region List along with the QuickPunch created regions. Up to 200 of these "running punches" can be performed in a single pass. Unlike normal punch recording (see "Audio Punch Recording Over a Specified Range" on page 349), QuickPunch provides instantaneous monitor switching on punch-out. All QuickPunch recording is nondestructive.

💡 *You do not need to use QuickPunch to punch on-the-fly with MIDI tracks. This capability is available in Normal (Nondestructive) Record mode, and in Destructive Record mode.*

## QuickPunch/TrackPunch Crossfade Length

Pro Tools can automatically write a crossfade for each punch point when using QuickPunch. The length for these crossfades is set with the QuickPunch Crossfade/TrackPunch Length option in the Editing Preferences page.

**To set the QuickPunch Crossfade Length:**

**1** Choose Setup > Preferences and click the Editing tab.

**2** Enter a new value (in msec) for the Quick-Punch/TrackPunch CrossFade Length.

A good general-purpose crossfade length for punches is 10 milliseconds. If you set the preference to zero, Pro Tools will not create any crossfades at the punch-in/out points.

**3** Click OK.

If a value other than zero is specified for the QuickPunch/TrackPunch Crossfade Length, Pro Tools writes a pre-crossfade at the punch-in point (which occurs up to but not into the punched region boundary), and a post-crossfade at the punch-out point (which occurs after the punched region).

Even if the QuickPunch/TrackPunch Crossfade Length is set to zero, Pro Tools always executes a 4 millisecond "monitor only" crossfade (which is not written to disk) to avoid distracting pops or clicks that might occur as you enter and exit record mode.

QuickPunch crossfades can be edited in the same manner as standard crossfades (see "Using Fades" on page 479).

## QuickPunch Guidelines for Pro Tools HD

When using QuickPunch with Pro Tools HD, two voices are required for each record-enabled, mono track. This means that you can record up to half the total number of voices available on your system. For example, a Pro Tools|HD Accel system configured for 192 voices can simultaneously record on up to 96 mono tracks with QuickPunch (or 48 stereo tracks).

If the required number of voices for the record-enabled tracks is not available when switching to QuickPunch mode, you are prompted to free up the necessary voices.

**To free up voices on tracks that are not record-enabled, and do not need to be heard while recording, do any of the following:**

- Set voice assignments for tracks to Off.
- Make tracks inactive.
- Group all RTAS plug-ins before TDM plug-ins.

Voices that are in use by others track, but not record-enabled, may be "stolen" while recording with QuickPunch as necessary. Priority for tracks while recording with QuickPunch are as follows:

- Tracks with assigned voices that are not record-enabled.
- Tracks with assigned voices that *are* record-enabled.
- Tracks with Dynamically Allocated Voicing that are not record-enabled.
- Tracks with Dynamically Allocated Voicing that *are* record-enabled.

If the session has plenty of available voices, you should have no trouble using QuickPunch with tracks using Dynamically Allocated Voicing. However, if you are running out of voices, and want to ensure that a track is heard when recording with QuickPunch, assign it a voice.

### QuickPunch and Dynamically Allocated Voicing

#### (Pro Tools HD Only)

When using QuickPunch with a Pro Tools|HD system configured for its maximum number of voices, make sure to set the voice assignment for each audio track to Dyn (for Dynamically Allocated Voicing). This ensures that Pro Tools handles the distribution of voices between each set of voices automatically. For example, for a 192-voice configured Pro Tools|HD Accel system, Dynamically Allocated Voicing distributes voices evenly across four sets of voices (1–48, 49–96, 97–144, and 145–192).

If you do not use Dynamically Allocated Voicing, the voices must be evenly distributed between all DSP engines. For example, to use QuickPunch on 32 tracks without Dynamically Allocated Voicing, tracks 1–16 must be assigned to voices 1–16 and tracks 17–32 must be assigned to voices 33–48.

## QuickPunch Guidelines for Pro Tools LE

For Pro Tools LE systems, up to 16 mono, or 8 stereo audio tracks can be simultaneously recorded with QuickPunch (see "Pro Tools LE System Capabilities" on page 30).

For Pro Tools LE with DV Toolkit 2 or Music Production Toolkit, up to 24 mono or stereo audio tracks can be simultaneously recorded with QuickPunch. On these systems, the combination of audio tracks and QuickPunch cannot be greater than 48.

⚠ *QuickPunch uses CPU processing power, and may reduce the number of tracks and plug-ins you can use.*

## Recording with QuickPunch

#### To punch on-the-fly with QuickPunch:

**1** With Pro Tools HD, make sure that Delay Compensation is deselected in the Options menu.

⚠ *Digidesign recommends recording without Delay Compensation in most cases. See "Delay Compensation" on page 741.*

**2** Do one of the following:

• Select Options > QuickPunch.

– or –

• Right-click the Record button in the Transport and select QuickPunch.

When QuickPunch is enabled, a "P" appears in the Record button in the Transport.



QuickPunch enabled

*QuickPunch enabled*

**3** To change the automatic crossfade used by QuickPunch, configure QuickPunch Crossfade Length option in the Editing Preferences page (see "QuickPunch/TrackPunch Crossfade Length" on page 380).

**4** Record enable the tracks on which you want to punch in. Make sure there are enough available voices on your system.

**5** Prepare to record by cueing Pro Tools to an appropriate location. To use pre-roll, enable a pre-roll value in the Transport window.

**6** Start playback by clicking Play in the Transport window.

**7** Do one of the following:
- When you reach the punch-in point, click Record in the Transport.

– or –

- For Pro Tools systems using a Digidesign control surface, 003, 003 Rack, Digi 002, Digi 002 Rack, or Mbox 2 Pro with a connected footswitch, press the footswitch at the punch-in point.

The Record button stops flashing and stays lit during recording.

**8** To punch out, click Record again (or press the footswitch).

As Pro Tools continues playing, you can perform additional punches (up to 200). When recording multiple punches during a single pass, a single audio file is recorded from which Pro Tools creates the appropriate regions.

## QuickPunch with an Edit Selection

If you make an Edit selection and use Quick-Punch, the following rules apply:

◆ If the Transport is not online, recording begins and stops whenever you click the Record button in the Transport—regardless of the selection's start or end point.

◆ If the Transport is online, punch-in/out behavior is controlled by the Online Options setting in the Operation Preferences page. If you select Record Online at Insertion/Selection, QuickPunch punches in and out only within the selection (or in the case of an insertion point, only after the insertion point). If you select Record Online at Time Code Lock, Quick-Punch disregards the selection and punches in and out whenever you want (after Pro Tools has locked to time code).

## Region and Take Numbering with QuickPunch

After recording with QuickPunch, the new audio regions appear in the Region List. This includes the whole-file audio region encompassing all punches from the record pass, along with the regions derived for each punch.

Names for the punched regions are numbered consecutively starting with "01." For example, if QuickPunch is used to punch in twice on a track called "Lead Gtr," a region for the parent audio file appears and is named "Lead Gtr_01," and two regions for the punches are named "Lead Gtr_01-01" and "Lead Gtr_01-02."

If you stop playback and record additional punches with QuickPunch, subsequent regions are named by incrementing the first two digits in the name. For example, on the second pass, the punched regions are named "Lead Gtr_02-01," "Lead Gtr_02-02," and so forth.

# TrackPunch Audio Recording

## (Pro Tools HD Only)

TrackPunch is especially useful as a digital dubber for film re-recording (dubbing) and mixing. Keyboard shortcuts and preference settings for recording and input monitoring provide flexibility that makes TrackPunch equally useful for loading dailies and recording Foley, as well as over-dubbing and tracking in music sessions.

## TrackPunch Usage Guidelines

### TrackPunch and Dynamically Allocated Voicing

When using TrackPunch with a Pro Tools|HD system configured for maximum voices, make sure to set the voice assignment for each audio track to *dyn* for Dynamically Allocated Voicing (this mode was previously known as Auto Voice mode). This ensures that Pro Tools can automatically manage voices most efficiently.

### Audio Files and TrackPunch

After a TrackPunch recording pass, the punched track's playlist in the Edit window displays the regions created by punching. You can use any of the Trim tools after punch recording to open up the head or tail of TrackPunch (and Quick-Punch) recorded regions, or to reveal the parent audio file that was recorded in the background. This lets you compensate for any late or missed punches.

# Voice Requirements for TrackPunch Recording

TrackPunch requires two voices for each record-enabled, mono track. This means that you can record up to half the total number of voices available on your system.

When switching to TrackPunch mode, you are prompted to free up additional voices if not enough are available.

**To free up voices on tracks that are not record-enabled, and do not need to be heard while recording, do any of the following:**

- Set voice assignments for tracks to Off.

- Make tracks inactive.

- Group all RTAS plug-ins before TDM plug-ins.

As necessary, voices in use by other tracks may be "stolen" while recording with TrackPunch (thus silencing some tracks).

TrackPunch voice playback priority follows the same guidelines as QuickPunch, as follows (from highest to lowest playback priority):

- Tracks with assigned voices that are not record-enabled.
- Tracks with assigned voices that *are* record-enabled.
- Tracks with Dynamically Allocated Voicing that are not record-enabled.
- Tracks with Dynamically Allocated Voicing that *are* record-enabled.

If the session has plenty of available voices, you should have no trouble using TrackPunch with tracks that use Dynamically Allocated Voicing. However, if you are running out of voices, and want to ensure that a track will be heard when recording with TrackPunch, assign it a voice.

## TrackPunch Recording

Before using TrackPunch, configure Pro Tools and TrackPunch as follows:

**To configure Pro Tools and TrackPunch:**

**1** Configure TrackPunch preferences (see "TrackPunch Preferences" on page 385).

**2** If necessary, configure Pro Tools synchronization settings for online recording and track arming (see "Configuring Synchronization and Track Arming" on page 386).

**To use TrackPunch:**

**1** Make sure Pro Tools is not recording or playing back (the Transport is stopped).

**2** Make sure that Delay Compensation is deselected in the Options menu.

⚠ *Digidesign recommends recording without Delay Compensation in most cases. See "Delay Compensation" on page 741.*

**3** Enable TrackPunch mode (see "Enabling TrackPunch Mode" on page 387).

**4** TrackPunch enable all audio tracks that you want to punch during the record pass (see "TrackPunch Enabling Tracks" on page 388).

**5** Configure monitoring for record-enabled tracks by selecting the appropriate mode from the Track menu, as appropriate. Choices include:

- Set Record Tracks to Auto Input
- Set Record Tracks to Input Only

Selecting either monitoring mode only affects tracks that are record-enabled.

💡 *You can also use the TrackInput buttons to switch the monitor source for record-enabled tracks.*

**6** Start playback.

**7** To compare levels of the input source with audio on disk, click the TrackInput button. When lit (green), the track is monitoring input. When unlit (gray), the track is monitoring from disk (see "Selecting Record Monitor Modes with TrackInput Monitoring" on page 339).

**8** To punch tracks one at a time, click Record in the Transport and then use each individual track's Record Enable button to punch in and out on-the-fly.

**9** To punch multiple tracks simultaneously, do one of the following:

- Record enable as many as 16 TrackPunch enabled audio tracks, then click Record in the Transport to punch in and out all TrackPunch-enabled tracks simultaneously.

– or –

- Click Record in the Transport first, then Alt-Shift-click (Win) or Option-Shift-click (Mac) track's Record Enable button to simultaneously punch in and out on all currently selected TrackPunch enabled tracks.

💡 *Use groups for single-click selection of multiple tracks (click to the left of the Group Name in the Group List).*

**10** While continuing local or remote playback, do any of the following:

- Punch in on other TrackPunch enabled tracks individually.

- After punching out, take tracks out of record enable then record enable different TrackPunch enabled tracks.

- Repeat as needed to punch other stems, tracks, or takes.

## TrackPunch Preferences

The following preference settings let you customize TrackPunch performance.

### TrackPunch Crossfade Length

Pro Tools can automatically write a crossfade for each punch point when using TrackPunch. The length for these crossfades is set with the Quick-Punch Crossfade/TrackPunch Length option in the Editing Preferences page. For more information, see "QuickPunch/TrackPunch Crossfade Length" on page 380.

## Transport and Track Record Settings

The TrackPunch preferences appear on the Operation Preferences page. These preferences specify how track and Transport record status respond when the Transport is stopped (during playback and recording), and let you optimize Pro Tools for film, video, and music production workflows.



*TrackPunch preferences*

### Transport RecordLock

This setting lets the Transport Record be configured to either emulate a digital dubber, or to maintain legacy behavior for the Transport master Record.

◆ When not enabled, the Transport Record disarms when Pro Tools is manually stopped or stops due to a loss of time code. This replicates legacy Pro Tools recording behavior.

◆ When enabled, the Transport Record remains armed when playback or recording stops. This saves having to re-arm the Transport between takes, emulating digital dubber behavior.

Punching out of record by pressing Record on the Transport takes the transport out of record enable.

### Destructive Recording and Transport RecordLock

As a precaution against accidentally recording over previous material, the Transport Record-Lock preference is automatically disabled and grayed out when Destructive record mode is enabled.

### Audio Track RecordLock

This setting lets Pro Tools tracks either emulate a digital dubber, or maintain legacy behavior for track record status.

◆ When the Audio RecordLock preference is enabled, the record-enabled audio tracks remain armed when playback or recording stops.

◆ When the Audio RecordLock preference is not enabled, record-enabled audio tracks are taken out of record enable when Pro Tools is stopped. This prevents tracks from remaining armed from pass to pass, emulating track record behavior of a digital dubber.

### Destructive Recording and Transport RecordLock

As a precaution against accidentally recording over previous material, the Transport Record-Lock preference is automatically disabled and grayed out when Destructive record mode is enabled.

# Configuring Synchronization and Track Arming

### (Digidesign SYNC HD or SYNC I/O Only)

For online recording and punching, configure the following Peripheral and Session Setup settings. For best lockup times when synchronizing, it is recommended that no more than 16 tracks be TrackPunch-enabled at a time.

**To record online using TrackPunch switching:**

**1** Choose Setup > Peripherals.

**2** Click the Synchronization tab and make sure the Enable SYNC Peripheral option is selected, and that the Digidesign Synchronization Device is communicating with Pro Tools.

**3** Choose Setup > Session, and do the following:

- Select a Clock and Positional reference.
- If you want Pro Tools to be the time code master, enable Using SYNC. This option is located in the Generator controls in the Time Code Settings section of the Session Setup window.

**4** If you are controlling Pro Tools using 9-pin protocol, do the following:

- Click the Machine Control tab to display the Machine Control page of the Peripherals dialog (Setup > Peripherals).
- Configure Remote 9-pin Deck Emulation mode settings (see the *MachineControl Guide* for details).
- Click OK to close the Peripherals dialog.

*Consult the manufacturer of your controller for the most recent machine profiles and updates available for Pro Tools support.*

## Enabling TrackPunch Mode

Before you can enable individual audio tracks for TrackPunch recording, TrackPunch mode must be enabled in the Pro Tools transport.

**To enable TrackPunch mode:**

**1** Make sure Pro Tools is not recording or playing back (the Transport is stopped).

**2** Do one of the following:

- Select Options > TrackPunch.
- Right-click the Record button in the Transport, and select TrackPunch from the pop-up menu.
- Start-click (Windows) or Control-click (Mac) the Record button in the Transport to cycle through available Record modes until TrackPunch mode is selected (a "T" indicates TrackPunch mode).
- Press Control+Shift+T (Windows) or Command+Shift+T (Mac).



*Transport Record with TrackPunch mode enabled*

## Transport Display of TrackPunch Status



*TrackPunch and TrackInput Status indicators in the Transport window*

### Transport Record Button

The Transport Record button indicates Track-Punch and Record status as follows:

**When TrackPunch mode is enabled:**

◆ A "T" appears in the Record button in the Transport.

◆ If at least one track is TrackPunch-enabled, the Record button lights solid blue.

**When TrackPunch mode is enabled and the transport is armed for recording:**

◆ If no tracks are TrackPunch-enabled, the Record button in the Transport flashes gray and red.

◆ If at least one track is TrackPunch-enabled, the Record button flashes blue and red.

◆ If at least one TrackPunch-enabled track is also record-enabled, the Record button flashes blue and red, *and* the record LED lights.

◆ Whenever at least one audio track is recording, the Transport Record button lights solid red.

## TrackPunch Enabling Tracks

You can TrackPunch enable tracks without record enabling them. This lets you punch in and out on individual tracks after you start playback.

**To TrackPunch enable or disable an audio track:**

■ Start-click (Windows) or Control-click (Mac) the track's Record Enable button. When TrackPunch enabled, the button is solid blue.

**To TrackPunch enable or disable all audio tracks:**

■ Alt-Start-click (Windows) or Option-Control-click (Mac) a track's Record Enable button. When TrackPunch enabled, the tracks' Record Enable buttons are solid blue.

**To TrackPunch enable or disable all selected audio tracks:**

■ Alt-Start-Shift-click (Windows) or Option-Control-Shift-click (Mac) a track's Record Enable button. When TrackPunch enabled, the selected tracks' buttons are solid blue.

*Create track groups for each stem or set of tracks on which you plan to punch. Use the Group List to quickly select all tracks in the group. This makes it easier and faster to take multiple tracks in and out of TrackPunch enable simultaneously.*

## Track Record Status Display

Each track's Record Enable button indicates its TrackPunch and record enable status as follows:

• When a track is both TrackPunch-enabled and record-enabled, its Record enable button flashes blue and red.



*TrackPunch status indication in an audio track in the Mix window*

• When a track is TrackPunch-enabled but not record-enabled, its Record Enable button lights solid blue.

• When a track is record-enabled only, its Record Enable button flashes red.

• While a track is recording (in any mode), its Record Enable button lights solid red.
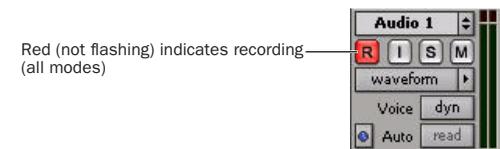


*Track Record status in the Edit window*

## TrackPunch Recording

After you have put Pro Tools in TrackPunch mode, and enabled tracks for TrackPunch recording, you can record with TrackPunch in several ways.

### Punching In on Individual Tracks

**To punch in on individual tracks:**

**1** Put Pro Tools in TrackPunch mode.

**2** Start-click (Windows) or Control-click (Mac) the Record Enable button for each track you want to punch in, so that the track is Track-Punch-enabled only. The track's Record Enable button should light solid blue.

**3** Click Record in the Transport to enter the TrackPunch Record Ready mode. The Record button flashes blue and red.

**4** Click Play in the Transport to begin playback.

**5** During playback, punch in and out on individual TrackPunch-enabled tracks by clicking their respective Record Enable buttons.

**6** Stop playback. When you are finished with the record pass, track Record Enable status and transport Record Arm status follow the current TrackPunch preference settings.

### Punching In on Multiple Tracks Simultaneously

**To punch in on multiple tracks simultaneously:**

**1** Enable TrackPunch mode (see "Enabling TrackPunch Mode" on page 387).

**2** Click the Record Enable button on each track you want to punch in, so that the track is both TrackPunch- and Record-enabled. The track's Record Enable button flashes blue and red.

**3** Click Play in the Transport to begin playback.

**4** During playback, click Record in the Transport to punch in and out on all TrackPunch-enabled tracks simultaneously.

**5** Stop playback. When you are finished with the record pass, track Record Enable status and transport Record Arm status follow the current TrackPunch preference settings.

### Start Recording on All Tracks

**To punch in on all tracks:**

**1** Enable TrackPunch mode (see "Enabling TrackPunch Mode" on page 387).

**2** Click the Record Enable button on each track you want to punch in, so that the track is both TrackPunch- and Record-enabled. The track's Record Enable button flashes blue and red.

**3** Click Record in the Transport to enter the TrackPunch Record Ready mode. The Record button flashes blue and red.

**4** Click Play in the Transport to begin playback.

**5** During playback, punch out and back in on individual TrackPunch-enabled tracks by clicking their respective Record Enable buttons.

**6** Stop playback. When you are finished with the record pass, track Record Enable status and transport Record Arm status follow the current TrackPunch preference settings.

## Example TrackPunch Workflows

Pro Tools emulates and enhances the following four "workflows" commonly performed in film, video, and music production:

• Dubbing and mixing film (see "Film Dubbing and Mixing with TrackPunch" on page 390)

• Loading dailies (see "Loading Dailies Using RecordLock" on page 391)

• Recording Foley (see "Foley Recording with TrackPunch" on page 392)

• Tracking and overdubbing in music production and any other recording situation (see "Tracking and Overdubbing Music with TrackPunch" on page 392)

Each of these workflows takes advantage of TrackPunch features and options.

In the following example workflows, it is assumed you already familiar with routing, selecting, and grouping Pro Tools tracks. If you are not, see Chapter 10, "Tracks" and Chapter 35, "Basic Mixing."

## Film Dubbing and Mixing with TrackPunch

By providing all the essential online punch recording and monitor switching capabilities of a digital dubber, TrackPunch optimizes Pro Tools for re-recording and mixing for film.

Film dubbing and mixing features of Track-Punch let you do the following:

• Arm and punch Pro Tools audio tracks remotely from a master synchronizer such as SoundMaster through P2 commands at any time, without having to stop playback and while maintaining time code lock. (Requires Digidesign MachineControl.)

• Toggle Pro Tools audio tracks between input and disk monitoring.

• Use TrackPunch when Pro Tools is the time code master (generating) or when slaving.

• Because Pro Tools can be networked, Track-Punch (and all other) audio files and whole sessions can be available for secure transfer to other systems for review, editing, and archiving.

**A typical pre-dub session using TrackPunch includes the following steps:**

**1** Configure synchronization between Pro Tools and other devices as appropriate.

**2** Choose Setup > Preferences and click the Operation tab.

**3** Select (enable) Transport RecordLock. This keeps the Transport Record armed after the transport stops.

*In Remote mode, Transport RecordLock has no effect. The synchronizer determines the behavior.*

**4** Deselect Audio Track RecordLock. This causes the audio track record to disarm when the transport stops.

*In Remote mode, Audio Track RecordLock has no effect. The synchronizer determines the behavior.*

**5** Choose Options > TrackPunch to enable TrackPunch mode.

**6** Create 32 new tracks, then do the following:

- Assign their inputs

– and –

- Group them into eight-track groups.

**7** Click the record enable buttons in the first eight tracks to TrackPunch enable the first eight tracks (or, the group for the first pre-dub).

💡 *Use the Group List to quickly select all tracks in the group, and Alt-Shift-click (Windows) or Option-Shift-click (Mac) to record-enable all the tracks in the group.*

**8** Assign the console paddles to the first eight-track group in the session.

**9** Begin the pre-dub pass. Use the console paddles to arm Pro Tools, and to punch in and out on the first group.

**10** When the first pre-dub is over and all tracks are punched out, clear all TrackPunch enabled tracks.

**11** Select the next group of tracks and TrackPunch-enable them.

**12** Punch in and out on the second group of tracks.

**13** Repeat the preceding steps as necessary.

## Loading Dailies Using RecordLock

In addition to its uses on dub and mix stages, Pro Tools makes it easy to load dailies. Dailies and similar types of transfers are comprised of multiple takes or scenes, each recorded while locked to unique time-of-day time code. In between each take, time code does not continue but stops completely. Because of this, the time code on dailies and similar source material is said to be "discontiguous" or discontinuous (also known as broken time code).

When a session is taken offline while recording due to broken time code, Pro Tools remains armed and waits for time code to resume. Pro Tools begins recording again when lock is re-established with the time code of the next take. Each take is recorded to its own audio file.

**To configure RecordLock for loading:**

**1** Choose Setup > Preferences and click the Operation tab.

**2** Enable Transport RecordLock.

**3** Enable Audio Track RecordLock.

**4** Configure synchronization and other settings as required.

**5** Put Pro Tools online, and start the external source player.

**6** Whenever time code drops out or stops, Pro Tools remains online and waits to receive new time code. The Transport and record-enabled tracks remain record-enabled (or TrackPunch enabled). When time code resumes, Pro Tools begins recording to a new audio file (properly time stamped based on the incoming code).

⚠ *Because Pro Tools has a 13-hour Timeline limit, you must use multiple sessions to load dailies if the span is more than 13 hours.*

## Foley Recording with TrackPunch

Foley recording is one of the more specialized forms of recording in film production with unique monitoring requirements. Between punches and takes, inputs must be muted while Foley artists move themselves and equipment as they progress through a scene.

TrackInput monitoring can be configured to support Foley style TrackPunch recording using the Mute Record-Armed Tracks While Stopped preference.

**To configure Pro Tools for Foley-style punch record monitoring:**

**1** Choose Setup > Preferences and click the Operation tab.

**2** Enable Mute Record-Armed Tracks While Stopped.

**3** Configure synchronization and other settings for Pro Tools and your other devices, then enable TrackPunch mode and proceed with punch recording. (See "TrackPunch Recording" on page 384 for the complete steps.)

When recording online and Mute Record-Armed Tracks While Stopped is enabled, record-enabled tracks mute when the Transport is stopped. Input can still be monitored at any time by using the TrackInput switch.

## Tracking and Overdubbing Music with TrackPunch

Modern multitrack recording requires the flexibility to "capture the moment" by allowing on-the-fly record enabling and punch recording, as provided by TrackPunch. Features of Track-Punch for all tracking, overdubbing, and punching situations include the following:

- Record enable tracks on-the-fly.

- Punch tracks in and out using on-screen Record Enable buttons, remotely from a synchronizer, from a control surface, or using a foot switch.

- Compare and match levels using TrackInput switching.

# DestructivePunch Audio Recording

**(Pro Tools HD Only)**

DestructivePunch is a destructive recording mode that lets you instantaneously *punch in* (start recording) and *punch out* (stop recording) on individual audio tracks during playback, while preserving a contiguous audio file on each punched track. No additional regions are created when recording in DestructivePunch mode.

DestructivePunch is useful for mixing and pre-dubbing workflows where you want the final result to be a single, contiguous file without any edits.

DestructivePunch is essentially a destructive version of TrackPunch mode. Where Track-Punch always records audio to a new file in the background, DestructivePunch destructively

records audio directly into the original file, using a fixed 10-millisecond linear crossfade. Up to 200 "running punches" can be performed in a track during a single DestructivePunch pass.

### DestructivePunch and MachineControl

When using Digidesign MachineControl software in Remote 9-Pin Deck Emulation Mode, DestructivePunch can be controlled via P2 protocol.

### DestructivePunch and Voice Allocation

As with TrackPunch and QuickPunch, DestructivePunch requires 2 available voices per mono track. When using DestructivePunch with a Pro Tools|HD system configured for maximum voices, make sure to set the voice assignment for each audio track to *dyn* for Dynamically Allocated Voicing. This ensures that Pro Tools can automatically manage voices most efficiently.

## Configuring Pro Tools for DestructivePunch Recording

Before using DestructivePunch, configure DestructivePunch preferences and related Pro Tools settings as described in this section.

### Transport and Track Record Settings

The Transport RecordLock and Audio RecordLock preferences specify track and Transport Record Enable behavior when playback or recording are stopped. They function with DestructivePunch as with TrackPunch. For more information, see "TrackPunch Preferences" on page 385.

## Delay Compensation Settings

When using DestructivePunch to punch in on an existing recording, make sure the Delay Compensation settings are the same as when the original file was recorded. If they differ, the punched-in audio will not be time-accurate to the original recording.

◆ If Delay Compensation was inactive when recording the original file, it should be deactivated while punching into the original file in DestructivePunch mode.

◆ If Delay Compensation was active when recording the original file, it should be kept active while punching into the original file in DestructivePunch mode.

⚠ *Digidesign recommends recording without Delay Compensation in most cases. For more information, see "Delay Compensation" on page 741.*

To ensure that the Delay Compensation path on record tracks remains consistent while using DestructivePunch, you need to prevent Pro Tools from using the Low Latency monitoring path when record tracks switch to Input monitoring.

Track Compensation indicator displays in blue

**To apply Delay Compensation to a track where Delay Compensation was suspended:**

■ Control-Start-click (Windows) or Command-Control-click (Mac) the Track Compensation indicator on the track.

**To apply Delay Compensation to all selected tracks where Delay Compensation was suspended:**

■ Control-Start-Shift-click (Windows) or Command-Control-Shift-click (Mac) the Track Compensation indicator on the track.

## Enabling DestructivePunch Mode

Before you can enable individual audio tracks for DestructivePunch recording, you must put Pro Tools in DestructivePunch mode.

**To enable DestructivePunch mode:**

**1** Make sure Pro Tools is not recording or playing back (the Transport is stopped).

**2** Do one of the following:

- Select Options > DestructivePunch.
- Right-click the Record button in the Transport and select DestructivePunch from the pop-up menu.
- Start-click (Windows) or Control-click (Mac) the Record button in the Transport to cycle through available Record modes until DestructivePunch mode is indicated by "dp" in the Transport Record Enable button.

## Enabling Tracks for DestructivePunch Recording

### DestructivePunch Enabling Tracks without Record Enabling Them

You can enable tracks for DestructivePunch without record enabling them. This lets you punch in on individual tracks at any time after starting playback by clicking their respective Record Enable buttons.

**To DestructivePunch-enable an audio track:**

■ Start-click (Windows) or Control-click (Mac) the track's Record Enable button to toggle the button to solid blue.

**To DestructivePunch-enable all audio tracks:**

■ Alt-Start-click (Windows) or Option-Control-click (Mac) a track's Record Enable button to toggle all Record Enable buttons to solid blue.

**To DestructivePunch-enable all selected audio tracks:**

■ Alt-Start-Shift-click (Windows) or Control-Option-Shift-click (Mac) a track's Record Enable button to toggle the Record Enable buttons for the selected audio tracks solid blue.

*Create a VCA group for each stem or set of tracks on which you plan to punch, and use the VCA Record Enable button to arm all tracks in the group for DestructivePunch. For more information, see "VCA Master Tracks" on page 714.*

## DestructivePunch-Enabling and Record-Enabling Tracks Simultaneously

You can simultaneously DestructivePunch enable tracks and record enable them. This starts recording as soon as the transport is record-armed and playback begins.

**To simultaneously DestructivePunch enable and record enable an audio track:**

■ Click the track's Record Enable button. The track's Record Enable button flashes blue and red.

**To simultaneously DestructivePunch enable and record enable all audio tracks:**

■ Alt-click (Windows) or Option-click (Mac) a track's Record Enable button. All tracks' Record Enable buttons flash blue and red.

**To simultaneously DestructivePunch enable and record enable all selected audio tracks:**

■ Alt-Shift-click (Windows) or Option-Shift-click (Mac) a track's Record Enable button. The Record Enable buttons for the selected audio tracks flash blue and red.

## Display of DestructivePunch Status

### Transport Record Enable Button

The Transport Record Enable button indicates DestructivePunch mode and Record status as follows:

**When DestructivePunch mode is enabled:**

◆ The letters "dp" appears in the Record button in the Transport.



*Transport Record Enable button with DestructivePunch mode enabled*

◆ If at least one track is DestructivePunch-enabled, the Record button in the Transport lights solid blue.



*DestructivePunch status in the Transport window*

**When DestructivePunch mode is enabled and the transport is armed for recording:**

◆ If no tracks are DestructivePunch-enabled, the Record button in the Transport flashes gray and red.

◆ If at least one track is DestructivePunch-enabled, the Record button flashes blue and red.

◆ If at least one DestructivePunch-enabled track is also record enabled, the Record button flashes blue and red, *and* the record LED lights.

◆ Whenever at least one audio track is recording, the Record button lights solid red.

## Track Record Status Display

When Pro Tools is in DestructivePunch mode, each track's Record Enable button indicates its DestructivePunch and record enable status as follows:

• When a track is both DestructivePunch-enabled and record-enabled, its Record Enable button flashes blue and red.

• When a track is DestructivePunch-enabled but not record-enabled, its Record Enable button lights solid blue.

• When a track is record-enabled only, its Record Enable button flashes red.

• While a track is recording (in any mode), its Record Enable button lights solid red.

## Record and Input Status LEDs

Record and Input LEDs next to the Transport Record Enable button indicate track Record and Input status as follows, in all recording modes:

**Record Status LED** When lit (red), indicates that at least one audio track is currently record-enabled. When off (gray), no tracks are currently record-enabled.

**Input Status LED** When lit (green), indicates that at least one audio track is currently set to Input Only monitoring (regardless of record enable status). When off (gray), all tracks are in Auto Input monitoring

☼ *Track Record Enable buttons also appear in blue to indicate that track is Destructive-Punch-enabled.*

## Preparing Tracks for DestructivePunch Recording

In order for a track to be enabled for Destructive-Punch recording, the track must contain a contiguous audio file that meets the following requirements:

• The file must start at the beginning (sample 0) of the session.

– and –

• The File Length must be equal to or greater than the DestructivePunch File Length setting (see "DestructivePunch File Length" on page 397).

If a track does not contain a file that meets these requirements, you can do any of the following to meet the requirements:

- Move the current file in the track Timeline so that its beginning aligns with the session start.
- Select the material in the track and use the Consolidate command to create a continuous file of the required length.
- Change the DestructivePunch File Length setting so that the current file is equal to or greater than the required length.
- Use the Prepare DPE Tracks command to consolidate audio on all DestructivePunch-enabled tracks. (See "Using the Prepare DPE Tracks Command" on page 397.)

## DestructivePunch File Length

To use DestructivePunch on an audio track, the track must contain a contiguous audio file of a minimum length, which is set in the Pro Tools Operation preferences page.

### To set DestructivePunch File Length:

**1** Choose Setup > Preferences and click Operation.

**2** Enter a value for DestructivePunch File Length.

**3** Click OK.

## Using the Prepare DPE Tracks Command

### To prepare a track for DestructivePunch recording:

**1** Enable DestructivePunch mode ("Enabling DestructivePunch Mode" on page 394).

**2** Make sure the tracks you want to prepare are DestructivePunch-enabled ("DestructivePunch Enabling Tracks without Record Enabling Them" on page 394).

**3** Choose Options > Prepare DPE Tracks.

Pro Tools consolidates audio on all DestructivePunch-enabled tracks from the beginning of the session to the value specified in the DestructivePunch File Length preference.

## DestructivePunch Recording

After you have put Pro Tools in DestructivePunch mode, enabled tracks for DestructivePunch recording, and prepared tracks if necessary, you can record in several ways.

### Punching In On Single Tracks

### To punch in on single tracks:

**1** Enable DestructivePunch mode ("Enabling DestructivePunch Mode" on page 394).

**2** Start-click (Windows) or Control-click (Mac) the Record Enable button for each track you want to punch in, so that the track is DestructivePunch-enabled only. The track's Record Enable button lights solid blue.

**3** Click Record in the Transport to enter Record Ready mode. The Record Enable button flashes blue and red.

**4** Click Play in the Transport to begin playback.

**5** During playback, punch in and out on individual DestructivePunch-enabled tracks by clicking their Record Enable buttons.

**6** Stop playback. When you are finished with the record pass, track Record Enable status and transport Record Arm status follow the current Audio Track RecordLock and Transport Record-Lock preference settings.

## Punching In on Multiple Tracks

**To punch in on multiple tracks simultaneously:**

**1** Enable DestructivePunch mode ("Enabling DestructivePunch Mode" on page 394).

**2** Click the Record Enable button on each track you want to punch in, so that the track is both DestructivePunch-enabled and Record-enabled. Each track's Record Enable button flashes blue and red.

**3** Click Play in the Transport to begin playback.

**4** During playback, click Record in the Transport to punch in and out on all DestructivePunch-enabled tracks simultaneously.

**5** Stop playback. When you are finished with the record pass, track Record Enable status and transport Record Arm status follow the current Audio Track RecordLock and Transport Record-Lock preference settings.

## Starting Recording Immediately on Multiple Tracks

**To punch in on multiple tracks:**

**1** Enable DestructivePunch mode ("Enabling DestructivePunch Mode" on page 394).

**2** Click the Record Enable button on each track you want to punch in, so that the track is both DestructivePunch-enabled and Record-enabled. Each track's Record Enable button flashes blue and red.

**3** Click Record in the Transport to enter Record Ready mode. The Record button flashes blue and red.

**4** Click Play in the Transport to begin playback.

**5** During playback, punch out and back in on individual DestructivePunch-enabled tracks by clicking their respective Record Enable buttons.

**6** Stop playback. When you are finished with the record pass, track Record Enable status and transport Record Arm status follow the current Audio Track RecordLock and Transport Record-Lock preference settings.

# Part V: Editing

# Chapter 21: Editing Basics

## Pro Tools Editing

The Edit window in Pro Tools provides a powerful collection of tools for editing and arranging audio, video, and MIDI. Track material can be edited nondestructively and in real time during playback. The Edit window also lets you graphically edit Elastic Audio and track automation.

This chapter covers the basic concepts of editing audio and MIDI regions and playlists. Subsequent chapters provide more detailed information on the following editing tasks:

- For information on editing regions and selections, see Chapter 24, "Editing Regions and Selections." Also, see Chapter 32, "Arranging Regions."

- For information on editing fades and crossfades, see Chapter 25, "Fades and Crossfades."

- For information on editing Elastic Audio, see Chapter 26, "Elastic Audio."

- For information on editing MIDI notes and other MIDI data in the Edit window, see Chapter 27, "MIDI Editing."

- For information on editing MIDI in the MIDI Event List, see Chapter 29, "MIDI Event List."

- For information on editing Automation data, see Chapter 37, "Automation."

- For information on editing video, see Chapter 43, "Working with Video in Pro Tools."

## Nondestructive Editing

The vast majority of audio editing in Pro Tools is nondestructive. Whether cutting, pasting, trimming, separating, or clearing regions, you are only performing these functions on a map of the actual media (such as audio files). The source files remain untouched. However, certain processes or tools work destructively (that is, it can permanently change audio files on your hard disk), as noted in this guide.

While editing for MIDI tracks is in some instances destructive, with a few precautions you can keep important MIDI tracks and regions safe when performing edits (see "Nondestructive MIDI Editing" on page 408).

## Editing During Playback

Pro Tools lets you perform many editing tasks while the session plays. This powerful capability lets you interactively modify and edit a session, hearing the changes as you make them.

☼ *Use Loop and Dynamic Transport modes for auditioning and editing loops during playback. See "Playback Modes" on page 313.*

Following are just a few examples of editing and arranging tasks that can be performed while playing back a Pro Tools session:

- Capture, separate, cut, copy, paste, and trim regions.
- Place, spot, or rearrange regions.
- Add fades or crossfades to audio regions.
- Quantize MIDI and audio events (Elastic Audio).
- Transpose and otherwise modify MIDI tracks.
- Nudge audio or MIDI regions.
- Audition different playlists.
- Adjust or scale automation and MIDI continuous controller data.
- Insert real-time plug-ins.
- Apply Real-Time (and Rendered) Elastic Audio processing.
- Process audio with an AudioSuite plug-in.
- Automation editing.

There are a few things that cannot be changed while Pro Tools plays, as noted throughout this guide.

## Track Material

Each time you record or import audio, video, and MIDI, Pro Tools creates *regions* for the new track data, which not only indicate where the material begins and ends, but also provides good feedback on its general shape and content. When you record additional takes, or "punch in" on a specific location within a track, Pro Tools creates additional regions.

Regions are also created by cutting and pasting, resizing, separating, and re-capturing existing regions. Regions in a session are listed in the Region List, where they can be dragged to existing tracks. A track can contain any number of regions, in any arrangement. The order and location of regions in a track define its *playlist*.

📄 *In addition to audio and MIDI regions, tracks provide automation playlists of any automation data (such as volume and pan). Automation can be recorded and edited in the Mix or Edit windows. For more information, see Chapter 37, "Automation."*

## Region Types

There are different types of audio and MIDI regions, based on how they are created:

📄 *For information on video regions, see Chapter 43, "Working with Video in Pro Tools."*

**Whole-File Audio Regions** These audio regions are created when recording or importing audio, consolidating existing regions, and when non-destructively processing with an AudioSuite plug-in. Whole-file audio regions reference an entire audio file that resides on your hard drive. Whole-file audio regions are displayed in bold in the Region List (see Chapter 12, "The Region List"). Normal regions often reference only a portion of the parent audio file and are created in the course of editing and, in some instances, when punch recording.

**User-Defined Regions** These are regions that are explicitly defined, such as when you record or import audio or MIDI; capture, separate, or consolidate a selection; trim a whole-file audio region; or rename an existing region.

**Auto-Created Regions** These regions are automatically created in the course of editing, and, in some instances, when punch recording over existing regions. Since these regions can accumulate rapidly in a session, you can hide them in the Region List. Auto-created regions can be turned into user-defined regions by renaming them.

📄 *For more information, see "Naming and Displaying Regions in the Region List" on page 196.*

**Offline Regions** Regions are *offline* when their parent files cannot be located, or are not available, when opening a session or importing a track. Offline regions appear in the Region List as italicized and dimmed; they appear in playlists as light blue regions with italicized names. Offline regions can be edited like other regions, but they cannot be processed with AudioSuite plug-ins.

**Multichannel Regions** These regions, which are displayed as a single region in the Region List, reference multiple regions and audio files for stereo and surround tracks. Multichannel regions can be expanded (by clicking the triangle next to their name) to see the individual channels, which can be dragged independently to tracks.

**Region Groups** A *region group* is a collection of any combination of audio and MIDI regions that looks and acts like a single region. Region groups are essentially containers holding one or more regions. Region groups can be created on a single track or on multiple adjacent audio, MIDI, and Instrument tracks. Region groups let you "nest" multiple regions into "macro" regions for groove and tempo manipulation, editing, and arranging.

📄 *For more information on region groups, see "Region Groups" on page 675.*

**Warped Regions** Regions on Real-Time Elastic Audio–enabled tracks can be *warped*. Warped regions are identified with a Warp Indicator icon in the upper-right corner of regions on tracks and to the left of region names in the Region List. Warped regions result from the application of Elastic Audio processing. Elastic Audio processing can be applied manually in Warp view or by using the TCE Trimmer in Waveform view, or automatically due to tempo conform or quantization.

📄 *For more information, see "Warped Regions" on page 517.*

## Audio Regions and Waveforms

When the Track View for audio tracks is set to Waveform, Pro Tools draws a waveform diagram of the audio. Audio waveforms tell you several things about the recorded sound.
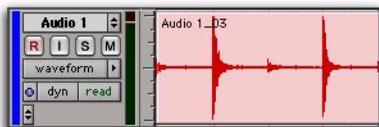


*Figure 20. Audio waveform of a drum track*

In Figure 20, the "peaks" represent places in the recording where the attack of the sound causes the volume to increase momentarily. These are followed by "valleys," where the volume decreases.

Different types of sounds produce different types of waveforms. Drums, for example, generally produce waveforms with sharp *transients* (peaks of short duration) that are clearly defined. A drum hit has a loud, sharp attack and a rapid decay.

Other sounds, such as vocals or sustained synthesizer pads, produce very different waveforms. These sounds have less pronounced peaks and valleys because they generally have softer attacks and longer decays.

### Draw Waveforms Rectified Preference

When the Display preference for Draw Waveforms Rectified is selected (in the Display Preferences page), audio waveforms are displayed so that their positive and negative waveform excursions are summed together and viewed as a

single positive-value signal. However, even when this preference is enabled, zooming in beyond a certain point will cause the waveforms to be displayed normally.
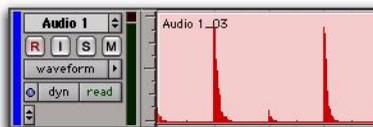


*Audio displayed in Rectified mode*
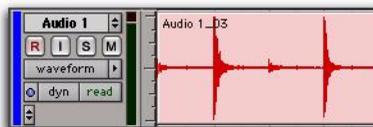


*Audio displayed in Normal mode*

Rectified mode displays more detailed waveforms when using track heights of Medium or Small, and can be particularly useful when editing volume automation data, since it depicts waveform "levels" as starting at the bottom of the track.

## Guidelines for Editing Waveforms

With the Selector tool in the Edit window, you can select portions of audio waveforms and divide them into segments called *regions*, so that you can rearrange and manipulate them in tracks.

While editing musical material, try to create regions that let you maintain a consistent beat. If you always define regions so that they contain a whole number of beats, you will be able to string the regions together and maintain a smooth, steady rhythm.

It is sometimes useful to have a steady, well-defined reference waveform (such as a drum track or click track) as a guide when selecting and defining other regions. If you have played in time with the beat, it should be easier to create rhythmically accurate regions by referring to the reference waveform.

Some important rules to keep in mind when defining regions:

◆ Whenever possible, begin a region precisely before a volume peak, and end it immediately before another volume peak.

◆ Whenever possible, make sure a region starts and ends on exactly the same part of a beat.

◆ Use the following Pro Tools features to help you edit rhythmic material or audio with clear transients into precise regions:

- Tab to Transients (see "Tabbing to Transients" on page 457.)
- Editing to a Grid (see "Grid" on page 422)
- Beat Detective (see Chapter 34, "Beat Detective")

## Avoiding Clicks and Pops

If an edited region begins or ends at a point of high amplitude, you may hear a click when Pro Tools plays from one region to another. In order to avoid clicks or pops do any of the following:

◆ Make sure that the start and end points of your selection are as close as possible to the point where the amplitude of the waveform tapers down to meet the *zero-crossing* line (the center line of the track's waveform display). If necessary, use the zooming tools in the Edit window (see "Using the Zoomer Tools" on page 424) to display waveforms in greater detail.
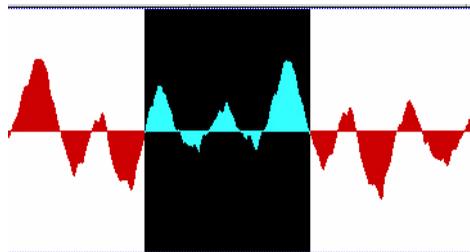


*Selection that begins and ends at zero crossings*

◆ Apply a crossfade between regions where a click or pop occurs. See "Creating a Crossfade" on page 489 for details.

◆ With Pro Tools HD, use the AutoFade feature to apply real-time fade-ins/outs to all region boundaries that do not touch or overlap other regions. See "Using AutoFades" on page 490 for details.

## Nondestructive Audio Editing

When editing an audio track's playlist in Pro Tools, you are not actually cutting and moving pieces of sound as you would if you were cutting and splicing analog tape. Instead, Pro Tools creates a map of the audio file on your hard disk, which describes the order in which to play various portions of the audio.

When trimming audio regions with any of the Trimmer tools, or when editing the placement or order of regions within a track, you can use multiple playlists to easily return to a track's previous state. For more information, see "Playlists" on page 410.

## Audio Regions and Automation Data

Automation data for audio resides in tracks and *not* in the Region List. This means that when you drag an audio region from the Region List to a new track, no automation data is placed in the track. However, if you drag an audio region from an existing track (that contains automation data) to another track, the automation from the source track is placed in the destination track.

## MIDI Regions and MIDI Data

The two most common Track Views you will use for MIDI and Instrument tracks are Notes and Regions:

◆ Use Notes View for inserting and editing individual MIDI notes, and for working with and affecting groups of notes.

◆ Use Regions View for arranging regions.

📖 *For more information on setting Track View, see "Track Views" on page 149.*

⇧ *To toggle the Track View between Notes and Regions, click in the track you want to toggle and press Start+Minus (Windows) or Control+Minus (Mac) on the QWERTY keyboard.*

## Notes View for MIDI and Instrument Tracks

When a MIDI or Instrument track's Track View is set to Notes, MIDI notes are displayed in a "piano roll" format. Each note is displayed as a small rectangle with its vertical placement indicating pitch and its horizontal placement indicating location in time (and duration).
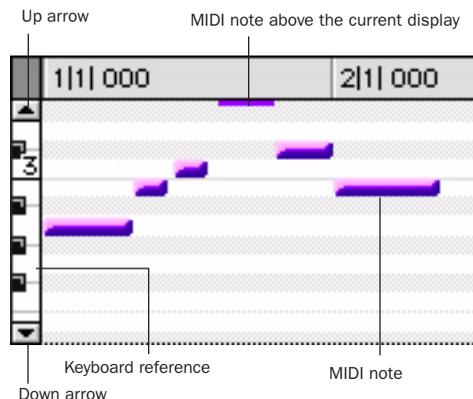


*Figure 21. MIDI track displaying notes*

To the left of the MIDI or Instrument track's playlist is a vertical mini-keyboard, complete with octave numbering, for pitch reference. You can click the mini-keyboard to play pitches using the track's selected MIDI output. Arrows at the top and bottom of the mini-keyboard (not available in the smaller track heights) are used to scroll the Notes display up and down.

⚠ *Clicking the mini-keyboard clears the current Edit selection. For more information, see "Selecting MIDI Notes" on page 532.*

In Notes View, the pitch range of MIDI notes that can be displayed depends on the track height, and on the current zoom value. Any time a track's notes do not fit within its current height, notes above or below the viewed area are displayed as single-pixel lines at the very top and bottom of the range (see Figure 21 above).

**To scroll the Notes display up or down for a MIDI or Instrument track, do one of the following:**

■ Click either the up or down arrow of the mini-keyboard.
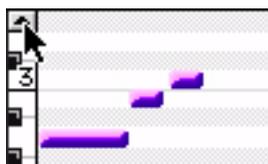

*Scrolling notes with the Up arrow on mini-keyboard*

– or –

■ With any of the Edit tools (such as the Time Grabber tool) selected, press Control+Alt+Start (Windows) or Command+Option+Control (Mac) and click and drag up or down on the mini-keyboard.
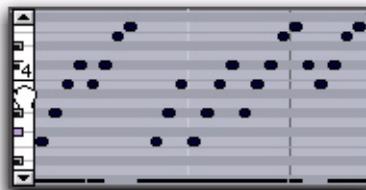

*Scrolling Notes display by dragging*

Using the Edit tools, notes can be inserted, deleted, transposed, trimmed, and moved. For more information, see "Manually Editing MIDI Notes" on page 532.

💡 *If you have a mouse with a scroll wheel, you can use it to scroll a MIDI or Instrument track's Notes display. Place the mouse over a MIDI or Instrument track in the Edit window, and Control-Alt-Start-scroll (Windows) or Command-Option-Control-scroll (Mac) the scroll wheel to scroll the Notes display for that track.*

## Regions View for MIDI and Instrument Tracks

MIDI and Instrument tracks can also be viewed as Regions, which is similar to Waveform View for audio tracks. While a track's notes are visible in Regions View, individual note editing is not available in this view. Instead, all editing occurs across a time range encompassing all track data, including continuous controller events, program changes, and System Exclusive events.

Use Regions View to define regions that represent song sections and clips, or to rearrange or assemble track material.

In Regions View, the vertical zoom is automatically scaled to fit the entire range of pitches of MIDI notes on a track.

There are a few things to consider when selecting, copying and cutting, and trimming MIDI regions:

◆ When cutting or clearing a region or region group selection that includes a note's start point, the entire note is removed. This is even the case when only a portion of the note (that includes its start point) is selected.

◆ When cutting or clearing a region or region group selection that includes a note's end point (but not its start point), the note remains and overlaps the edge of the region (see Figure 22 on page 408).
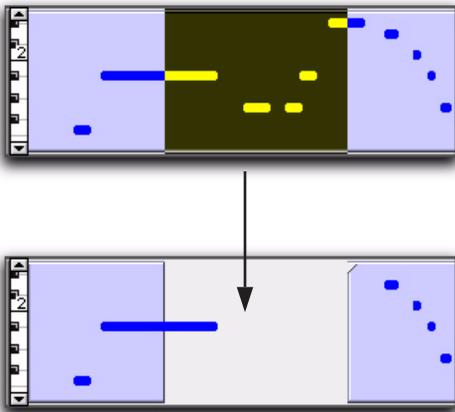


*Figure 22. Cutting a MIDI region with note overlap*

◆ Similar rules also apply when MIDI regions or region groups containing MIDI regions are trimmed with any of the Trimmer tools. If the MIDI region's start point is moved beyond a note's start point, the note is removed. If the region's end point is trimmed so that a note's start point is within the region but its end point is not, the note remains and overlaps the edge of the region.

When moving and placing MIDI regions with overlapping notes, the notes always move with the regions. When placing MIDI regions with overlapping notes next to or near another region, the overlapping notes extend into the next region on the track.

### MIDI Regions Created on Barlines

When recording MIDI, or when manually entering MIDI notes, the beginning and ending of resulting MIDI regions are constrained to bar boundaries. This greatly facilitates arranging MIDI regions in a musically meaningful way, in whole bar lengths.

The beginning of a recorded MIDI region always starts on the barline immediately before the first MIDI note (note on) of the region. Likewise, the MIDI region ends on the barline immediately following the last note (note off) of the region.

### Nondestructive MIDI Editing

While editing audio regions is usually nondestructive, this is generally not the case for MIDI regions. For instance, if a MIDI region resides in just one track at a single location, editing for that region *is* destructive. This means that altering the pitch, duration, or placement of notes in Notes View permanently alters the region.

However, when editing a MIDI region that appears elsewhere, in the same track (at another location or in a different playlist) or in another track, the editing is nondestructive and creates a new auto-created region. To go back to the previous material, drag the original region from the Region List, or return to a previously saved playlist.

*One way to safely return to a track's previous state is with playlists. Before you edit notes, trim regions, or rearrange the order of regions, make a duplicate of the track's existing playlist and then edit the duplicate (see "Playlists" on page 410).*

*To apply edits to all instances of a MIDI region, enable Mirrored MIDI Editing mode (see "Mirrored MIDI Editing" on page 527).*

## MIDI Regions and Continuous Controller Events

Continuous controller events reside in MIDI regions and not in tracks. This means that when dragging regions that contain controller data from either a track or the Region List, the controller data is written to the destination track.

Unlike continuous controller events, which represent nuances that are part of a MIDI performance, Mute in Pro Tools is an automation playlist that actually mutes the MIDI engine. Mute automation does not correspond to actual MIDI events and is therefore not exported when saving as a Standard MIDI File.

## Naming Regions

You can rename regions to give them more descriptive names, or merely to shorten or simplify existing names. When renaming a region that was auto-created during editing, the region becomes a user-defined region and is displayed in the Region List even when auto-created regions are hidden.

*For information on renaming regions in the Region List, see "Renaming Regions" on page 196.*

**To rename a region on a track:**

**1** Do one of the following:
- With the Grabber tool, double-click the region you want to rename.
- With any of the Edit tools, Right-click the the region that you want to rename and select Rename from the pop-up menu.
- Press Control+Shift+R (Windows) or Command+Shift+R (Mac).

**2** In the Name dialog, enter a new name for the region. If a whole-file audio region was selected, specify whether to rename just the region, or both the region *and* the disk file.
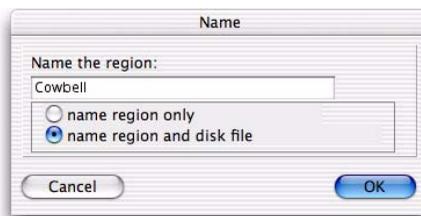


*Name dialog*

**3** Click OK to rename the region.

# Playlists

The ability to create *playlists* is a powerful feature of Pro Tools. Each track maintains a "main" playlist and any number of "alternate" edit playlists.

*Edit playlists* let you take a snapshot of a track's current arrangement of regions, thereby freeing you to experiment with alternate arrangements, returning as necessary to previously saved playlists.

A playlist, which can consist of a single region or many regions, can only be assigned to a track if it is not in use by another track. While you can create an almost unlimited number of edit playlists, which are shared among all tracks, each track has its own set of dedicated *automation playlist*s.

Automation playlists for audio tracks store data for volume, pan, mute, and plug-in controls. Automation playlists for MIDI tracks, however, store *only* mute information; continuous controller events, program changes, and Sysex events are stored in MIDI regions and therefore reside within edit playlists.

📄 *For more information on automation playlists, see Chapter 37, "Automation."*

## Working with Playlists

When you create a new track, it contains a single, empty playlist until you record, import, or drag and drop material to it.

💡 *Audio material can be dragged and dropped onto a track from the Region List, DigiBase browsers, from Windows Explorer or the Mac Finder.*

New playlists can be created that are empty or duplicates of the current playlist. Once created, you can recall, rename, and delete playlists as needed by using the Playlist selector.
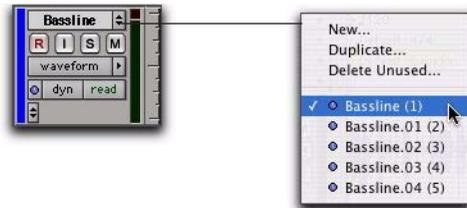


*Playlist selector*

## Duplicating a Playlist

When you edit a track, you can work with a copy of the track's playlist and keep the original playlist arrangement intact.

**To duplicate a track's current playlist:**

**1** Click the track's Playlist selector and choose Duplicate from the pop-up menu.

**2** Enter a name for the new playlist and click OK.

The duplicated playlist appears in the track and the track's name is changed to the name of the new playlist.

New and duplicated playlists are auto-named with the track name, followed by a Period (.) and the playlist number. For example, the first duplicated playlist on a track named "Kick" is auto-named "Kick.01," subsequent duplicated playlists are auto-named "Kick.02," "Kick.03," and so on.

## Creating a Playlist

You can create new empty playlists for recording or importing audio and MIDI. This can be useful for creating alternate takes of audio or MIDI, or for constructing alternate arrangements.

**To create a new (empty) playlist:**

**1** Click the track's Playlist selector and choose New.

**2** Enter a name for the new playlist and click OK. An empty playlist with the specified name appears in the track.

## Assigning a Playlist to Another Track

By default, a playlist is typically available only for the track on which it was created. However, if the playlist is no longer in use on its original track or any other track, it can be reassigned in another track using the Other Playlists feature. When a playlist is reassigned to another track (assigned on any track), it is unavailable to other tracks including the track on which it originated.

An audio playlist's timebase is saved with the playlist. When assigning an unassigned playlist to any track, the track assumes the saved timebase of the playlist.

## To assign a track playlist:

▪ Click the track's Playlist selector and do one of the following:

    • Select one of the track's playlists.

    – or –

    • Select a playlist from a different track by clicking the Other Playlists submenu, and selecting the desired playlist.



*Selecting a playlist from a different track*

The selected playlist appears in the track and the track's name is updated to that of the selected playlist.

## Renaming a Playlist

You can rename a playlist by renaming the track to which it is assigned.

**To rename a track's assigned playlist:**

**1** Double-click the track's name.

**2** Enter a new name and click OK. Both the track and playlist names are updated.

### Deleting a Playlist

You can delete a playlist from a session entirely. However, since playlists require minimal disk space, you do not need to delete them to conserve storage.

**To delete one or more playlists from a track:**

**1** Click the track's Playlist selector and choose Delete Unused.

**2** Select the unassigned playlists you want to delete. Shift-click (Windows or Mac), Control-click (Windows), or Command-click (Mac) to select multiple playlists.

**3** Click OK to delete the selected playlists. This operation cannot be undone.

*When deleting a track from a session, you have the option of deleting or keeping its playlists, so they can be used on other tracks.*

## Playlists and Groups

Creating new playlists with grouped tracks automatically increments the suffixes of the playlist names for each track of the active group. This lets you revert back to an earlier take by switching the playlist takes by group.

Using this method, you can add new tracks to the existing group and the suffixes for their playlist names are synchronized with the original tracks.

"Empty" playlists are created automatically to keep the playlist takes synchronized when switching back to the earliest playlist takes in the group.

**To keep your playlist names and performances synchronized (example workflow):**

**1** Create new tracks and group them together.

*For more information on grouping tracks, see "Grouping Tracks" on page 175.*

**2** Make sure the group is enabled.

**3** Create a new playlist (by clicking the Playlist selector in one of the tracks in the group and choosing New). The default suffix will now be ".01"—signifying take 1.

**4** Record take 1, then create a new playlist. The playlists on all tracks in the group increment to ".02."

**5** Create new tracks (for example, for an additional musician or microphone), then add these tracks to the group (or create a new group with all the tracks).

**6** Increment all the playlists by clicking the Playlist selector in one of the tracks in the group and choosing New.

All the playlists will now have the same suffix appended to them. (Creating additional playlists in any of the group tracks will increment their playlists to keep them synchronized.)

**7** If you want to hear the .01 take on the first group of tracks, you can switch any playlist in the group back to playlist .01.

All tracks in the group have playlists numbered with .01 suffixes (even those tracks that were added to the original group after the earlier takes). Empty playlists are automatically created on these newly-added members so that playlist numbers match across all members of the group.

## Elastic Audio and Alternate Playlists

Alternate playlists on Elastic Audio–enabled, tick-based tracks are only affected by tempo changes. Otherwise, alternate playlists are not affected by editing Warp or Event markers in the main playlist.

## Displaying Region Names, Region Times, and Other Data in Playlists

Region names and times can sometimes get in the way of editing audio waveforms and MIDI data. In these instances, you may want to disable their display. In other instances, such as arranging or spotting Foley, displaying region names and times is extremely useful.

**To enable or disable the display of region names in playlists:**

■ Select or deselect

> Name.

**To display region times:**

■ From View > Region, select one of the following options:

**No Time** Disables display of region times.

**Current Time** Displays start and end times for regions.

**Original Time Stamp** Displays the Original Time Stamp for each region. The Original Time Stamp is the original time code location for the region when it was first recorded or created.

**User Time Stamp** Displays the User Time Stamp for each region. The User Time Stamp, which defaults to the Original Time Stamp, can be re-defined with the Time Stamp command.



*Display enabled for region names, Overlap, and times*

You can also choose to display the following in regions:

**Sync Points** Can be displayed on regions in playlists (see "Sync Points" on page 662). This is useful when visually spotting to time code or in arranging in Grid mode.

**Region Overlaps** Can be displayed on regions in playlists. This is useful for arranging and when working with tick-based audio tracks (see "Region Overlap and Underlap" on page 468).

**Channel Name and Scene And Take Information** Can be displayed in regions in playlists and in the Region List. This is useful for working with multichannel recordings and metadata made by field recorders.

📄 *See the Field Recorder Workflow Guide for detailed information on workflows for field recorders.*

## Multiple Undo

Pro Tools can keep track of up to 32 of the last undoable operations, allowing you to return to a previous editing state.

The Undo operations in Pro Tools are stored in a queue, in the order in which they were invoked. When choosing Edit > Undo, the most recent operation is undone. If you choose Undo again, the next operation in the queue is undone. You can also choose Edit > Redo to redo an operation, which moves back through the Undo queue by one step.

When the number of operations in the Undo queue reaches the maximum Level of Undo, performing another undoable operation will remove the oldest operation at the top of the queue.

### To undo the last operation, do one of the following:

▪ Choose Edit > Undo.

– or –

▪ Press Control+Z (Windows) or Command+Z (Mac).

⚠ *If no actions are available to undo, the menu displays Can't Undo.*

### To redo the last undone operation, do one of the following:

▪ Choose Edit > Redo.

– or –

▪ Press Shift+Control+Z (Windows) or Shift+Command+Z (Mac).

⚠ *If no actions are available to redo, the menu displays Can't Redo.*

## Undo History Window

You can use the Undo History window to view the queue of the undoable and redoable operations and return to any previous state. The Undo History can show edit creation times, enabling you to revert to the state a session held at a particular time.
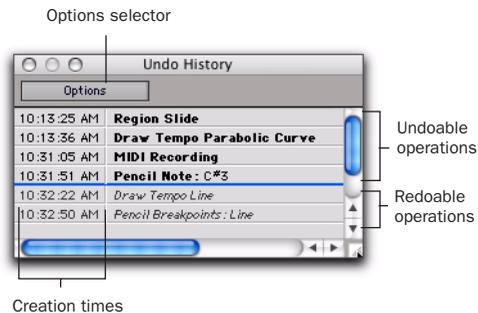


*Undo History Window*

### To show (or hide) the Undo History window:

▪ Choose Window > Undo History.

### To undo operations in the Undo History window:

▪ Click the operation (bold) in the list to undo.

All operations in the queue that were performed after the operation you select are also undone. In the Undo History window, undoable operations are shown in bold and redoable operations (operations that have already been undone) are shown in italics.

### To redo operations in the Undo History window:

▪ Click the operation (italics) in the list to redo.

The operation you choose, as well as all the operations in the queue before it, are redone.

**To toggle display of creation times in the Undo History window:**

■ Click the Options pop-up menu and choose Show Creation Times.

**To undo all the operations in the Undo Queue:**

■ Click the Options pop-up menu and choose Undo All.

**To redo all the operations in the Redo Queue:**

■ Click the Options pop-up menu and choose Redo All.

**To clear the Undo Queue**

■ Click the Options pop-up menu and choose Clear Undo Queue.

Other operations that clear the Undo Queue include:

- Deleting a track, or clearing a region from the Region List
- Selecting "Select > Unused," or "Select > Unused Audio Except Whole Files" in the Region List pop-up menu

When the number of operations in the Undo History reaches the maximum level of Undo, performing another undoable operation removes the oldest operation at the top of the Undo History queue. When the oldest operation is one operation away from being pushed out of the queue, it is shown in red.

## Levels of Undo and Memory

Because Pro Tools needs to keep track of the playlists for all tracks that are edited, the use of multiple Levels of Undo can be memory intensive. You can lower the Levels of Undo in Pro Tools to reduce the amount of system memory (RAM) used by the Undo queue. If you have plenty of memory available for Pro Tools, you can use higher Levels Of Undo.

*Use the Undo History window to view a queue of undo operations and return to a previous state.*

**To set the Levels of Undo in Pro Tools:**

**1** Choose Setup > Preferences and click the Editing tab.

**2** Click in the Levels of Undo field and enter a value of between 1–32.



*Levels of Undo preference*

**3** Click OK.

# Basic Editing Commands

Pro Tools provides many standard edit commands (such as cut, copy, and paste). Pro Tools also provides many specialized edit commands that are optimized for audio and MIDI production (such as Repeat Paste to Fill).

## Cut, Copy, Paste, and Clear

Use the Cut, Copy, Paste, and Clear commands to rearrange and edit track material. Edits can operate on entire regions selected with the Time Grabber tool, or on track ranges selected with the Selector tool. Edits can also work across multiple tracks (see "Editing Across Multiple Tracks" on page 420).

☞ *You can cut, copy, and paste noncontiguous regions by selecting them with the Object Grabber tool.*

### Track View and Edit Content

When cutting or copying track material, the Track View determines the type of data placed on the Clipboard. When editing in a track's Master View (Waveform View for audio tracks and Notes View for MIDI or Instrument tracks), selections can include all underlying automation and controller data ("Automation Follows Edit Option" on page 785). Thus, cutting an audio region can also cut any volume, pan, mute, send, continuous controller, or plug-in automation that is also on the track. This saves you from having to individually cut from each automation playlist on the track.
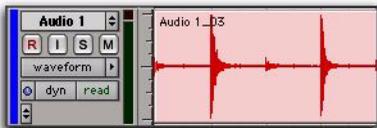


*Audio waveform data*

However, when selecting groups of MIDI notes with any of the Grabber tools (by drawing a rectangle around them), only the note data is placed on the Clipboard. When selecting a time range of MIDI notes with the Selector tool, all controller data in the track is selected (similar to selecting with the Selector tool for audio tracks in Waveform View).

When a track is displaying automation data or controller data, only that data is placed on the Clipboard. Also, whenever you cut or copy automation data, bounding breakpoints are created at each end of the selected area, in order to preserve the slope of the automation both inside and outside the selection.
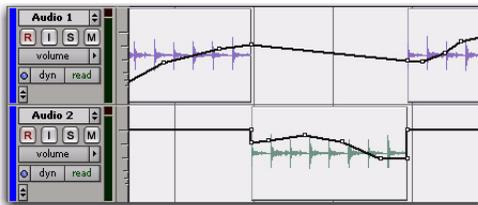


*Automation data (breakpoint-type data) with Cut and Pasted audio region*

☞ *Use Control+Start+V (Windows) or Command+Control+V (Mac) to special paste automation data into another automation type. For example, you can copy Pan automation into a Volume automation playlist.*

If tracks are grouped, copying and pasting on any of the tracks affects each of the other tracks in the group. Tracks that are hidden—even if they are part of a group being edited—are not affected by edits.

The Edit mode affects how material is selected, copied, and pasted:

- In Slip mode, the Cut command leaves an empty space corresponding to the data removed from the track.

- In Slip mode, pasted data can overlap an adjacent region.

- In Shuffle mode, the Cut command leaves no empty space, since the regions to the right of the cut slide over, closing the gap.

- In Shuffle mode, pasted data causes all regions to slide over to make room for the pasted material.

📖 *For more information on the Edit modes, see "Edit Modes" on page 421.*

New regions are often auto-created when performing edits. For instance, when clearing a selection from a region, new regions are auto-created from the material residing outside of the selection.

### Cut and Copy Commands

Use the Cut command to remove the selection from the track and place it on the Clipboard.

Use the Copy command to place a copy of the selection on the Clipboard so it can be pasted to another track, or to the same track at a different location, while leaving the original intact and in place.

**To cut or copy a selection or region:**

**1** If you want to constrain the selection to the current Grid value, set the Edit mode to Grid.

**2** Set the Track View for the tracks you want to edit.

When displaying waveforms for audio tracks, or notes or regions for MIDI tracks, selections include underlying automation and controller data. If the track is displaying automation data, only the automation data is affected by the edits.

**3** Make an Edit selection of the material you want to cut or copy.

📖 *For information on making Edit selections, see "Selecting Track Material" on page 449.*

**4** Do one of the following:

- Choose Edit > Cut to remove the selection and place it on the Clipboard.

– or –

- Choose Edit > Copy to place the selection on the Clipboard, without removing it.

If a portion of a region was cut or copied, the material on the Clipboard appears as a new region in the Region List. If a portion of a region was cut, new regions are auto-created from the material residing outside of the selection.

When working in Shuffle mode, any subsequent regions slide over to fill any empty space.

### Deleting Underlying Region Data

When removing a region or selection, you can choose to remove or keep the underlying region data.

**To delete a region or selection along with the underlying region data:**

■ Choose Edit > Cut.

**To delete a region or selection without removing the underlying region data:**

■ Choose Edit > Clear.

## Paste Command

Use the Paste command to place the contents of the Clipboard at the Edit insertion point, and overwrite any material already there.

**To paste a selection or region:**

**1** If you want to constrain the insertion point or the selection to the current Grid value, set the Edit mode to Grid.

**2** Do one of the following:

- With the Selector tool, click in a track at the point where you want to paste the material.

– or –

- Use the Selector or Time Grabber tool to make a selection where the material will be placed.

☞ *With the Grabber tool, Start-click (Windows) or Control-click (Mac) a region to conform it to the current selection.*

**3** Choose Edit > Paste.

If pasting at an insertion point in Shuffle mode, material to the right of the paste point is shifted to the right. In Slip mode, the material is overwritten.

If pasting into a selection in Shuffle mode, the selection is replaced by the Clipboard's contents with the adjacent material slid left or right as necessary. In Slip mode, the selection is also replaced but with the surrounding material remaining unchanged.

☞ *When working with MIDI, you can merge the contents of the Clipboard with material in the destination track using Edit > Paste Special > Merge. For more information, see "Paste Special" on page 809.*

## Clear Command

Use the Clear command to remove a selection from a track without placing it on the Clipboard.

**To clear a selection or region:**

**1** If you want to constrain the selection to the current Grid value, set the Edit mode to Grid.

**2** Set the Track View for the tracks you want to edit.

When displaying waveforms for audio tracks, or notes or regions for MIDI tracks, selections include underlying automation and controller data. If the track is displaying automation data, only the automation data is affected by the edits.

**3** Make an Edit selection.

**4** Choose Edit > Clear to remove the selection.

If a portion of a region was cleared, new regions are auto-created from the material residing outside of the selection. If working in Shuffle mode, any subsequent regions slide over to fill any empty space.

## Special Cut, Copy, Paste, and Clear Commands

Use the four "special" Edit menu commands (Cut Special, Copy Special, Paste Special, and Clear Special) for cutting, copying, pasting, and clearing automation (volume, pan, mute, and plug-in automation) on audio, Auxiliary Input, Master Fader, VCA Master, and Instrument tracks. These commands can also be used for MIDI controller data on MIDI and Instrument tracks.

⚠️ *You cannot paste MIDI controller data to automation data nor automation to MIDI.*

📖 *For more information, see "Cutting, Copying, and Pasting Automation" on page 806.*

## Repeat To Fill Selection

The Repeat to Fill Selection command lets you automatically fill a selection with audio or MIDI regions or data without requiring that you manually duplicate the regions. To use Repeat to Fill Selection, cut or copy a region, then make a selection and use the command to fill the selection. When pasting audio regions, you are prompted to specify a crossfade to be used for the pasted regions.

If you fill an area that is an exact multiple of the copied region size (for example, filling 16 bars with a 4-bar region), the copied selection is pasted as many times as it takes to fill the selection. If you fill an area that is not an exact multiple of the copied region size (for example, filling 15 seconds of a track with a 2-second region of room noise), the remaining selection area is filled with an automatically trimmed version of the original selection.

**To fill a selection with Repeat to Fill Selection:**

**1** Select the region you want to copy.

**2** Choose Edit > Copy.

**3** Select the area you want to fill using the Selector tool and choose Edit > Paste Special > Repeat to Fill Selection.

**4** Do one of the following:
- If pasting audio regions to larger areas, the Batch Fades dialog opens. Configure the dialog to create crossfades between each pasted region, then click OK.

– or –
- If you do not want crossfades for the pasted audio, click Cancel in the Batch Fades dialog.

# Editing Across Multiple Tracks

When working with data from multiple tracks, there are some important points to remember. For example, if any selected tracks are set to their master view (see "Master Views for Tracks" on page 152), edits affect not only audio and MIDI for the selected tracks, but *all* automation and controller data as well.

If all selected tracks are displayed as automation data, edits only affect the type of automation data displayed in each track. Furthermore, if track 1 displays Pan automation, track 2 displays Volume automation, and track 3 displays Mute automation, the Cut command cuts *only* pan data from track 1, volume data from track 2, and mute data from track 3.

📄 *For more information on selecting data on multiple tracks, see "Selecting Across Multiple Tracks" on page 455.*

**To copy all types of automation on all selected tracks when copying only automation or controller data:**

■ Choose Edit > Copy Special > All Automation.

**To paste to multiple tracks:**

**1** Do one of the following:

- Place the insertion point in each of the destination tracks by Shift-clicking in them

- Make a selection in one of the Timebase rulers.

**2** Choose Edit > Paste.

When you paste multiple types of data, whatever data has been copied is pasted into the correct type of playlist. Automation data is pasted into the corresponding automation playlist. Audio or MIDI data is pasted into the audio or MIDI playlist. You do not need to set target tracks to the specific type of data being pasted for the paste to work correctly.

If *all* destination tracks in a multitrack paste are displayed as automation, the paste replaces any previous data on the target track without shuffling—regardless of whether you are in Slip or Shuffle mode.

# Chapter 22: Editing Modes and Tools

## Edit Modes

Pro Tools has four Edit modes: Shuffle, Spot, Slip, and Grid. Grid mode provides two modes of operation, Relative and Absolute, explained below. The Edit mode is selected by clicking the corresponding button in the upper left of the Edit window.



*Edit mode buttons*

> ⇧ *You can also use F1 (Shuffle), F2 (Slip), F3 (Spot), and F4 (Grid) to set the Edit mode.*

The Edit mode affects the movement and placement of audio and MIDI regions (and MIDI notes), how commands like Copy and Paste function, and also how the various Edit tools (Trim, Selector, Grabber, and Pencil tools) work.

> ⇧ *Use the Accent key ( ` ) to toggle through the Edit modes.*

## Shuffle

In Shuffle mode, you can move, trim, delete, cut, or paste regions freely within a track or to other tracks, but their movement is constrained by other regions. That is, if you place several regions in a track, they automatically snap to each other. You can then "shuffle" their order, but you cannot separate them from each other and you cannot make them overlap as in Slip mode. However, if there is silence between existing regions, and the regions are shuffled, the silence is maintained, and not removed.

In Shuffle mode, adding another region to the beginning of a track moves all subsequent regions to the right (later in time) by the length of the added region.

When using any of the Trimmer tools in Shuffle mode, changing a region's start or end point automatically moves any subsequent regions as necessary. The placement and insertion of MIDI notes is not affected by Shuffle mode.

### Shuffle Lock

With certain workflows, it is important to exclude Shuffle mode in order to ensure that regions stay time-aligned while editing. Shuffle Lock prevents you from inadvertently entering Shuffle mode by disabling all key commands and control surface switches for Shuffle mode. You cannot invoke Shuffle Lock while in Shuffle mode.

**To lock out Shuffle Mode:**

■ While in any Edit mode other than Shuffle mode, Control-click (Windows) or Command-click (Mac) the Shuffle button on-screen. A lock icon appears in the Shuffle button.



*Lock icon indicating Shuffle Lock*

**To unlock Shuffle Mode:**

■ Control-click (Windows) or Command-click (Mac) the locked Shuffle button on-screen.

## Slip

In Slip mode, regions can be moved freely within a track or to other tracks. In this mode, it is possible to place a region so that there is space between it and other regions in a track. When the track is played back, this space is silent. It is also possible to move a region so that it overlaps or completely covers another region.

Use Slip mode when you want the Trim, Selector, Grabber, and Pencil tools to work without any restrictions to placement in time.

## Spot

Use Spot mode to place regions at precise locations. In Spot mode you can specify a frame location (or a location based on any of the other time formats), capture an incoming Time Code address, or use a region's time stamps as reference points for spotting. This can be particularly useful when performing post production tasks around SMPTE frame locations.

When Spot mode is enabled, Pro Tools asks you to specify a destination location when a region is dragged from the Region List, a DigiBase browser, Windows Explorer, or the Mac Finder.

## Grid

In Grid mode, regions and MIDI notes that are moved, trimmed or inserted "snap" to the currently selected Grid value, or to precise increments on a user-definable time grid.

### Absolute and Relative Grid

Grid mode can be applied in Absolute or Relative mode:

◆ In Absolute Grid mode, moving any region snaps the region start to Grid boundaries. If a region's start point falls between beats, and the Grid is set to 1/4 notes, dragging the region will *snap* its start time to the nearest 1/4 note (the current absolute Grid value).

◆ In Relative Grid mode, regions can be moved by Grid (or Nudge) *units*. If a region's start point falls between beats and the Grid is set to a 1/4 note (assuming the 1/4 note gets the beat), dragging the region will be constrained to 1/4 notes, preserving the region's relative position to the nearest beat. For more information on Relative Grid mode, see "Sliding Regions in Grid Mode" on page 656.

**To select Absolute or Relative Grid mode:**

■ Click the Grid mode selector and choose Absolute or Relative.

⌐ *To temporarily suspend Grid mode and switch to Slip mode while dragging a region, hold down the Control key (Windows) or Command key (Mac) after clicking the mouse.*

## Configuring the Grid

The actual Grid size, chosen from the Grid value pop-up menu can be based on a time value using the Main Time Scale; or, if Follow Main Time Scale is deselected, another time format can be used for the Grid size.

The Grid Value indicator and pop-up menu are located in the Edit window.
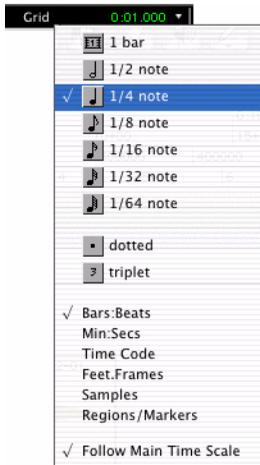


*Grid Value indicator and pop-up menu*

☼ *The current Grid value is also used for the Quantize to Grid command (see "Quantizing Regions to Grid" on page 474) and Separated Region At Grid command (see "Separate Region Commands" on page 466).*

Also available in the Grid Value pop-up is an option for Regions/Markers. When selected, events can be placed freely (as in Slip mode) but will snap to region locations (start, end, and sync points), markers, and Edit selections when placed near them.

☼ *MIDI notes inserted with the Pencil tool ignore the Regions/Markers option, and instead snap to the time value selected in the Grid Value pop-up menu.*

**To display the Grid lines in the Edit window, do one of the following:**

■ Choose Setup > Preferences and click the Display tab, then Enable Draw Grids in Edit Window.
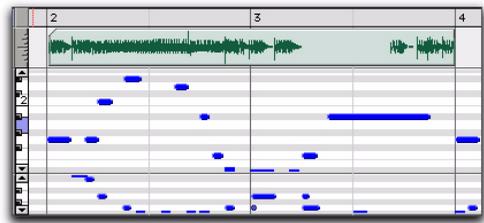


*Grid lines displayed in the Edit window with the Grid value set to 1/2 note*

– or –

■ Enable (and disable) Grid lines by clicking the currently selected Timebase ruler name.

Click to enable or disable Grid lines
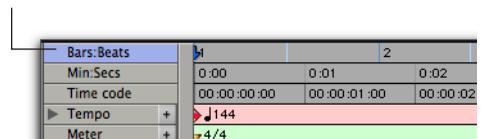


*Turning on Grid lines from a Timebase ruler*

# Edit Tools

Pro Tools has several Edit tools: the Zoomer, Trimmer, Selector, Grabber, Scrubber, and Pencil tools, and the multifunctional Smart Tool. Select an Edit tool by clicking it in the Edit window. The Zoomer, Trimmer, Grabber, and Pencil tools have multiple modes, which you can select from a pop-up menu when you click the tool.
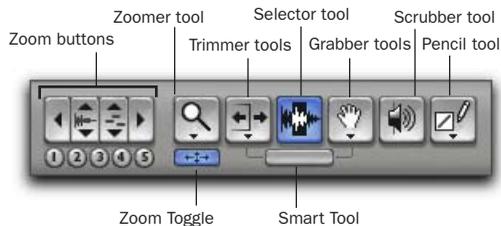


*Zoom buttons and Edit tools*

| ⇧ | *You can use F5 (Zoomer), F6 (Trimmer), F7 (Selector), and F8 (Grabber), F9 (Scrubber), and F10 (Pencil) to select the Edit tool and toggle through each tools' respective subset of tools.* |

| ⇧ | *Press the Escape key to toggle through the Edit tools.* |

**Zoom Buttons** Use the Zoom buttons to zoom in and out vertically and horizontally on MIDI and audio track material. You can also store and recall five Zoom presets.

**Zoomer Tool** Use the Zoomer tool to select a zoom view in a track.

**Zoom Toggle** Use the Zoom Toggle to switch between the current zoom view and a defined zoom view.

**Trimmer Tools** Use the Trimmer tools to trim regions and region groups.

**Selector Tool** Use the Selector to make selections on tracks.

**Grabber Tools** Use the Grabber tools to select, separate, or move regions on tracks.

**Smart Tool** Use the Smart tool to Trim, Select, or Grab regions in tracks.

**Scrubber Tool** Use the Scrubber tool to scrub through track material.

**Pencil Tool** Use the Pencil tool to draw automation and MIDI data.

| 📖 | *For information on using the Edit tools in Notes view on MIDI and Instrument tracks, see Chapter 27, "MIDI Editing."* |

| 📖 | *For information on using the Edit tools in Warp view and Analysis view on Elastic Audio–enabled tracks, see "Editing in Warp View" on page 511 and "Editing in Analysis View" on page 518.* |

# Using the Zoomer Tools

Zooming options in Pro Tools include Zoom buttons, the Zoomer tool, the Zoom Preset buttons, and the Zoom Toggle command.

## Zoom Buttons

Pro Tools includes different Zoom buttons for zooming in and out on track data.

### Horizontal Zoom In and Out Buttons

The Horizontal Zoom In and Out buttons let you zoom in and out horizontally on track data.



*Horizontal Zoom In button*

**To zoom in horizontally for all tracks, do one of the following:**

■ Click the Horizontal Zoom In button.

■ Press Control+] (Windows) or Command+] (Mac).

■ Click and drag on the Horizontal Zoom In button to zoom in continuously.

**To zoom out horizontally for all tracks, do one of the following:**

■ Click the Horizontal Zoom Out button.

■ Press Control+[ (Windows) or Command+[ (Mac).

■ Click and drag on the Horizontal Zoom Out button to zoom out continuously.

### Audio and MIDI Zoom In and Out Buttons

The Audio and MIDI Zoom buttons let you zoom in and out vertically on audio and MIDI data respectively.
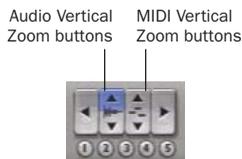


*Audio and MIDI Vertical Zoom buttons*

**To zoom in vertically for all audio tracks, do one of the following:**

■ Click the Audio Zoom In button.

■ Press Control+Alt+] (Windows) or Command+Option+] (Mac).

■ Click and drag on the Audio Zoom In button to zoom continuously.

**To zoom out vertically for all audio tracks, do one of the following:**

■ Click the Audio Zoom Out button.

■ Press Control+Alt+[ or Control+Alt+] (Windows) or Command+Option+[ or Command+Option+] (Mac).

■ Click the Audio Vertical Zoom buttons.

**To zoom in vertically for all MIDI and Instrument tracks, do one of the following:**

■ Click the MIDI Zoom In button.

   – or –

■ Press Control+Shift+] (Windows) or Command+Shift+] (Mac).

**To zoom out vertically for all MIDI and Instrument tracks, do one of the following:**

■ Click the MIDI Zoom Out button.

   – or –

■ Press Control+Shift+[ (Windows) or Command+Shift+[ (Mac).

**To zoom in or out vertically for a single MIDI or Instrument track:**

**1** Make sure the Track View is not set to Regions View.

**2** Select the Zoomer tool.

**3** Hold Start (Windows) or Control (Mac) and click and drag upwards to zoom in, or downward to zoom out.

## Additional Zoom Button Features

**To return to the previous zoom level, do one of the following:**

■ Alt-click (Windows) or Option-click (Mac) any of the Horizontal, Audio, or MIDI Zoom buttons.

– or –

■ Press Control+Alt+E (Windows) or Command+Option+E (Mac).

**To zoom in on a selection:**

■ Press Alt+F (Windows) or Option+F (Mac).

**To zoom so that all regions are visible in the Edit window, do one of the following:**

■ Double-click the Zoomer tool in the toolbar.

– or –

■ Press Alt+A (Windows) or Option+A (Mac).

## Zoomer Tool

Use the Zoomer tool to zoom in and out around a particular area within a track. The Zoomer tool offers two modes: Normal, and Single Zoom mode.

◆ In Normal Zoom mode, the Zoomer tool remains selected after zooming.

◆ In Single Zoom mode, the previously selected Edit tool is automatically reselected after zooming.

## Normal Zoomer Tool

**To zoom around a certain track point:**

**1** Enable Normal Zoom mode by doing one of the following:

- Click the Zoomer tool pop-up menu and select Normal Zoom mode.

– or –

- Press the F5 key to toggle to Normal Zoom mode.



*Zoomer tool*

**2** Click once with the Zoomer tool at a location within the track. All tracks are zoomed in by one level and the Edit window is centered around the zoomed location.

**3** To zoom back to the previous level, Alt-click (Window) or Option-click (Mac) with the Zoomer tool.

**To zoom into a particular track area:**

**1** Enable Normal Zoom mode by doing one of the following:

- Click the Zoomer tool pop-up menu and select Normal Zoom mode.

– or –

- Press the F5 key to toggle to Normal Zoom mode.

**2** Do any of the following:

• To zoom horizontally, drag with the Zoomer tool in the track's playlist.

– or –

• To zoom horizontally *and* vertically, press Control (Windows) or Command (Mac) while dragging in the track's playlist.
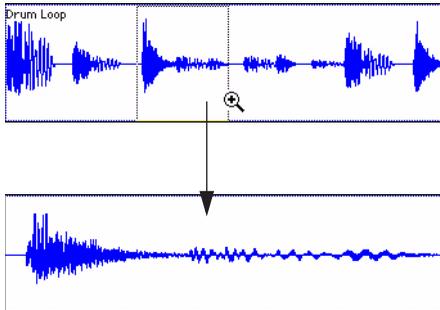


*Zooming horizontally with Zoomer tool*

The zoomed area fills the entire Edit window.

## Single Zoom Mode

Single Zoom mode returns you to the previously selected tool after a zoom has been performed.

For example, when using the Smart Tool you can click the Single Zoomer tool, and once the Zoom operation has been performed, Pro Tools automatically switches back to the Smart Tool.

### To use Single Zoom mode, do one of the following:

■ Click the Zoomer tool pop-up menu and select Single Zoom mode.

– or –

■ Press the F5 key to toggle to Single Zoom mode.

Single Zoom is identified with an arrow to the right of the Zoomer icon.



*Single Zoom mode*

Normal Zoom mode does not have the arrow.



*Normal Zoom mode*

## Zooming in a Ruler

### To zoom horizontally in a ruler:

**1** Press Control+Alt (Windows) or Command+Control (Mac) and move the cursor into the ruler area, so the Zoomer tool appears.
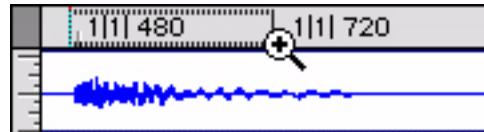


*Zooming in a ruler*

**2** Do one of the following:

• Click once to zoom in one level around a certain point.

– or –

• Drag to zoom in around a particular ruler range.

## Continuous Zoom with the Zoomer Tool

Use the Zoomer tool to zoom in or out continuously.

**To use continuous zoom on one track or a group of tracks:**

**1** Select the Zoomer tool.

**2** Hold the Start key (Windows) or Control (Mac) and do one of the following:

- Drag up to continuously zoom in vertically.
- Drag down to continuously zoom out vertically.
- Drag to the right to continuously zoom in horizontally.
- Drag to the left to continuously zoom out horizontally.

For horizontal zoom, all tracks zoom together. Tracks will zoom in or out centered horizontally on the location where you click.

### Vertical Zooming In or Out of All Audio Tracks Continuously

The continuous zoom feature usually only affects the track or group of tracks in which you click and drag up or down to zoom out or in. When using continuous zoom on audio tracks, you can choose to have all shown audio tracks zoom as one.

**To vertically zoom in or out of all audio tracks using continuous zoom:**

**1** Select the Zoomer tool.

**2** Do one of the following:

- Drag up or down on the Audio Zoom In button. Any waveform height offsets will be maintained.

  – or –

- Press Start+Shift (Windows) or Control+Shift (Mac) and drag up or down. When you release the mouse, all shown audio tracks will zoom to the same zoom level.

**To zoom all audio tracks and reset waveform display to the default height, do one of the following:**

- Double-click the Zoomer tool.

  – or –

- Press Alt+A (Windows) or Option+A (Mac).

**To set all audio track waveform heights to match the waveform height of the topmost audio track in the Edit window:**

- Control-Shift-click (Windows) or Command-Shift-click (Mac) any of the Zoom buttons. All waveform height offsets will be lost.

## Zoom Preset Buttons

Pro Tools lets you save up to five horizontal Edit window Zoom presets, which can be recalled by typing a number or by clicking a Zoom Preset button.

**To store a view as a Zoom preset:**

**1** Use the Zoomer tool to configure the Track View as desired.

**2** Click and hold one of the Zoom Preset buttons (1–5) and choose Save Zoom Preset from the Zoom Preset pop-up menu. The preset button flashes momentarily, and any previously stored Zoom preset at that number is replaced.



*Zoom Preset pop-up menu*

**To recall a saved Zoom preset, do one of the following:**

▪ Click the appropriate Zoom Preset button (1–5).

– or –

▪ Click and hold the Zoom Preset button and choose Recall Zoom Preset from the Zoom Preset pop-up menu.

## Zoom Toggle

Zoom Toggle lets you define and toggle between zoom states in the Edit window.

### Zoom Toggle Parameters

The Zoom Toggle stores and recalls the following parameters:

- Vertical Zoom
- Horizontal Zoom
- Track Height
- Track View
- Grid setting

### Zoom Toggle Preferences

The Zoom Toggle preferences determine how Zoom Toggle works. Adjust the Zoom Toggle preferences to fit your workflow.
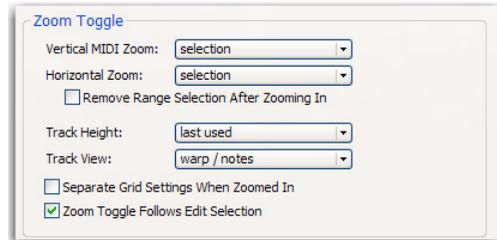


*Zoom Toggle preferences*

�☼ *For MIDI Editing, set the Zoom Toggle preferences as follows: Vertical Zoom to Last Used, Horizontal Zoom to Last Used, Track View to Waveform/Notes, and Track Height to Fit to Window.*

☼ *For audio editing, set the Zoom Toggle preferences as follows: Vertical Zoom to Selection, Horizontal Zoom to Selection, Track Height to Fit to Window, and Track View to No Change.*

### Vertical Zoom

**Selection** When selected, zoom toggling in zooms vertically to the current Edit Selection.

**Last Used** When selected, zoom toggling in zooms vertically to the last stored Zoom Toggle state for MIDI notes in Notes view only.

### Horizontal Zoom

**Selection** When selected, zoom toggling in zooms horizontally to the current selection. This is especially useful for audio editing.

**Last Used** When selected, zoom toggling in zooms horizontally to the last stored Zoom Toggle state. This option can emulate a separate editor window. This is especially useful for editing MIDI notes.

### Remove Range Selection After Zooming In

When the Remove Range Selection After Zooming In option is selected, the current Edit selection collapses into an insertion point after zoom toggling in.

### Track Height

**Last Used** When selected, zoom toggling in changes all tracks containing an Edit Selection to the last used Track Height.

**Medium** When selected, zoom toggling in changes all tracks containing an Edit Selection to the Medium Track Height.

**Large** When selected, zoom toggling in changes all tracks containing an Edit Selection to the Large Track Height.

**Jumbo** When selected, zoom toggling in changes all tracks containing an Edit Selection to the Jumbo Track Height.

**Extreme** When selected, zoom toggling in changes all tracks containing an Edit Selection to the Extreme Track Height.

**Fit To Window** When selected, zoom toggling in changes all tracks containing an Edit Selection to the Fit To Window Track Height.

### Track View

**Waveform/Notes** When selected, zoom toggling in changes the Track View for audio tracks to Waveform view, and changes the Track View for Instrument and MIDI tracks to Notes view.

**Warp/Notes** When selected, zoom toggling in changes the Track View for audio tracks to Warp view, and changes the Track View for Instrument and MIDI tracks to Notes view.

**Last Used** When selected, zoom toggling in changes the Track View to the last used Track View that was stored with Zoom Toggle.

**No Change** When selected, the track view does not change when zoom toggling in or out.

### Separate Grid Settings When Zoomed In

When selected, this option retains the same (current) grid setting when zoom toggling in or out. When this option is deselected, the grid setting stored with Zoom toggle is recalled when zoom toggling in.

### Zoom Toggle Follows Edit Selection

When selected, this option ensures that zoom toggle automatically follows the current Edit selection. When disabled, changing the Edit selection has no affect on the currently toggled-in track.

## Using Zoom Toggle

Depending on the Zoom Toggle preferences settings, the Zoom Toggle button in the Edit window lets you define a zoom state and toggle between it and the current zoom state, or it zooms to the settings in the Zoom Toggle preferences. When Zoom Toggle is enabled, the Edit window displays the stored zoom state. Additionally, any changes made to the view while Zoom Toggle is enabled are also stored in the zoom state.

When Zoom Toggle is disabled, the Edit window reverts to the last zoom state.

**To store a zoom state using Zoom Toggle:**

**1** Set the Zoom Toggle preferences.

**2** Make an Edit selection.

**3** Click the Zoom Toggle button. It lights to indicate that Zoom Toggle is enabled and Pro Tools zoom toggles in based on the settings of the Zoom Toggle preferences.



Zoom Toggle button

*Zoom Toggle button in the Edit window*

If Last Used is selected for any of the following, you can adjust the corresponding zoom, height, or view in the Edit window to update the stored zoom state:

- Vertical Zoom
- Horizontal Zoom
- Track Height
- Track View

*In Commands Keyboard Focus mode (see "Keyboard Focus" on page 20), press the E key to enable or disable Zoom Toggle.*

**To modify the stored Zoom Toggle state, do one of the following:**

■ Change the Zoom Toggle preferences.

– or –

■ If Last Used is selected for any of the Vertical Zoom, Horizontal Zoom, Track Height, or Track View preferences, do the following:

- Make sure the Zoom Toggle button is lit (enabled).

– and –

- Adjust the Track Height, Vertical Zoom, Track View, or the Grid depending on which preferences are set to Last Used. Changes are stored as the new Zoom Toggle state.

**To clear the stored Zoom Toggle state:**

**1** Make sure the Zoom Toggle button is lit (enabled).

**2** Alt-click (Windows) or Option-click (Mac) the Zoom Toggle button.

**To use Zoom Toggle without changing playlist views:**

**1** Make a selection on one or more tracks.

**2** Do one of the following:

- Press Alt+Start+E (Windows) or Option+Control+E (Mac).

– or –

- With Commands Keyboard Focus enabled (see "Keyboard Focus" on page 20), press Alt+E (Windows) or Option+E (Mac).
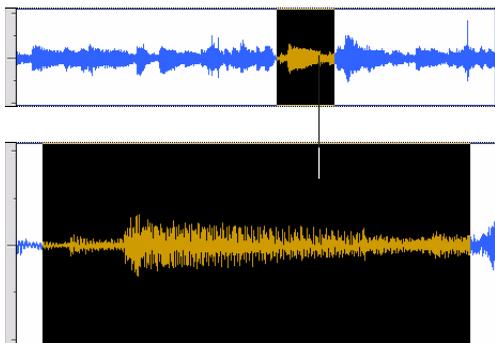


*Using the Zoom Toggle*

## Auto-Toggle When Changing Selection

When Zoom Toggle is enabled, selecting a different range of material, or selecting material on a different track affects Zoom Toggle as follows:

- Changing the selection length does not re-zoom the window, the current zoom level is maintained.

- Changing the selection to a different track sets the toggle-in state for track height and view. However, horizontal zoom remains unchanged. When moving the selection from a toggled in track, the toggled out track height and view are restored.

⚠ *Auto-Toggle does not work for Edit selections across multiple tracks that are Zoom-toggled to Fit to Window.*

# Zooming with a Scroll Wheel

If you have a mouse with a scroll wheel, you can use the scroll wheel to zoom in and out of tracks, both vertically and horizontally.

**To continuously zoom in the Edit window (horizontal zoom):**

■ Hold Alt (Windows) or Option (Mac) while turning the mouse scroll wheel.

**To continuously zoom audio (vertical zoom) in the Edit window:**

■ Hold Alt+Shift (Windows) or Option+Shift (Mac) while turning the mouse scroll wheel.

**To continuously zoom MIDI (vertical zoom) in the Edit window:**

■ Hold Alt+Start (Windows) or Option+Control (Mac) while turning the mouse scroll wheel.

**To scroll the contents of the Edit window or Mix window horizontally:**

**1** Focus the window you want to scroll by clicking in it or bringing it forward.

**2** Hold the Shift key while turning the mouse scroll wheel.

# Using the Trimmer Tools

Trimmer tools provide region, note, and data trimming functions. The following Trimmer tools are available:

- Trimmer tool; also called Standard Trimmer tool
- Time Compression/Expansion Trimmer tool; also called TCE Trimmer tool
- Scrub Trimmer tool (Pro Tools HD only)
- Loop Trimmer tool

The Standard and Scrub Trimmer tools are only constrained by the boundaries of the whole-audio file referenced by the region. The TCE Trimmer tool is only constrained by the maximum TCE amount when using the TCE Trimmer tool.

## Trimmer Tool

With the Trimmer tool, you can quickly shorten or expand a region (up to the entire length of the source audio file). The first time you trim a region, Pro Tools automatically adds it to the Region List as a new region (with a name derived from the original) in order to differentiate it from the original.

The Trimmer tool is a nondestructive tool and does not actually modify the original audio or MIDI data (when working on regions). To return to the length of the original region, drag it from the Region List, or resize the edited region with the Trimmer tool to its original length.

Use of the Trimmer tool is affected by the current Edit mode: Shuffle, Slip, Spot, or Grid (see "Edit Modes" on page 421).

*The Trimmer tool can also be used to lengthen and shorten MIDI notes (see "Trimming Note Start and End Times" on page 534), and also to scale automation and controller data up or down "Drawing Automation" on page 801.*

**To trim a region with the Trimmer tool:**

**1** Select the Trimmer tool.

**2** With Pro Tools HD, click the Trimmer tool pop-up menu and select "Standard."



*Trimmer tool*

**3** Move the cursor near the start or end of the region, so the Trimmer Tool cursor appears.



*Trimmer tool*

To reverse the direction of the Trimmer tool, press Alt (Windows) or Option (Mac).

**4** Do one of the following:

- If trimming the end, drag left to shorten the region, right to lengthen.

– or –

- If trimming the start, drag right to shorten the region, left to lengthen.

*When working with audio, you cannot trim past the boundaries of adjacent regions.*

When trimming regions in a stereo or multi-channel track, all channels are trimmed.

When using Shuffle mode, subsequent regions are slid as necessary to make room for the edited region. If using Grid mode, the dragged start/end times snap to the nearest Grid boundary. If using Spot mode, the Spot dialog opens, where you can enter the new location for the region's start or end point.

## Time Compression/Expansion Trimmer Tool

The Time Compression/Expansion Trimmer tool (TCE Trimmer) is a convenient tool for matching an audio region to the length of another region, a tempo grid, a video scene, or to practically any other reference point you want.



*Time Compression/Expansion Trimmer tool over a region*

⚠ *The TCE Trimmer tool unloops and consolidates looped regions.*

💡 *With Pro Tools HD or LE with DV Toolkit 2, you can match an Edit selection to the length of a Timeline selection by selecting Edit > TCE Edit to Timeline Selection command (see "TCE (Time Compression and Expansion) Edit To Timeline Selection" on page 477.*

## Elastic Audio TCE Trimmer Tool

On Elastic Audio–enabled tracks, the TCE tool uses the track's selected Elastic Audio plug-in (Real-Time or Rendered) to apply Real-Time or Rendered Elastic Audio processing. The resulting region displays a Warp indicator to indicate Elastic Audio processing.

📄 *For information on Elastic Audio plug-ins, see "Elastic Audio Plug-ins" on page 507.*

## AudioSuite TCE Trim Tool

On audio tracks without Elastic Audio enabled, the Time Compression/Expansion Trimmer tool works by using the Time Compression/Expansion (TCE) AudioSuite plug-in selected in the Pro Tools Processing preferences to create a new audio file.

### Time Compression/Expansion Plug-in Preferences

You can select which AudioSuite plug-in is used for trimming with the TCE Trimmer tool on non-Elastic Audio–enabled audio tracks.

**To set the AudioSuite plug-in for use with the TCE Trimmer tool:**

**1** Choose Setup > Preferences.

**2** Click the Processing tab.

**3** From the TC/E Plug-in pop-up menu, select the AudioSuite plug-in to be used with the Time Compression/Expansion Trimmer tool.



*TC/E Preferences*

**4** From the Default Settings pop-up menu, select the plug-in setting.

**5** Click OK.

📖 *Refer to the DigiRack Plug-ins Guide for more information about AudioSuite plug-ins.*

### Using the TCE Trimmer Tool in Grid Mode

The TCE Trimmer tool can be used in Grid mode to match a region to the tempo of a session or a section of a session. For example, you might import a one-bar drum loop with a tempo of 90 BPM into a session with a tempo of 120 BPM. In Grid mode, you can use this tool to simply and quickly "time compress" the drum loop to the length of one measure, with no noticeable to minimal loss of audio fidelity.

⚠️ *Trimming regions while in Relative Grid mode will trim the regions in grid increments while maintaining their relative offset (if any) from the grid.*

**To use the TCE Trimmer tool in Grid mode:**

**1** Set the Edit mode to Grid.

**2** Click the Trimmer tool pop-up menu and select TCE.



*Time Compression/Expansion Trimmer tool*

**3** With the TCE Trimmer tool, drag the audio region's start or end point to compress or expand the region to the Grid (for example, by quarter notes).

### Using the TCE Trimmer Tool in Slip Mode

**To use the TCE Trimmer tool in Slip mode:**

**1** Set the Edit mode to Slip.

**2** Click the Trimmer tool pop-up menu and select TCE.

**3** With the TCE Trimmer tool, drag the region's start or end point to compress or expand the region freely.

### Using the TCE Trimmer Tool in Spot Mode

In Spot mode, clicking with the TCE Trimmer tool in a region opens the Spot dialog. You can specify the location you want the region to start or end at, or the duration of the region, and the region is automatically compressed or expanded as specified.

**To use the TCE Trimmer tool in Spot mode:**

**1** Set the Edit mode to Spot.

**2** Click the Trimmer tool pop-up menu and select TCE.

**3** Click the region near its start or end point. The Spot dialog opens. Using any Time Scale, enter a new start or end time (or duration) for the region, then click OK.

## Scrub Trimmer Tool

### (Pro Tools HD Only)

The Scrub Trimmer tool is a convenient tool for auditioning material (on up to two tracks) to find a trim point. You can drag in a track to hear the audio information, then trim at a specific location by releasing the mouse button.

This action creates a new region. Note that the Scrub Trimmer tool changes into a "right trim" or "left trim" shape as it is placed over the right or left side of a region. To reverse the direction of the Scrub Trimmer tool, press Alt (Windows) or Option (Mac) before you click the region.
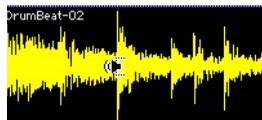


*Scrub Trimmer tool over a region*

Scrub playback speed and direction vary with controller movement. Scrubbed audio is routed through the track signal path, so you hear any effects in the signal path.

**To scrub trim a track:**

**1** Click the Trimmer tool pop-up menu and select Scrub. The tool changes to a speaker with a bracket.

**2** Drag within a track to the left or right. Audio from a scrubbed track is routed through the track signal path, including any TDM effects. When you locate the trim point, release the mouse button to trim the region.

To scrub trim two tracks, click with the Scrub Trimmer tool between two adjacent tracks and drag.

To scrub with finer resolution (without having to zoom in), press Control (Windows) or Command (Mac) while scrubbing.

## Loop Trimmer Tool

Use the Loop Trimmer tool to create or trim looped regions.



*Loop Trimmer tool*

📄 *For more information on looping regions, see "Region Looping" on page 671.*

## Creating Loops with the Loop Trimmer Tool

**To create loop regions using the Loop Trimmer tool:**

**1** Click the Trimmer tool icon in the Edit window to access the Trimmer Tool pop-up menu.

**2** Select Loop.

**3** Position the cursor over the top half of an unlooped audio or MIDI region, or region group. The cursor changes to indicate that you can loop trim the region. (Positioning the cursor over the bottom half of the region results in the Standard Trim cursor.)



*Loop Trim cursor*

**4** Do one of the following:

- Click at the end of the region, and drag left or right to the point you want the loop to stop.

– or –

- Click at the beginning of the region, and drag left or right to the point you want the loop to start.
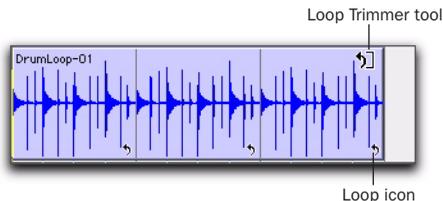


*Looped region*

## Trimming Looped Regions

You can trim looped regions in two ways:

- Loop Trim a looped region to change how long the region is looped. For example, Loop Trim a looped region from 2 bars to four bars. With a 1 bar region, the number of loops changes from 2 to 4. Each loop iteration remains the same length, but the length of the entire looped region changes.

- Trim the source region (loop iteration) while keeping the overall loop length unchanged. The number of loop iterations within the looped region changes accordingly. For example, trim a 2 bar loop iteration of a 4 bar looped region to 1 bar. The 4 bar looped region remains constant, but the number of loop iterations changes from 2 to 4. Each loop iteration's length changes, but how long the region is looped does not.

**To Loop Trim a looped region:**

**1** Select the Loop Trimmer tool.

**2** Move the cursor over the top half of the looped region (not over a Loop icon). The cursor indicates the Loop Trimmer tool.
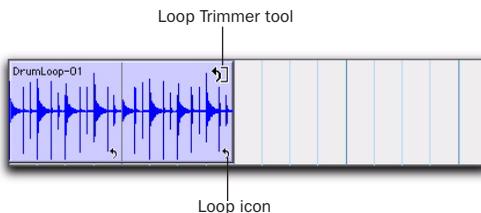


*Looped region*

**3** Trim the looped region.



*Loop trimming a looped region*

The number of loops increases or decreases to fill the new length of the entire looped region.

*Hold down the Start key on Windows, or the Control key on Mac, while trimming to trim in loop iteration increments.*

*Trimming a looped region does not trim any underlying Fades.*

**To trim the source region (loop iteration) of a looped region:**

**1** Select the Loop Trimmer tool.

**2** Move the cursor over a Loop icon in the looped region, or anywhere along the bottom of the region. The cursor indicates the Trimmer tool icon.
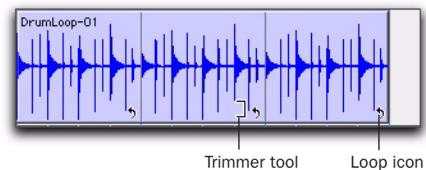


*Looped region*

**3** Trim the start or end of the loop iteration.



*Trimming a looped region*

The number of trimmed loop iterations increases or decreases to fill the original length of the entire looped region.



*Trimmed looped region*

# Using the Selector Tool

Use the Selector tool to place the edit cursor in a track or Timebase ruler, or to make Timeline selections or Edit selections on tracks. For more information on making selections, also see Chapter 23, "Making Selections."

## Placing the Edit Cursor

**To place the edit cursor with the Selector tool:**

**1** Select the Selector tool in the Edit window.

**2** Click the desired location in a track or on a Timebase ruler.



*Placing the edit cursor with the Selector tool*

## Making an Edit Selection with the Selector Tool

**To make an Edit selection with the Selector tool:**

**1** Select the Selector tool in the Edit window.

**2** Do one of the following:
- To make an Edit selection in a single track, click and drag in the track.
- To make an Edit selection across multiple tracks, click and drag across the tracks.
- If Link Timeline and Edit Selection is enabled, click and drag on Timebase ruler to make an Edit selection across all tracks.
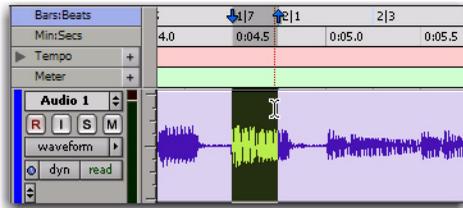


*Making a selection with the Selector tool*

**To select an entire region with the Selector tool:**

**1** Select the Selector tool in the Edit window.

**2** Double-click the desired region on a track.

**To select an entire track with the Selector tool:**

**1** Select the Selector tool in the Edit window.

**2** Triple-click the desired track.

## Making a Timeline Selection with the Selector Tool

**To make a Timeline selection with the Selector tool:**

**1** Select the Selector tool in the Edit window.

**2** Do one of the following:
- Click and drag in a on Timebase ruler.

– or –
- If Link Timeline and Edit Selection is enabled, click and drag in a track.

# Using the Grabber Tools

Use the Grabber tools to select, move, separate, and arrange regions on tracks. There are three modes for the Grabber tool: Time Grabber, Separation Grabber, and Object Grabber. For more information about arranging regions, also see Chapter 32, "Arranging Regions."

**Time Grabber** Selects an entire region on a track with a single click. For more information on selecting regions, see "Selecting Track Material" on page 449.



*Time Grabber tool*

**Separation Grabber** Cuts and pastes an Edit selection from one location to another by clicking and dragging. For more information, see "Separation Grabber Tool" on page 468.



*Separation Grabber tool*

**Object Grabber** Lets you select multiple, noncontiguous regions. For more information, see "Object Selections" on page 451.



*Object Grabber tool*

### To select one of the Grabber tools:

**1** Click and hold the Grabber tool in the Edit window.

**2** From the Grabber tool pop-up menu, select the desired Grabber tool.
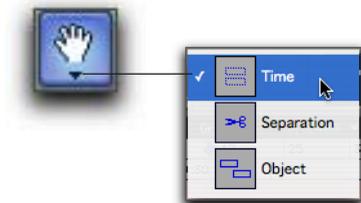


*Selecting a Grabber tool*

# Using the Smart Tool

With the Smart Tool, you can instantly access the Selector, Grabber, and Trimmer tools, and you can also perform fades and crossfades. The position of the cursor in relation to a region or note, or within an automation playlist, determines how the Smart Tool functions.



*Smart Tool in Edit window*

To select the Smart Tool, click its icon in the upper left of the Edit window, or press F6+F7 (or F7+F8) simultaneously.

## The Smart Tool in Waveform View (or MIDI Track Regions View)
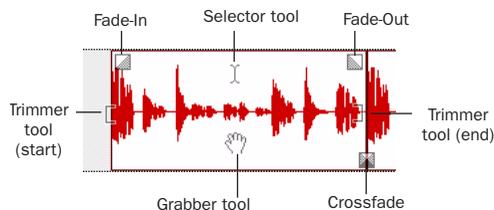


*Smart Tool in Waveform View*

The following capabilities are available with the Smart Tool when working with audio tracks in Waveform or Blocks View, or MIDI or Instrument tracks in Regions View:

◆ For the Selector tool, position the cursor over the middle of the region, in the upper half of the region.

◆ For the Grabber tool, position the cursor over the middle of a region, in the lower half of the region.

◆ For the Trimmer tool, position the cursor near the region's start or end point.

◆ For a fade-in or fade-out, position the cursor near an audio region's start or end point, near the top of the region. Once the Fade cursor appears, drag into the region to set the fade length. The fade is created automatically with the Default Fade Settings (in the Editing Preferences page).

◆ For a crossfade, position the cursor between two adjacent audio regions, near the bottom of the region. Once the Crossfade cursor appears drag left or right to set the crossfade length. The crossfade is created automatically with the Default Fade Settings (in the Editing Preferences page).

⇧ *To temporarily switch the Smart Tool to the Scrubber, place the cursor over the region so that the Selector tool is enabled, then press Start (Windows) or Control (Mac).*

### The Smart Tool in Warp View
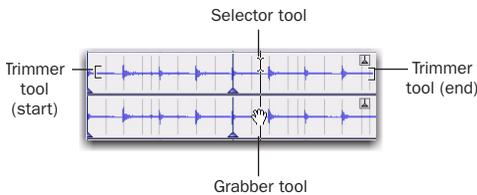


*Smart Tool in Warp View*

The following capabilities are available with the Smart Tool when working with Elastic Audio–enabled audio tracks in Warp View, or MIDI or Instrument tracks in Regions View:

◆ For the Selector tool, position the cursor over the middle of the region, in the upper half of the region.

◆ For the Grabber tool, position the cursor over the middle of a region, in the lower half of the region, but not over an Event marker or Warp marker.

◆ For Elastic Audio warping, position the cursor over an Event marker or a Warp marker, in the lower half of the region (for more information on warping audio, see "Editing in Warp View" on page 511).

◆ For the Trimmer tool, position the cursor near the region's start or end point, in the upper half of the region.

⇧ *To temporarily switch the Smart Tool to the Scrubber, place the cursor in the upper half of the region so that the Selector tool is enabled, then press Start (Windows) or Control (Mac).*

### The Smart Tool in Notes View
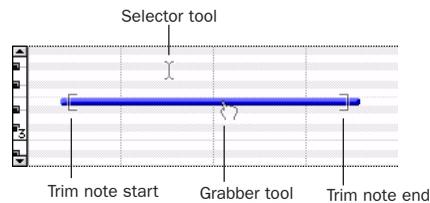


*Smart Tool in Notes View*

The following capabilities are available with the Smart Tool when working with MIDI and Instrument tracks in Notes View:

◆ For the Selector tool, position the cursor so it does not cover any notes.

◆ To get the Selector tool while positioning the cursor over notes, press Control (Windows) or Command (Mac).

◆ For the Grabber tool, position the cursor over the note, near its middle.

◆ To get the Marquee so you can select a group of notes, position the cursor so it does not cover any notes and press Control (Windows) or Command (Mac).

◆ For the Trimmer tool, position the cursor near the note's start or end point.

□ *To temporarily switch the Smart Tool to the Pencil tool, press Start (Windows) or Control (Mac).*

□ *To temporarily switch the Smart Tool to the Eraser, press Alt+Start (Windows) or Option+Control (Mac).*

### The Smart Tool in Automation and Controller Views

The following capabilities are available with the Smart Tool when working in both automation and controller views:

◆ For the Selector tool, position the cursor anywhere in the bottom 75% of the playlist for the Selector tool. Drag with the Selector tool to select breakpoints.

◆ For Trimmer tools, position the cursor in the top 25% of the playlist for the Trimmer tool. Drag with the Trimmer tool to trim breakpoints. Press Control (Windows) or Command (Mac) while trimming for fine control.

◆ For Grabber tools, Control (Windows) or Command (Mac) for the Grabber tool, then click in on the automation line to create breakpoints

To edit existing breakpoints, move the cursor near a breakpoint for the Grabber tool.

For fine control with the Grabber tool, press Control (Windows) or Command (Mac)—or continue to hold the key if you are creating a new breakpoint.

To vertically constrain Grabber tool movement, press Shift.

To vertically constrain Grabber tool movement with fine control, press Control+Shift (Windows) or Command+Shift (Mac).

### The Smart Tool with Stereo and Multichannel Tracks

When using the Smart Tool on stereo and multichannel tracks, individual channels cannot be independently edited. All edits affect all channels as a whole.

Tool switching for the Smart Tool in stereo and multichannel tracks is determined by the position within the entire track, and not within individual channels.

## Using the Scrubber Tool

The Scrubber tool lets you "scrub" up to two tracks of audio in the Edit Window. Scrubbing is a technique that originated in tape editing, where the tape was rocked back and forth past the playhead at slower than normal speeds to find a particular location (usually for cutting and splicing).

While viewing an audio waveform in Pro Tools can be helpful in visually finding an edit point, sometimes a waveform display (because of its sonic characteristics) may not reveal the desired spot in the audio material. By scrubbing back and forth in Pro Tools, you can listen and locate an exact edit point.

When the Edit Insertion Follows Scrub/Shuttle option is enabled in the Operation Preferences page, the edit cursor automatically locates to the point where scrubbing stops.

When the Scrolling option is set to Continuous (Pro Tools HD and LE with DV Toolkit 2 only) or Center Playhead (Pro Tools HD only), clicking with the Scrubber in a track's playlist centers the

Edit window around that point, and moves the Playhead there. With these Scrolling Options, scrubbed material moves past the Playhead, which remains stationary and centered.

💡 *Scrubbing is only supported for audio tracks. MIDI and Instrument tracks cannot be scrubbed.*

**To scrub a single audio track:**

**1** Select the Scrubber tool.

**2** Drag within the track: left for reverse or right for forward.



*Scrubbing an audio track with the Scrubber*

The distance and speed with which you drag (with either the mouse, or the scrub wheel on a control surface) determine the length and speed of the scrubbed audio. Audio from the scrubbed track is routed to its output, along with any effects assigned to the track.

The resolution for the Scrubber is dependent on the zoom factor for the scrubbed track.

💡 *You can temporarily switch the Selector tool to the Scrubber tool by Start-clicking (Windows) or Control-clicking (Mac). For finer resolution, Control-Start-click (Windows) or Command-Control-click (Mac).*

**To scrub multiple audio tracks, do one of the following:**

■ With the Scrubber selected, drag between two adjacent tracks.
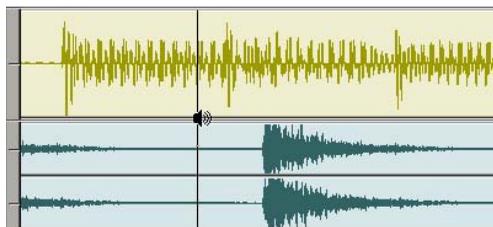


*Scrubbing between two audio tracks*

– or –

■ Scrub within a selection that contains multiple tracks.

When scrubbing multiple tracks, only the first two tracks are heard.

⚠ *The maximum number of channels scrubbed in Pro Tools is eight, which lets you scrub a 7.1 track, two stereo tracks (four channels), but not two 5.1 surround tracks (12 channels).*

### Scrub/Shuttle Mode

When scrubbing normally, you can scrub at normal playback speeds or slower. Scrub/Shuttle mode, however, lets you scrub at several times normal speed, which is helpful in playing through large ranges and locating material.

**To scrub in Shuttle mode (at several times normal speed):**

**1** Select the Scrubber tool.

**2** While pressing Alt (Windows) or Option (Mac), drag within the track—left for reverse, right for forward. The Fast Forward and Rewind buttons in the Transport window engage.

The distance and speed dragged determine the speed for the scrubbed audio.

## Shuttle Lock Mode

Shuttle Lock mode lets you use the numeric keypad to shuttle up to two tracks forward or backwards at specific speeds: 5 is normal speed, numbers from 6 up to 9 provide increasingly faster fast-forward speeds, and numbers from 4 down to 1 provide progressively faster rewind speeds (4 is the slowest rewind Shuttle Lock speed, 1 is the fastest). If multiple tracks are selected, only the first two tracks are shuttled.

**To play one or two tracks with the shuttle lock:**

**1** With Pro Tools HD, make sure the Operation preference for Numeric Keypad mode is not set to Shuttle (see "Operation Preferences" on page 76).

**2** With the Selector tool, click in the track where you want playback to begin. To shuttle on two tracks, Shift-click in a second track.

**3** Press the Start key (Windows) or Control (Mac) and a number on the numeric keypad: 0–9 (9 is fastest, 5 is normal speed, and 0 stops shuttling).

Once Shuttle Lock mode is initiated, Fast Forward and Rewind become highlighted in the Transport window.

**4** Press additional keys to change the playback speed, or press Plus (+) or Minus (–) to switch the playback direction (plus for forward, minus for backward).

**5** To stop playback, press Start+0 (Windows) or Control+0 (Mac).

**To exit Shuttle Lock mode, do one of the following:**

■ Press Stop in the Transport window.

– or –

■ Press the Spacebar.

## Custom Shuttle Lock Speed

Use the Custom Shuttle Lock Speed preference to customize the highest fast-forward Shuttle Lock speed (key 9) to better match your editing and auditioning needs.

**To configure Custom Shuttle Lock Speed:**

**1** In Pro Tools, select Setup > Preferences and click the Operation tab.

**2** Be sure that the Numeric Keypad mode is set to Transport or Classic (see "Operation Preferences" on page 76).

**3** Enter a desired percentage for the Custom Shuttle Lock Speed setting. The range for this setting is 50–800%. You can use the Up and Down Arrow keys to increase or decrease the setting.

**4** Click OK.

The Custom Shuttle Lock Speed will be saved with your Pro Tools preferences (not with the session).

**To enable Custom Shuttle Lock Speed:**

■ Press Start+9 (Windows) or Control+ 9 (Mac) on the numeric keypad.

## Numeric Keypad Set to Shuttle

### (Pro Tools HD Only)

Pro Tools offers another form of shuttling, different from that of Shuttle Lock mode. With the Numeric Keypad mode set to Shuttle, playback of the current Edit selection is triggered by pressing and holding the keys on the numeric keypad—playback stops once the keys are released. Various playback speeds are available in both forward and reverse. In this mode, pre- and post-roll are ignored.

**To shuttle with the Numeric Keypad mode set to Shuttle:**

**1** Choose Setup > Preferences and click the Operation tab.

**2** Set the Numeric Keypad mode to Shuttle and click OK.

**3** With the Selector tool, click in the track where you want playback to begin. To shuttle on two tracks, Shift-click in a second track.

**4** Press and hold any of the following keys (or key combinations) on the numeric keypad to trigger playback.

| Shuttle Speed | Rewind Key | Forward Key |
|---|---|---|
| 1 X Speed | 4 | 6 |
| 4 X Speed | 7 | 9 |
| 1/4 X Speed | 1 | 3 |
| 1/2 X Speed | 4+5 | 5+6 |
| 2 X Speed | 7+8 | 8+9 |

**5** Press a different key to switch the playback direction or speed. Release to stop.

## Using the Pencil Tool

The Pencil tool lets you draw audio waveforms (at the sample level), tempo changes, MIDI data, and automation.

📖 *For information on drawing tempo changes, see "Editing Tempo Events in the Tempo Editor" on page 608.*

📖 *For information on drawing MIDI data, see "The Pencil Tool" on page 528.*

📖 *For information on drawing automation, see "Drawing Automation" on page 801.*

## Waveform Repair with the Pencil Tool

On audio tracks, the Pencil tool lets you destructively "redraw" waveform data. This tool is most commonly used to repair a pop or click in an audio file. A pop or click appears as a sudden sharp spike in a waveform. This tool only becomes active when the Edit window is zoomed in to the sample level.

⚠ *The Pencil tool is a destructive editing tool that permanently modifies the audio file on disk and should be used with caution.*

Although you can Undo a Pencil tool edit, it is recommended that you create a backup copy of the target audio, before using the Pencil tool. You can do this by using the AudioSuite Duplicate plug-in.

📖 *Refer to the DigiRack Plug-ins Guide for information about the AudioSuite Duplicate plug-in.*

**To destructively edit an audio waveform with the Pencil tool:**

**1** Locate the area you want to edit.

**2** Using the Zoomer tool or the Zoom buttons, zoom down to the sample level so the waveform appears as a continuous thin line. Adjust the Track Height, as necessary, to edit the waveform with greater precision. You can also use vertical zoom for greater visual resolution.

💡 *You can recall zoom levels with the Zoom Preset buttons (see "Using the Zoomer Tools" on page 424), or with Memory Locations (see "Memory Locations and Markers" on page 637). The default setting for Zoom Preset 5 is at the sample level for Pencil editing.*

**3** Select the Pencil tool.



*Pencil tool*

**4** Carefully draw with the Pencil tool by dragging over the area of the waveform.

Do not over-edit or the results may be undesirable. However, you can use the Undo command to undo your previous edit.
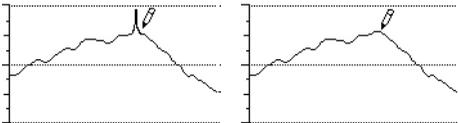


*Repairing a "pop" with the Pencil tool*

The Pencil tool can independently edit different channels of a multichannel track.

Try to limit editing to smoothing over a very small problem area, and keep the "fixes" in character with the shape of the surrounding waveform.

# Chapter 23: Making Selections

## Linking or Unlinking Timeline and Edit Selections

Pro Tools lets you link or unlink the Timeline and Edit selections.

When the Timeline and Edit selections are linked, selecting in a track's playlist (making an Edit selection) also defines the play and record range (the Timeline selection).

Unlinking Timeline and Edit selections lets you make a selection within a track for editing purposes that is distinct from the selection in the Timeline (which determines the playback and recording range).

**To link or unlink the Timeline and Edit selections, do one of the following:**

■ Select or deselect Options > Link Timeline and Edit Selection.

– or –

■ In the upper left of the Edit window, click the Link Timeline and Edit Selection button so it becomes highlighted (selected) or un-highlighted (not selected).



**Link Timeline and Edit Selection enabled**

*[SHIFT] Press Shift+Forward Slash (/) to toggle Link Timeline and Edit Selection on and off.*

If you are working on a film or video scene, you may want to unlink the Timeline and Edit selections to find or audition material that is at a different location than the current Timeline selection. Edit selections can be played (choose Edit > Selection > Play Edit) without disrupting the current Timeline selection. Once you find the material, you can then go back to the Timeline selection and place it within the context of the scene.

Figure 23 illustrates another reason why you might want to unlink the Timeline and Edit selections. In this example, the Timeline selection sets a range to be looped on playback, while a MIDI region (residing within the loop) is selected for editing purposes. During playback, the Edit selection can be nudged, quantized, or transposed while the loop plays back completely independent and uninterrupted.
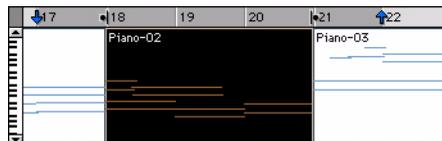


*Figure 23. Timeline and Edit selections unlinked*

While you could theoretically do this with the Timeline and Edit selections linked, as soon as playback is stopped, the playback range would then be updated to that of the more recent edit range, or to a single note when editing MIDI.

### Timeline and Edit Selection Markers

Timeline selections are displayed in the Main Timebase ruler with *Timeline Selection Markers*, which appear as blue arrows (red when recording). In addition, there are *Pre- and Post-Roll Flags* (which are green when enabled) indicating the location for pre- and post-roll.



*Timeline Selection Markers with Pre- and Post-Roll Flags*

When the Timeline and Edit selections are unlinked, Edit selections are displayed in the ruler with *Edit Markers*, which appear as black brackets.



*Figure 24. Edit Markers*

If the Timeline and Edit selections are linked, Edit selections are represented by the blue Timeline Selection Markers.

See the following sections for more information on working with Timeline and Edit selections:

- "Selecting Track Material" on page 449
- "Timeline Selections" on page 458
- "Setting Punch and Loop Points" on page 354
- "Setting Pre- and Post-Roll" on page 357

# Linking or Unlinking Track and Edit Selections

Pro Tools lets you link or unlink Track selection with Edit selections.

When Track and Edit selections are linked, you can make a selection within a track or across multiple tracks for editing and each associated track is selected (track names automatically highlight). This lets you quickly apply track-level commands (such as Track View toggle, change track heights) and have the command apply to all tracks you are working on.

When Track and Edit selections are unlinked, making an Edit selection does not automatically select all associated tracks.

**To link or unlink Track and Edit selection, do one of the following:**

■ Select or deselect Options > Link Track and Edit Selection.

– or –

■ In the upper left of the Edit window, click the Link Track and Edit Selection button so it becomes highlighted (selected) or un-highlighted (not selected).



*Link Track and Edit Selection enabled*

# Selecting Track Material

Before audio and MIDI material can be edited, it must first be selected. The Track View determines how the material is viewed and selected.

When you make a selection, it appears as a highlighted area of the tracks, and is also indicated by blue start and end arrows (*Timeline Selection Markers*) in the Main Timebase ruler. If any track (audio or MIDI) in the session is record-enabled, even if it is hidden, these markers appear red.



*Timeline Selection Markers indicating Edit selection*

If the Timeline and Edit selections are unlinked, the Edit selection range is indicated by Edit Markers in the Main Timebase ruler. See "Linking or Unlinking Timeline and Edit Selections" on page 447 for details.

## Selections and Edit Groups

When making selections on tracks that are part of an Edit Group, all tracks within the group become selected.

## Selections and Hidden Tracks

When editing tracks that are part of an active Edit Group, any tracks within the group that are hidden are not affected by the edits. To edit all members of a group, make sure they are visible by highlighting their names in the Track List.

## Selections in Multiple Tracks

**To make a selection in multiple tracks:**

■ With the Selector tool, click and drag horizontally to include adjacent tracks in a selection (drag vertically to define the time range).

## Selecting Regions

**To select a portion of a region:**

■ With the Selector tool, drag within a region (left or right) to select the material on a single track. (You can also use the Selector tool across multiple, adjacent tracks to make multitrack selections.)
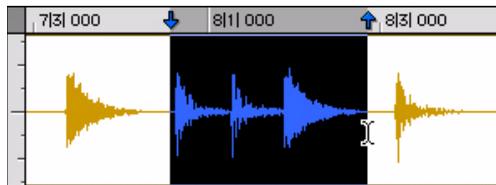


*Selecting a portion of a region*

**To select an entire region, do one of the following:**

■ Click the region with the Time Grabber tool.

– or –

■ Double-click the region with the Selector tool.

**To select two regions and the time range between them:**

**1** With the Time Grabber, click the first region.

**2** Shift-click the second region. Both regions are selected, along with the time range between them (including any other regions).

**To select an entire track, do one of the following:**

▪ Click in the track with the Selector tool and then choose Edit > Select All.

– or –

▪ Triple-click with the Selector tool in the track.

**To select all regions in all tracks:**

**1** Select the "All" Edit Group in the Group List pop-up menu.

**2** Do one of the following:

• Click in any track with the Selector tool and choose Edit > Select All.

– or –

• Triple-click with the Selector tool in any track.

🔲 *Another way to select all regions in all tracks, without having to select the "All" Edit Group, is to press Enter (Windows) or Return (Mac), then press Control+A (Windows) or Command+A (Mac). The Link Timeline and Edit Selection option must be enabled.*

## Region List Selection Follows Edit Selection

When the Editing preference for "Region List Selection Follows Edit Selection" is enabled, selecting a region in a track also causes the region to become selected in the Region List.

Conversely, if the Editing preference for "Edit Selection Follows Region List Selection" is enabled, selecting a region in the Region List causes the initial occurrence of that region to become selected within the track.

## Selecting All from Timebase Rulers

**To select all material in all displayed audio and MIDI tracks:**

**1** Enable Link Timeline and Edit Selection (Options > Link Timeline and Edit Selection).

**2** Double-click in any Timebase ruler. All regions in all displayed audio and MIDI tracks are selected. Tracks that are hidden are not selected.

**To select all material in all tracks, including Conductor events:**

**1** Enable Link Timeline and Edit Selection (Options > Link Timeline and Edit Selection).

**2** While pressing Control (Windows) or Option (Mac), double-click in any Timebase ruler. All regions in all displayed audio and MIDI tracks are selected, including all events in each of the Conductor tracks.

## Making Selections While Playing

Pro Tools lets you make on-the-fly selections with the Up and Down Arrow keys.

**To make a selection while playing:**

**1** Enable Link Timeline and Edit Selection (Options > Link Timeline and Edit Selection).

**2** With the Selector tool, click somewhere near the beginning of the track in which you want to make the selection.

**3** Click Play in the Transport window to begin playback.

**4** When playback reaches the point where you want the selection to begin, press the Down Arrow key.

**5** Press the Up Arrow key at the point where you want the selection to end. The selected range becomes highlighted.

**6** To stop playback, click Stop in the Transport window.

To automatically scroll to the beginning of the selection (or to the location of the on-screen cursor), press the Left Arrow key. To scroll to the end of the selection, press the Right Arrow key.

While in Page Scroll or Continuous Scroll mode, making a selection in the Timeline or a playlist during playback as the playback cursor moves off-screen suspends page scrolling. To resume page scrolling and jump to the current playback location, click the Playback Cursor locator in the Main Timebase ruler (see "Locating the Playback Cursor when It Is Off-Screen" on page 306).

## Object Selections

Use the Object Grabber tool to select noncontiguous regions on one or more tracks. Noncontiguous selections must encompass entire regions. If you want a noncontiguous selection to include a portion of a region, first turn the portion into a new region with the Separate Region command (see "Separate Region Commands" on page 466).

⚠ *The Object Grabber is not available when the Edit mode is set to Shuffle or Spot.*

**To select noncontiguous regions:**

**1** Set the Edit mode to either Slip or Grid.

**2** Click the Grabber tools pop-up menu and select "Object."



*Object Grabber tool*

**3** Shift-click each region you want to include in the selection. The regions can even reside on different tracks.
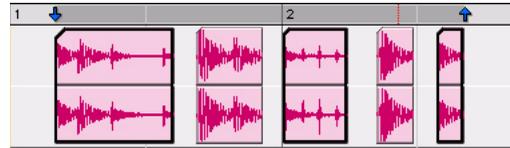


*Noncontiguous selection*

Each clicked region is surrounded by a dark border, indicating it is selected.

The Object Grabber tool ignores Edit Groups when making selections. For instance, selecting a region on a grouped track does not cause regions in the other tracks in the group to become selected.

### Object to Time Selection

You can convert between Time- and Object-based selections. Time selections are made with the Selector and Time Grabber tools. Object selections are made with the Object Grabber tool.

Converting to an Object selection is useful when you are working with large selections, especially across multiple tracks, and you want to remove certain regions from the selection.

Converting to a Time selection is useful if you want to select all regions between a noncontiguous Object selection.

**To change a Time selection to an Object selection:**

**1** Drag with the Selector tool in any track to define a selection, or select in a Timebase ruler to select across all tracks.



*Selected regions*

**2** With the Object Grabber tool selected, double-click the Grabber icon in the toolbar. Regions falling within the selection range become selected as objects. Regions that were partially selected become deselected.
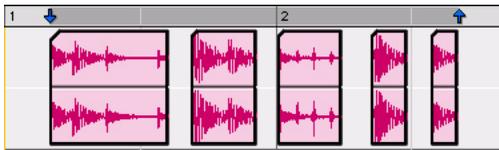


*Regions selected as objects*

To select regions that were partially selected, press Start (Windows) or Control (Mac) while double-clicking the Grabber icon.

**To change an Object selection to a Time selection:**

**1** Select any number of regions with the Object Grabber tool.

**2** Double-click the Selector tool in the toolbar. The time range between the first and last region becomes selected.

When using the Object Grabber tool on tracks that belong to an Edit Group, regions in the other grouped tracks are selected if they fall within the range of the selected region.

## Changing a Selection Length

The selection range can be shortened or lengthened. This does not affect the material within the selection.

**To change the length of a selection, do one of the following:**

■ With the Selector tool, position the cursor over one end of the current selection and Shift-click or Shift-click and drag left or right.

■ In the Main Timebase ruler, drag the Timeline Selection Marker for the selection's start or end point.



*Dragging a Timeline Selection Marker*

■ If Link Timeline and Edit Selection is disabled, drag the Edit Markers (see Figure 24 on page 448) to change the selection length.

**To make a long-length selection:**

**1** With the Selector tool, click at where you want the selection to start.

**2** Scroll to the end point and Shift-click at the point where you want the selection to end.

To verify the start and end points of a long selection, press the Left Arrow key to scroll to the beginning of the selection, or press the Right Arrow key to scroll to the end.

## Nudging a Selection Range

The selection range (not the material within the selection) can be moved by the Nudge value.

**To nudge a selection range:**

**1** Configure the Nudge value. For details, see "Defining the Nudge Value" on page 472.

**2** Make the initial selection with the Selector tool.

**3** While pressing Shift, press Plus (+) or Minus (–) on the numeric keypad to move the selection range by the Nudge value.

## Nudging Selection Start/End Points

Start and end points for selections can be moved by nudging them.

**To move a selection start or end point by the Nudge value:**

**1** Configure the Nudge value. For details, see "Defining the Nudge Value" on page 472.

**2** Make the initial selection with the Selector tool.

**3** Do one of the following:
- While pressing Alt+Shift (Windows) or Option+Shift (Mac), press Plus (+) or Minus (–) on the numeric keypad to move the selection's start point by the Nudge value.

– or –
- While pressing Control+Shift (Windows) or Command+Shift (Mac), press Plus (+) or Minus (–) on the numeric keypad to move the selection's end point by the Nudge value.

## Extending Selections

You can extend selections to region start and end points, to include an adjacent region, or to Markers and Memory Locations.

**To extend a selection to a region start or end point:**

**1** With the Selector tool, select a portion of a region, or click anywhere in the region.

**2** Do one of the following:
- Press Shift+Tab to extend the selection to the region's end point.

– or –
- Press Control+Shift+Tab (Windows) or Option+Shift+Tab (Mac) to extend the selection to the region's start point.

**To extend a selection to include an adjacent region:**

**1** Select the first region with the Time Grabber tool.

**2** Do one of the following:
- With Tab to Transients disabled, press Start+Shift+Tab (Windows) or Control+Shift+Tab (Mac) to extend the selection to the next region boundary.

– or –
- Press Control+Start+Shift+Tab (Windows) or Option+Control+Shift+Tab (Mac) to extend the selection to include the previous region boundary.

**To extend a selection to a Marker or Memory Location:**

**1** Do one of the following:

- Click in a track with the Selector tool at the desired start or end point.

– or –

- Make a selection with the Selector or Time Grabber tool.

**2** Do one of the following:

- Shift-click a Marker in the Markers ruler.

– or –

- Shift-click a Memory Location in the Memory Locations window.

The selection is extended from the original Insertion point to the Marker or Memory Location.

## Using the Edit Selection Indicators (Start, End, and Length)

The Edit Selection indicators at the top of the Edit window can define precise Edit selections. Time values for the Edit Selection indicators use the time format for the Main Time Scale.



*Edit Selection indicators*

**To make a selection with the Edit Selection indicators:**

**1** Click with the Selector tool in the track you want to select.

**2** Click in the Start field at the top of the Edit window.

**3** Type in the start point for the selection and press the Forward Slash key (/) to enter the value and automatically move to the end field.

**4** Type in the end point for the selection and press Enter to accept the value.

### Numeric Entry Shortcuts for Selection Indicators

You can use the following shortcuts for entering values in the Edit Selection indicators:

- Press the Forward Slash (/) key to cycle through the three Edit Selection indicators.

- Use Period (.) or the Left and Right Arrow keys to move through the different time fields in each Edit Selection indicator.

- Press the Up or Down Arrow keys to increase or decrease the numerical values.

- Click and drag in a field to scroll to a new value. For finer resolution, Control-drag (Windows) or Command-drag (Mac).

- Press Control (Windows) or Command (Mac) and Plus (+) or Minus (–), then type a number, to add or subtract from the current field value. For example, to add 10 to a current field value, cycle to the field, press Control (Windows) or Command (Mac) and Plus (+) key, type "10," and then press Enter.

▪ Press Escape to exit the Edit Selection indicators without entering any values.

*These shortcuts can also be used to enter start and end values in the Transport window.*

### Calculator Entry Mode

You can perform calculator-style editing of values in the Edit Selection indicators.

**To subtract time values:**

**1** In the Edit Selection indicator, highlight the time field you want to change.

**2** Press Minus (–) on the numeric keypad.

**3** Type the amount you want to subtract from the current time value, then press Enter.

**4** Press Enter again to apply the change.

**To add time values:**

**1** In the Edit Selection indicator, highlight the time field you want to change.

**2** Press Plus (+) on the numeric keypad.

**3** Type the amount you want to add to the current time value, then press Enter.

**4** Press Enter again to apply the change.

## Selecting Across Multiple Tracks

To perform edits across multiple tracks or all tracks, you must first select the tracks. Do this by including other tracks in the selection, or by selecting in a Timebase ruler (for all tracks).

**To make a selection in multiple tracks:**

■ With the Selector tool, click and drag vertically to include adjacent tracks in a selection (drag horizontally to define the time range).

**To extend a selection to another track:**

**1** Using the Selector or Time Grabber tool, make a selection in the first track or tracks.

**2** Shift-click in additional tracks with the Selector tool. An identical range is selected for each additional track.

To shorten or lengthen the selection across each of the tracks, press Shift while dragging to change the range of the selection.

**To select across all tracks, do one of the following:**

■ Enable the *All* Edit Group and make a selection in any track.

– or –

■ Drag with the Selector tool in any Timebase ruler (make sure the Timeline and Edit Selections are linked).

These selections include all tracks in the Edit window, but do not include the Conductor tracks (for Tempo, Meter, and Markers).

**To select across all tracks, including the Conductor tracks (for Tempo, Meter, and Markers):**

■ Alt-drag (Windows) or Option-drag (Mac) with the Selector tool in any Timebase ruler.

## Moving and Extending Selections Between Tracks

With Commands Keyboard Focus enabled, Edit selections can be moved or extended to adjacent tracks.

**To move a selection to an adjacent track:**

**1** Enable Commands Keyboard Focus (see "Keyboard Focus" on page 20).
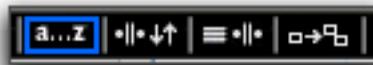


*Commands Keyboard Focus button enabled*

**2** With the Selector or Time Grabber tool, make a selection.

**3** Do one of the following:

- Press P on your computer keyboard to move the selection to the previous track.

– or –

- Press semicolon (;) to move the selection to the next track.

In either instance, the original Edit selection becomes deselected.

⬜ SHIFT *With Commands Keyboard Focus disabled, press Start+P (Windows) or Control+P (Mac) to move the selection to the previous track, or Start+Semicolon (;) (Windows) or Control+Semicolon (;) (Mac) to move the selection to the next track.*

**To extend a selection to an adjacent track:**

**1** Enable Commands Keyboard Focus (see "Keyboard Focus" on page 20).

**2** With the Selector or Time Grabber tool, make a selection.

**3** Do one of the following:

- Press Shift+P to extend the selection to the previous track.

– or –

- Press Shift+Semicolon (;) to extend the selection to the next track.

In either instance, the original Edit selection remains selected.

⬜ SHIFT *With Commands Keyboard Focus disabled, press Start+Shift+P (Windows) or Control+Shift+P (Mac) to extend the selection to the previous track, or Start+Shift+Semicolon (;) (Windows) or Control+Shift+Semicolon (;) (Mac) to extend the selection to the next track.*

**To remove the bottom track from a selection:**

■ Press Alt+Start+Semicolon (;) (Windows) or Option+Control+Semicolon (;) (Mac) to remove the bottom track.

## Other Useful Selection Techniques

Following are some additional selection techniques.

**To position the edit cursor precisely at a region start, end, or sync point:**

**1** Make sure the Tab to Transients button is not enabled. (See "Tabbing to Transients" on page 457.)

**2** Click with the Selector tool in the track.

**3** Do one of the following:

- Press Tab to move the cursor to the next region or region group start, end, or sync point.

– or –

- Press Control+Tab (Windows) or Option+Tab (Mac) to move the cursor to the previous region or region group start, end, or sync point.

**To make a selection with the Scrubber:**

**1** Choose Setup > Preferences and click the Operation tab.

**2** Select the option for "Edit Insertion Follows Scrub/Shuttle," then click OK.

**3** Scrub with the Scrubber to find an appropriate start point for the selection, then release.

**4** While pressing Shift, scrub to an appropriate end point for the selection, then release. The range between the initial and final scrub becomes selected.

**To move a selection to an adjacent region on the same track:**

**1** Select a region with the Time Grabber.

**2** Do one of the following:

• Press Start+Tab (Windows) or Control+Tab (Mac) to move the selection to the next region.

– or –

• Press Control+Start+Tab (Windows) or Option+Control+Tab (Mac) to move the selection to the previous region.

In either instance, the original region becomes deselected.

**To slide an Edit selection in the Main Timebase ruler:**

**1** With the Selector or Time Grabber tool, make a selection.

**2** While pressing Alt (Windows) or Option (Mac), move the cursor over either of the Timeline Selection Markers in the ruler (the Time Grabber appears).



*Sliding an Edit selection in the Main Timebase ruler*

**3** Drag left or right to move the Edit selection back or forward in time while preserving its length.

If Link Timeline and Edit Selection is disabled (Options > Link Timeline and Edit Selection), Alt-drag (Windows) or Option-drag (Mac) the Edit Markers instead.

## Right-Click Commands and Selection Preservation

You can use Right-click commands with key combinations to perform operations on objects while maintaining selections in the Edit and Mix windows. For example, you can maintain selections in the following areas while carrying out certain commands:

• Region selections in the Timeline

• Region name selections in the Region List

• Track selections

**To apply a command to an object while keeping the current selection:**

■ Control-Right-click (Windows) or Command-Right-click (Mac) the object and choose a command from the pop-up menu.

## Tabbing to Transients

With the Tab to Transients button enabled, you can automatically navigate to transients in audio waveforms in Waveform view, placing the cursor just before the detected transient peak. This lets you define selections and play ranges, as well as start and end points for new regions, without having to zoom in on the waveform.



*Tab to Transients button enabled*

In Warp view, Tab to Transients tabs to all Event and Warp markers in a region. Normal Tab tabs to region boundaries and all Warp markers. In Analysis view, pressing Tab always tabs to Event markers, regardless of whether or not Tab to Transients is enabled.

For MIDI and Instrument tracks in Notes view, pressing Tab always tabs to the next note, regardless of whether or not Tab to Transients is enabled. In Regions view, Tab to Transients tabs to notes and Normal Tab tabs to region boundaries.

When Tab to Transients is enabled, the Tabbing function also locates the cursor to region start and end points, but not to sync points.

🔳 *To toggle Tab to Transients on and off, press Control+Alt+Tab (Windows) or Command+Option+Tab (Mac).*

**To set the start and end points of a selection with Tab to Transients:**

**1** In the upper left of the Edit window, click the Tab to Transients button so it becomes selected.

**2** If you will be setting the play range with this selection, enable Options > Link Timeline and Edit Selection.

**3** Click in the audio track just before the beginning of the material you want to select.

**4** Press Tab repeatedly until the cursor locates to the transient where you want to start the selection.

If necessary, you can move to the previous transient by pressing Control+Tab (Windows) or Option+Tab (Mac).

**5** Press Shift+Tab until the cursor locates to the end of the material you want to select.

To move the selection end point to the previous transient, press Control+Shift+Tab (Windows) or Option+Shift+Tab (Mac).

Once selected, the material can be looped for recording or playback, or it can be turned into a new region with the Separate or Capture command.

💡 *Peak transients are usually visible in the waveform. However, some low-frequency transients may not appear as visible peaks in the waveform.*

### Tab To Transients Across Multiple Tracks

With the edit cursor inserted across multiple tracks, you can use Tab to Transients to tab to the next transient on any of those tracks. When transients on multiple tracks are closely aligned, Tab to Transients tabs to the first transient on any of those tracks.

# Timeline Selections

With the Link Timeline and Edit Selection option disabled, selections can be made in the Timeline that are distinct and separate from Edit selections.

With the Timeline and Edit selections linked, any Edit selections that are made are mirrored in the Timeline, and any Timeline selection is mirrored as an Edit selection across all tracks.

Whether the Timeline and Edit selections are linked or not, the range indicated by the Timeline Selection Markers always determines the range for playback and recording (except when in Dynamic Transport mode, see "Dynamic Transport Mode" on page 315).

With Pro Tools HD, when the Scrolling option is set to Center Playhead, it determines where playback begins (see "Playing Timeline and Edit Selections with the Playhead" on page 313).

**To make a Timeline selection with the Selector tool:**

**1** If you want to constrain the selection to the current Grid value, set the Edit mode to Grid.

**2** Click and drag with the Selector tool in any Timebase ruler.
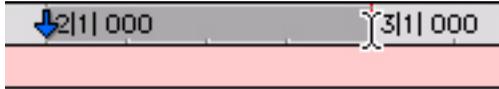


*Making a Timeline selection with the Selector tool*

The Timeline selection is indicated in the Main Timebase ruler by the blue Timeline Selection Markers (or if a track is record-enabled, the Timeline Selection Markers are red). The start, end, and length for the Timeline selection is displayed in the corresponding fields in the Transport window.

🔅 *To select all tracks, including Conductor tracks, press Alt (Windows) or Option (Mac) while clicking and dragging in a Timebase ruler with the Selector tool.*

**To set the Timeline selection by dragging the Timeline Selection Markers:**

**1** If you want to constrain movement to the current Grid value, set the Edit mode to Grid.

**2** With the Time Grabber, drag the first Timeline Selection Marker (down arrow) to set the start point.

**3** Drag the other Timeline Selection Marker (up arrow) to set the end point.



*Dragging a Timeline Selection Marker*

**To set the Timeline selection by typing into the Transport window:**

**1** If necessary, resize the Transport window to Expanded View so the start and end times are displayed (View > Transport > Expanded).

**2** Do one of the following:

- In the Transport window, click in the start field.

– or –

- Press Alt+Forward Slash (/) (Windows) or Option+Forward Slash (/) (Mac) on the numeric keypad to select the start field in the Transport window.

**3** Type in the new start location and press Forward Slash (/) to enter the value and automatically move to the end field.

**4** Type in the new end location and press Enter to accept the value.

## Sliding a Timeline Selection

Like Edit selections, Timeline selections can be slid in the Main Timebase ruler.

**To move a Timeline selection in the Main Timebase ruler:**

**1** While pressing Alt (Windows) or Option (Mac), move the cursor over either of the Timeline Selection Markers (the Time Grabber appears).

**2** Drag left or right to move the Timeline selection back or forward in time, while preserving its length.

### Timeline Selections to/from Edit Selections

When the Timeline and Edit selections are unlinked, you can copy selections between them.

**To copy the current Edit selection to the Timeline:**

■ Choose Edit > Selection > Change Edit to Match Timeline.

**To copy the current Timeline selection to an Edit selection:**

■ Choose Edit > Selection > Change Timeline to Match Edit.

## Navigating the Timeline with the Edit Window Counters and Indicators

The counters and indicators at the top of the Edit window display the current playback location and Edit selection. These include the Main and Sub Counters, and the Edit Selection Start, End, and Length indicators.

All Edit window counters and indicators (except the Sub Counter) let you enter a location in their counter display to navigate to a specific time location.



*Main and Sub Counters, Edit Selection indicators*

The Main Counter displays the playback location in the time format for the Main Time Scale. The Sub Counter can be set to any of the other Time Scale formats for another timing reference.

The Edit Selection indicators (to the right of the Main and Sub counters) display the Start and End times, and Length of the current Edit selection according to the Main Timebase.

The Main and Sub Counters, as well as the Edit Selection indicators, also appear in the Transport window when it is set to display Counters.

**To navigate with the Edit window Main Counter (or one of the Edit Selection indicators):**

**1** Do one of the following:

- Click in one of the counters.

– or –

- Press asterisk (*) on the numeric keypad to highlight the Main Counter in the Edit window (or the Main Counter in the Transport window or Big Counter window, if either are displayed).

**2** Type in the new location. Press Period (.) to cycle through to the different time fields.

**3** Press Enter to accept the new value and automatically locate there.

## Scrolling in a Timebase Ruler

You can scroll the contents of the Edit window by clicking and dragging in a ruler. While this does not actually update the session's Current Location, it does let you conveniently shift the display left or right for the sake of finding and editing material.

This method of scrolling is especially useful when using the Continuous Scrolling option (Pro Tools HD and Pro Tools LE with DV Toolkit 2 only), which does not update or follow Timeline selections.

**To scroll the entire contents of the Edit window from a ruler:**

▪ While pressing Control+Alt+Start (Windows) or Command+Option+Control (Mac), drag left or right in any of the Timebase rulers.
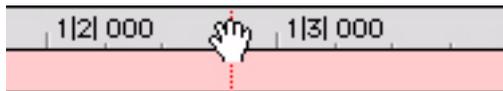


*Scrolling in a ruler*

## Scrolling with a Scroll Wheel

If you have a mouse with a scroll wheel, you can use the scroll wheel to scroll vertically or horizontally in any Pro Tools window that has a scroll bar (such as the MIDI Event List).

**To scroll a Pro Tools window vertically:**

**1** Place the mouse over the window you want to scroll (for example, in the Edit window you might want to scroll either the track display or the Region List).

**2** Scroll the scroll wheel up or down to scroll the window up or down.

**To scroll a Pro Tools window horizontally:**

**1** Place the mouse over the window you want to scroll (for example, in the Edit window you might want to scroll either the track display or the Region List).

**2** Shift-scroll the scroll wheel up or down to scroll the window to the left or right.

## Auto-Scrolling Tracks in the Mix and Edit Windows

### (Pro Tools HD Only)

If you are working with more tracks than can be displayed at one time in the Mix or Edit windows, you can select a track in one window and Pro Tools will automatically scroll to that track in both windows.

**To auto-scroll the Mix and Edit windows to show a track, do one of the following:**

▪ In the Track List, Right-click the track name and select Scroll Into View from pop-up menu.

– or –

▪ In the Track List, Control-click (Mac) the track name and select Scroll Into View from pop-up menu.

The track becomes selected, and the Mix and Edit windows both scroll to display the selected track.

## Navigating to Tracks Using Track Position Numbers

With Track Number View enabled, each track is assigned a number corresponding to its position in the Mix and Edit Windows. You can scroll directly to any track by its positional number.

💡 *When tracks are reordered, Track Position Numbers are reassigned to keep them in numerical sequence.*

**To navigate directly to any track using Track Position Numbers:**

**1** Choose View > Track Number.

**2** Do one of the following:

• Choose Track > Scroll to Track.

– or –

• Press Control+Alt+F (Windows) or Command+Option+F (Mac).

*Scroll To Track dialog*

**3** In the Scroll To Track dialog, enter the Track Position Number.

**4** Click OK.

The track is selected, and the windows scroll as follows:

• The Edit window tracks scroll to bring the selected track as close to the top as possible.

• The Mix window tracks scroll to bring the selected track as close to the left as possible.

## The Universe Window

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

The Universe window displays an overview of the entire session, representing audio and MIDI material on all tracks that are not hidden (including tracks that are inactive, or that contain offline regions). The order in which material is displayed in the Universe window corresponds to the track order in the Edit window.

**To open the Universe window:**

■ Choose Window > Universe.

shaded area indicates what's visible in the Edit window
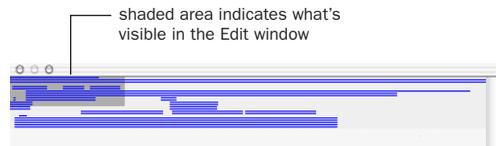
*Universe window*

Audio material residing in audio tracks is represented by a single, horizontal line in the Universe window. Each channel in a stereo or multichannel track is represented individually.

Since Auxiliary Input, Master Fader, and VCA Master tracks do not contain audio, they are displayed as blank areas in the Universe window.

MIDI and Instrument tracks containing MIDI data are represented by single, horizontal lines.

## Resizing the Universe Window

Even though the Universe window can be re-sized horizontally and vertically, the length of the entire session is always displayed in the Universe window. If the Universe window is resized so some of the session's track are not displayed, a vertical scroll bar becomes available.

## Shaded Area in the Universe Window

The shaded area in the Universe window represents what is visible in the Edit window. If you change what is displayed in the Edit window—by zooming, scrolling horizontally or vertically, hiding or showing tracks, or changing track heights—the highlighted area in the Universe window updates.

During playback, if the Edit window is set to scroll, the highlighted area in the Universe window also scrolls.

## Scrolling in the Universe Window

By clicking in the Universe window, you can automatically scroll, either horizontally or vertically, the material displayed in the Edit window. This provides a convenient method of locating anywhere in the session, or adjusting which shown tracks are visible in the Edit window.

**To move the highlighted area in the Universe window:**

**1** Choose Window > Universe.

**2** Drag the highlighted area to a different position in the Universe window to affect which tracks are displayed in the Edit window.
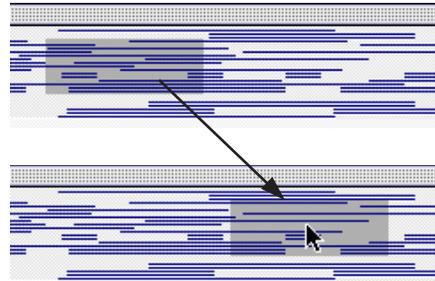


When all tracks are visible in the Edit window and the session is zoomed all the way out, with all regions visible, the entire Universe window is shaded.

# Chapter 24: Editing Regions and Selections

Regions are the basic building blocks for arranging audio and MIDI in Pro Tools. Understanding how regions are created, edited, and arranged is essential to taking full advantage of the editing capabilities of Pro Tools.

This chapter covers basic editing functions as they apply to regions and region groups, and selections, which for the most part apply to both MIDI and audio data.

📄 *For editing procedures more specific to MIDI, see Chapter 27, "MIDI Editing."*

📄 *For editing procedures specific to video, see "Video Regions" on page 921.*

## Creating New Regions

Pro Tools provides several commands for creating regions and region groups, each of them having a slightly different effect on the selection. When you create a new region or region group, it appears in the Region List and in the track's playlist. When creating a new region from an existing region, the original region remains in the Region List.

📄 *For details on how these new regions are automatically named, see "Auto-Naming Options" on page 197.*

📄 *For information on automatically-created regions, see "Region Types" on page 403.*

# Capture Region Command

The Capture Region command defines a selection as a new region and adds it to the Region List. From there, the new region can be dragged to any existing tracks.

**To capture a new region:**

**1** With the Selector tool, click and drag within an existing region to select the material for the new region.
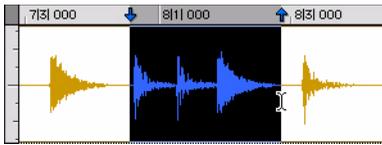


*Selecting a region portion*

**2** Choose Region > Capture.

**3** Enter a name for the new region and click OK.

The new region appears in the Region List. The original region remains intact and unchanged.

# Separate Region Commands

The Separate Region commands define a selection within an existing region, or a partially selected region, as a new region and separate it from surrounding material.

New regions appear in the tracks in which they are created, separate from the data surrounding them. They also appear in the Region List.

There are three different Separate Region commands:

**At Selection (or Edit Cursor)** Creates new region boundaries at the selection start and end points. If there is no selection and the edit cursor is placed within the region, the region is split into two new regions at the insertion point.

**On Grid** Creates new regions according to the selected Grid value (see "Defining the Grid Value" on page 656).

**At Transients** Automatically creates region boundaries on detected transients within a selection. This uses the same algorithm for transient detection as the Tab to Transients feature (see "Tabbing to Transients" on page 457). On Elastic Audio–enabled tracks, the Separate At Transients command uses the transient events detected by Elastic Audio analysis (see "Elastic Audio Analysis" on page 505).

**To separate one or more regions at the selection (or at the edit cursor):**

**1** Do one of the following:
- With the Selector tool, make an Edit selection.
- With the Selector tool, click at the point where you want to separate the region.

**2** Do one of the following:
- Choose Edit > Separate Region > At Selection.
- Press Control+E (Windows) or Command+E (Mac).
- With an Edit selection, Right-click near the cursor position or selection and choose Separate from the pop-up menu.

**3** If the Editing preference for Auto-Name Separated Regions is disabled, enter a name for the new region when prompted, then click OK.

**To separate regions according to the current grid resolution:**

**1** Make an Edit selection.

**2** Choose Edit > Separate Region > On Grid.

**To separate regions at transients:**

**1** Make an Edit selection.

**2** Choose Edit > Separate Region > At Transients.

## Auto-Name Separated Regions Option

With the Auto-Name Separated Regions option in the Editing Preferences page selected, Pro Tools automatically names separated regions for you. The name is a numbered variation of the original region's name.

By separating a region, additional regions are auto-created from data on either side of the separation, which have new numbers assigned to their names. The original region remains intact and unchanged on the Region List.

☼ *The Region List can quickly fill up with auto-created regions. For easier region management, click the Region List pop-up menu, deselect Show > Auto-Created to hide all auto-created regions in the Region List.*

▤ *If the Separate Region Operates On All Related Takes option (Editing Preferences page) is selected and you are editing a region that is one of a number of related takes with the same User Time Stamp (for example, as created with loop recording), the Separate Region command affects each take. For more information see, "Editing Preferences for Takes" on page 353.*

## Separating Multiple Tracks

Figure 25 illustrates a separation across three mono audio tracks and one stereo track. For some tracks, the selection resides within a region, while others reside at the start or end of a region.
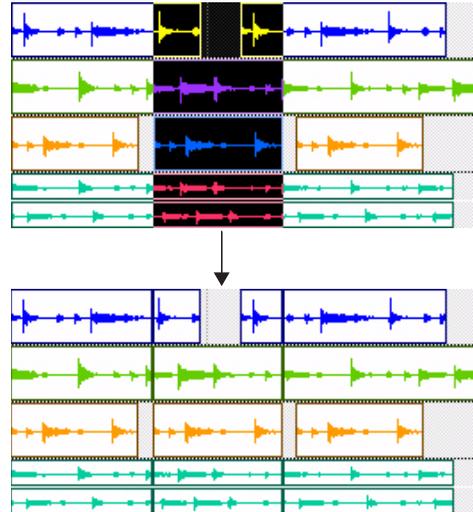


*Figure 25. Separating across multiple tracks*

Once separated, this material can be moved or copied to another location.

## Separation Grabber Tool

You can use the Separation Grabber tool to automatically separate an Edit selection and move it to another location or another track.

**To separate a selection with the Separation Grabber tool:**

**1** With the Selector tool, make an Edit selection. The selection can reside within a single region, across adjacent regions within the same track, or across multiple tracks.

**2** From the Grabber tools pop-up menu, choose the Separation Grabber tool.



*Separation Grabber tool*

**3** Click and drag the selection to the new location, or to another track.
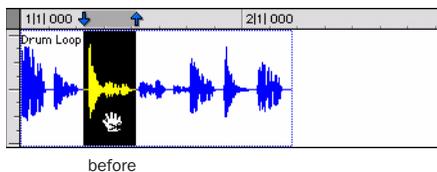


before
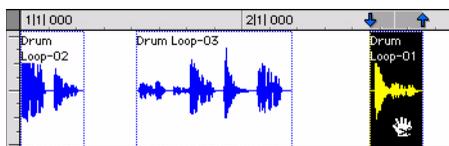
after



*Dragging later in track with Separation Grabber tool*

A new region (or regions) containing the previous selection is created, separate from the original selection. New regions are also created from the material outside the original selection.

**To separate a selection without affecting the original regions:**

**1** With the Selector tool, make an Edit selection. The selection can reside within a single region, across adjacent regions within the same track, or across multiple tracks.

**2** From the Grabber tools pop-up menu, choose the Separation Grabber tool.

**3** While pressing Alt (Windows) or Option (Mac), click and drag the selection to the new location, or to another track.
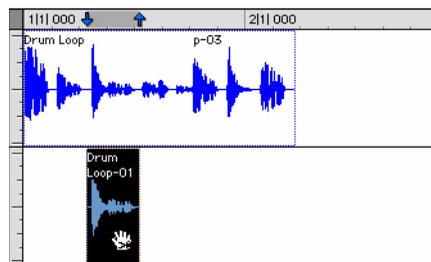


*Dragging to another track with the Separation Grabber tool*

New regions containing the previous selection are created and placed at the new location. The original selection and regions remain intact.

## Region Overlap and Underlap

When a tick-based audio track has multiple regions, an increase in tempo can cause neighboring regions to overlap. Audio regions can be set to display a small "dog-ear" corner to indicate overlapping region boundaries.



Overlap region
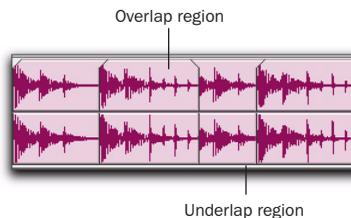
Underlap region

*Region overlap and underlap*

**To toggle the display of overlap and underlap region boundaries:**

■ Choose View > Region > Overlap.

## Changing Region Overlap/Underlap

After tempo changes with tick-based audio, and other edits, regions may overlap in undesired ways. To correct this, a region can be brought to the front, or sent behind neighboring regions as needed.

**To change the region overlap or underlap:**

**1** In the Edit window, choose the region or regions you want to re-order.

**2** Do one of the following:

• Choose Region > Bring to Front to make the region overlap the neighboring regions.

– or –

• Choose Region > Send to Back to make the region underlap the neighboring regions.

If multiple overlapping regions are selected, Pro Tools will apply the command to each region as that region relates to the neighboring region on the right.

# Healing Separated Regions

The Heal Separation command returns separated regions to their original state—provided the regions are still next to each other and their relative start and end points have not changed since the separation.

If you have trimmed or otherwise changed the start or end points of the two regions, or moved them further away from each other, you will not be able to repair them with the Heal Separation command. It is not possible to heal two regions created from different audio files.

**To heal a separation between two regions:**

**1** With the Selector tool, make a selection that includes part of the first region, the entire separation between the regions, and part of the second region.

**2** Choose Edit > Heal Separation.

**If the regions do not heal with Heal Separation, do one of the following to return the separated regions to a single region:**

■ Delete one of the two separated regions (verify that Slip mode is enabled so the gap does not close) and use the Trimmer tool to expand the remaining region to its original length (see "Using the Trimmer Tools" on page 433).

– or –

■ Delete both of the separated regions and drag the original region from the Region List to the original location (see "Placing Regions in Tracks" on page 647).

# Trimming Regions

In addition to the Trimmer tools, Pro Tools provides several options for editing region and region group boundaries.

📄 *For information on using the Trimmer tools, see "Using the Trimmer Tools" on page 433.*

## Trim Region to Selection Command

The Trim Region to Selection command removes data before and after a region or MIDI note selection, leaving only the selection. This command lets you quickly remove all data in a region (and in some instances the entire track) except for the current selection.

**To trim unwanted data from a region or note:**

**1** With the Selector tool, select a portion of a region or note (or a range of notes).

**2** Choose Edit > Trim Region > To Selection to remove material outside of the selection.

## Trim Region to Insertion Commands

You can trim a region or MIDI note by automatically removing the material between the Edit insertion point and the start or end point of the region.

**To trim from a start point to insertion:**

**1** With the Selector tool, click inside the region or note where you want the new start point to be.

**2** Choose Edit > Trim Region > Start To Insertion. The region's start point is automatically trimmed to the insertion point.

**To trim from an end point to insertion:**

**1** With the Selector tool, click inside the region or note where you want the new end point.

**2** Choose Edit > Trim Region > End To Insertion. The region's end point is automatically trimmed to the insertion point.
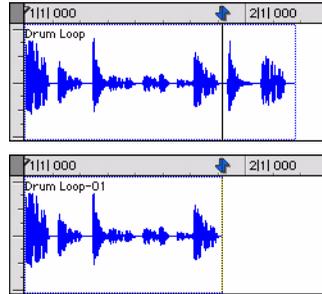


*Region end trimmed to insertion*

## Trim to Fill Selection Commands

The Trim to Fill Selection commands let you automatically reveal underlying material in the gaps between regions, as follow:

**To trim from a start point to fill gaps:**

**1** With the Selector tool, select across at least one gap between regions.

**2** Choose Edit > Trim Region > Start to Fill Selection.

The start point of the region behind the gap is automatically trimmed (expanded) to the previous region, or as far as possible if there is not enough underlying material to cover the gap.
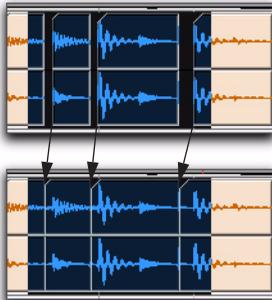


*Region start trimmed to fill gap*

**To trim from an end point to fill gaps:**

**1** With the Selector tool, select across at least one gap between regions.

**2** Choose Edit > Trim Region > End To Fill Selection.

The end point of the region in front of the gap is automatically trimmed (expanded) to the next region, or as far as possible if there is not enough underlying material to cover the gap.
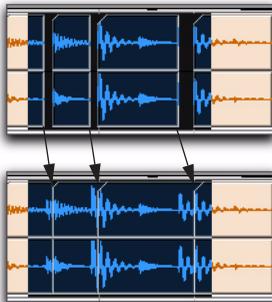


*Region end trimmed to fill gap*

**To trim from a region's start and end points to fill gaps:**

**1** With the Selector tool, select across at least one gap between regions.

**2** Choose Edit > Trim Region > To Fill Selection.

The start point of the region behind the gap is automatically trimmed (expanded) to the previous region, or as far as possible if there is not enough underlying material to cover the gap; and the end point of the region in front of the gap is automatically trimmed (expanded) to the next region, or as far as possible if there is not enough underlying material to cover the gap.

## Trimming with Nudge

You can trim the start and end points of a region by nudging them.

**To trim a region's start or end point by the Nudge value:**

**1** Configure the Nudge value (see "Defining the Nudge Value" on page 472).

**2** With the Time Grabber tool, select the region you want to trim.

**3** Do one of the following:
- While pressing Alt (Windows) or Option (Mac), press Plus (+) or Minus (–) on the numeric keypad to trim the region's start point by the Nudge value.

– or –
- While pressing Control (Windows) or Command (Mac), press Plus (+) or Minus (–) on the numeric keypad to trim the region's end point by the Nudge value.

# Nudging Regions

Pro Tools can nudge regions (or MIDI notes) by precise increments with the Plus (+) and Minus (–) keys on the numeric keypad. The amount of the nudge is determined by the value specified in the Nudge Value pop-up menu. The Nudge function can be used in any of the Edit modes.

Nudging can be invaluable for adjusting the "groove" of a musical phrase or a sound effect relative to other elements in the session. Since Pro Tools can nudge material during playback, you can nudge continuously in real time to adjust the timing relationship between tracks.

Nudge can also be used to adjust the placement of automation breakpoints. For more information, see "Editing Automation" on page 803.

## Defining the Nudge Value

The Nudge value determines how far regions and selections are moved when nudging.

Start and end points for selections can also be moved by the Nudge value (see "Nudging Selection Start/End Points" on page 453). In addition, regions can be trimmed by the Nudge value (see "Trimming with Nudge" on page 471).

**To set the Nudge value:**

**1** Do one of the following:

- From the View > Main Counter menu, select the Time Scale for the Nudge value.

– or –

- To keep the Main Time Scale and use a different time format for the Nudge value, deselect Follow Main Timebase in the Nudge Value pop-up menu.

**2** Specify a Nudge value by doing one of the following:

- From the Nudge value pop-up menu in the Edit window, select the Nudge value.

– or –

- To specify a Nudge value not listed in the Nudge Value pop-up menu, click the Nudge Value indicator and type in the value.
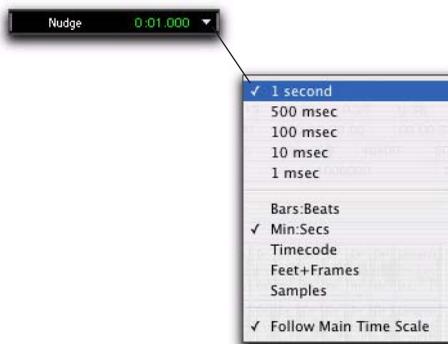


*Nudge Value pop-up menu showing Time Code*

## Nudging with Nudge

**To nudge one or more region:**

**1** Configure the Nudge value. For details, see "Defining the Nudge Value" on page 472.

**2** With the Time Grabber or Selector tool, select the region, regions, or region groups you want to nudge. The regions can reside on multiple tracks. Only regions that are completely selected are nudged.

**3** Do one of the following:

- On the numeric keypad, press Plus (+) to move the selection forward by the Nudge value.

– or –

- Press Minus (–) to move the selection back by the Nudge value.

The Nudge command works the same regardless of the Edit mode. Adjacent regions are overlapped in Shuffle mode, the Spot dialog does not appear when in Spot mode, and shifted material does not snap to the Grid when in Grid mode.

## Nudging Regions on Multiple Tracks and in Multichannel Tracks

When nudging a selection of multiple regions within a single track or across multiple tracks, that also contains silence, any automation data residing within the silence is also nudged.

## Nudging by Next Nudge Value

In addition to nudging by the current Nudge value, you can also nudge by the next, larger value in the Nudge pop-up menu.

For example, if the Nudge value is set to 1 frame and you want to nudge by a larger valuer, you can nudge by the next, larger Nudge value of 10 frames.

**To nudge forward or back by the next, larger Nudge value:**

**1** Enable Commands Keyboard Focus (see "Keyboard Focus" on page 20).

**2** Select the regions or notes you want to nudge.

**3** Do one of the following:
- Press Forward Slash (/) to nudge the selected material forward by the next Nudge value.
- Press M to nudge the selection back by the next Nudge value.

*When Commands Keyboard Focus is not enabled, press Start+Forward Slash (/) (Windows) or Control+Forward Slash (/) (Mac) to nudge the selected material forward by the next Nudge value, and press Start+M (Windows) or Control+M (Mac) to nudge the selected material back by the next Nudge value.*

## Nudging a Region's Contents

Often a region's start point will reside at the correct location, perhaps at a SMPTE frame or bar, but the material within the region starts too late or early. You can, in effect, nudge a region's audio waveform or MIDI notes without displacing the region's start and end points.
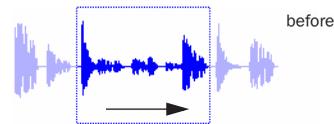


Region contents are slid, moving waveform material into and out of the current region boundaries
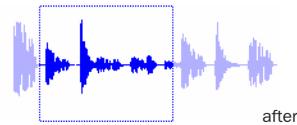


*Nudging region content*

This "sliding" of region contents is only possible if there is material residing outside the region's start and end points—from the region having been trimmed, or perhaps captured from a larger region.

**To nudge the contents of a region without changing the region start and end points:**

**1** Configure the Nudge value (see "Defining the Nudge Value" on page 472).

**2** With the Time Grabber tool, select the region whose contents you want to nudge.

**3** While pressing the Start key (Windows) or Control (Mac), press Plus (+) or Minus (–) on the numeric keypad to move the material by the Nudge value.

# Quantizing Regions to Grid

The Quantize to Grid command adjusts the placement of selected audio and MIDI regions so that their start points (or sync points, if present) align precisely to the nearest Grid boundary.

To quantize individual MIDI notes or Elastic Audio Events, use the Quantize Event Operations. You can also use the Quantize Event Operation to quantize audio regions (see "Quantize" on page 558).

**To quantize one or more regions:**

**1** Select the Grid value (see "Defining the Grid Value" on page 656).

**2** With the Selector or Time Grabber tool, select the region or regions you want to quantize. The regions can be on multiple tracks. Only regions that are entirely selected will be quantized.

**3** Choose Region > Quantize to Grid. Region start times (or sync points) are aligned to the nearest boundaries for the defined Grid.

For MIDI regions, only the regions are quantized and all MIDI data contained within the regions (such as notes) are moved equally, thereby retaining their rhythmic relationships.

For Elastic Audio regions, only the regions are quantized and all Elastic Audio Events contained within the regions (such as transient events) are moved equally, thereby retaining their rhythmic relationships.

☼ *To quantize individual MIDI notes or Elastic Audio Events, use the Quantize Event Operations. You can also use the Quantize Event Operation to quantize audio regions. For more information see "Quantize" on page 558).*

# Editing Stereo and Multichannel Tracks

Regions on individual channels within stereo and multichannel tracks cannot be independently selected. All selections for these tracks are time-based, which means that selections made with the Selector or Time Grabber tool extend to each and every channel in the track.

When regions in multichannel tracks are edited with any of the Trimmer tools or dragged with the Time Grabber tool, material on all channels is affected equally as a group.

### Split Selected Tracks

To edit a specific channel within a stereo or multichannel track without affecting the other channels, you can split the track into separate mono tracks. Once the edits have been made to the separated material, you can then drag or copy it back to the original multichannel track.

**To split a stereo or multichannel track:**

**1** Select one or more stereo or multichannel tracks (see "Selecting Tracks" on page 146).

**2** Choose Track > Split Into Mono. Regions from the channels on the selected tracks are placed on new, mono audio tracks.

Names for the new tracks are based on the source track name and channel suffix. For example, if a stereo track called "Funkit" is split, two new tracks called "Funkit.L" and "Funkit.R" are created.

Output and send assignments and volume and pan settings are retained in the new tracks. Mono equivalents of stereo and multi-mono plug-in assignments are assigned in the new tracks. However, multichannel plug-in assignments are not assigned in the new tracks.

## Dragging Regions to and from Stereo and Multichannel Tracks
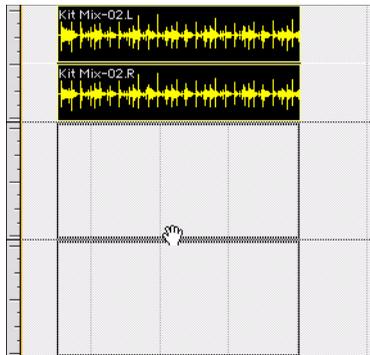


*Dragging a stereo region to two mono audio tracks*

When dragging regions to or from stereo or multichannel tracks, the following rules apply:

◆ Provided the number of tracks and channels are the same for the source and destination, you can drag regions between multichannel tracks and mono tracks.

◆ The source and destination for dragged regions can be mixed. For example, you can drag regions from a 5.0 track (containing five channels) to a stereo track and three mono audio tracks.

◆ When dragging multichannel regions to mono tracks, the destination tracks must be adjacent.

◆ When dragging regions from mono tracks to a multichannel track, the source tracks need not be adjacent.

Multichannel regions can also be dragged from the Region List, to multichannel tracks of the same format, groups of mono audio tracks, or a combination of both.

Conversely, a collection of single, mono regions can be dragged from the Region List to multichannel tracks—provided the dragged number of regions matches the number of channels in the destination track.

## Consolidate Command

During the course of normal edit operations, any track can accumulate many regions. However, once a track or track range (such as a verse or chorus) reaches a satisfactory state, you may want to consolidate multiple regions into a single region.

When consolidating an entire audio track or just an Edit selection, a new audio file is written that consists of the entire selection, including any blank space.

When consolidating, muted regions are treated as silence. Otherwise, whether or not a track is muted, or contains Mute automation, does not affect the Consolidate command.

⚠ *Consolidating an audio track does not consolidate underlying automation data. To create a single file with automation data applied to the audio, use Bounce to Disk (see "Bounce to Disk" on page 836).*

**To consolidate regions within a track:**

**1** Do one of the following:

- Using the Time Grabber or Selector tool, select the regions you want to consolidate.

– or –

- To select all regions in a track, triple-click in its playlist with the Selector tool.

**2** Choose Edit > Consolidate.

# Compacting an Audio File

The Compact Selected command deletes unused portions of audio files to conserve disk space, and to prepare for cleaner hard drive back-ups. The Compact Selected command also deletes any audio files for which there are no regions on tracks referencing those files.

Because it permanently deletes audio data, the Compact Selected command should be used only after you have completely finished your editing and are sure that you have no further use for the unused audio data.

The Compact Selected command can *pad* the regions of the compacted file by a selectable amount. If regions in your session use cross-fades, or if you want to pad the regions for the sake of any future trimming, you should enter an appropriate amount of padding (in milliseconds).

⚠ *The Compact Selected command is destructive and cannot be undone. It permanently alters the original audio files. There is no way to recover data deleted by this command.*

**To compact an audio file:**

**1** From the Region List pop-up menu, choose Select > Unused. All regions that have not been placed in a track in the current session are highlighted in the Region List.

**2** To remove all of these unused audio regions, choose Clear Selected from the Region List pop-up menu. When the dialog appears, choose Remove.

**3** In the Region List, select the region or regions you want to compact.

**4** From the Region List pop-up menu, choose Compact Selected.

**5** Enter the amount of padding in milliseconds that you want for each region in the file.

**6** Click Compact to compact the file or Cancel to cancel the command.

Once the Compact operation has been completed, the session is saved automatically.

# Processing Audio with AudioSuite Plug-ins

The AudioSuite plug-ins included with your Pro Tools system can be used to process and modify audio regions or even entire audio files. Do this in order to apply a specific AudioSuite process (such as Normalization or DC Offset Removal) any number of audio regions in your session.

📄 *Refer to the DigiRack Plug-ins Guide for more information about AudioSuite plug-ins.*

# TCE (Time Compression and Expansion) Edit To Timeline Selection

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

When the Edit and Timeline selections are unlinked, you can compress or expand an audio selection to fit the Timeline selection. On audio tracks, TCE Edit to Timeline Selection uses the TCE AudioSuite Plug-in selected in the Processing preferences (*see "Processing Preferences" on page 86*). On Elastic Audio–enabled tracks, TCE Edit To Timeline Selection uses the track's selected Elastic Audio plug-in (see "Elastic Audio Plug-ins" on page 507).

### To fit an Edit selection to the Timeline:

**1** Deselect Options > Link Timeline and Edit Selections.

**2** With the Selector tool, select the audio material to be compressed or expanded.

**3** In any Timebase ruler, select the time range where you want to fit the audio material.

**4** Choose Edit > TCE Edit to Timeline Selection. The Edit selection is compressed or expanded to the length of the Timeline selection.

### TCE Edit to Timeline Selection on Multiple Tracks and Channels

The TCE Edit to Timeline command can be used on multichannel selections, and selections across multiple tracks. All regions are compressed or expanded equally by the same percentage value, based on Edit selection range. This ensures that the rhythmic relationship between the different channels or tracks is maintained.

### Fitting an Audio Region to an Edit Selection

Regions can be dragged from the Region List to fit within an Edit selection. The dragged region is compressed or expanded to fit within the selection. On audio tracks, fitting an audio region to the Edit selection uses the TCE AudioSuite Plug-in selected in the Processing preferences (*see "Processing Preferences" on page 86*). On Elastic Audio–enabled tracks, it uses the track's selected Elastic Audio plug-in (see "Elastic Audio Plug-ins" on page 507).

### To fit an audio region to an Edit selection:

**1** With the Selector tool, make an Edit selection in an audio track.

**2** Control-Alt-drag (Windows) or Command-Option-drag (Mac) the region from the Region List to the track with the selection. The start of the region is positioned at the selection start, and the region is compressed or expanded to match the length of the selection.

## Fit to Selection on Multiple Tracks and Channels

The Fit to Selection command supports dragging multiple regions from the Region List to multiple tracks, or multichannel tracks.

However, all dragged regions are compressed or expanded equally by the same percentage value, based on length of the region last clicked before dragging.

# Chapter 25: Fades and Crossfades

## Using Fades

You can quickly and easily apply a fade-in or fade-out on a region, as well as crossfades between adjacent audio regions. Crossfading is the process of fading between two regions of audio to prevent pops, clicks, or sudden changes in sound. Crossfades have many applications, from smoothing transitions between regions to creating special audio effects. The crossfade duration, position, and shape are all user-definable.

Fades are computed and written to disk. Crossfades that are written to disk are stored in a folder named "Fade Files" within the session folder. When you play back your track, Pro Tools reads and plays back the fade file from disk.

Pro Tools does not let you replace fade-ins and fade-outs with crossfades. To add a crossfade between regions, any existing fade-ins and fade-outs between the regions must first be deleted.

☼ *Pro Tools HD includes an AutoFade feature that provides real-time fades without processing them to disk (see "Using AutoFades" on page 490).*

## About Crossfades and Curves

To create a crossfade between two regions, use the Selector tool to select across the end point of the first region and the start point of the second. The length of the selection determines the length of the crossfade. Though fades may appear to be discrete regions, they cannot actually be separated from the regions in which they were created. You can, however, create fade-ins and fade-outs for individual regions (see "Creating Fades at the Beginnings and Ends of Regions" on page 487).

Use the Fades dialog to select, view, and manipulate the curves used to perform fades and crossfades. Different volume curves can be assigned to the fade-out and fade-in portions of crossfades. The Fades dialog can also render a preview of the fade.

The following examples illustrate common types of crossfades, and explain how the type of selection you make determines the character of the crossfade.

☼ *Since crossfades are created by fading between overlapping audio material, a crossfade cannot be performed on regions that do not contain audio material beyond their region boundaries.*

## Standard Crossfade (Centered)
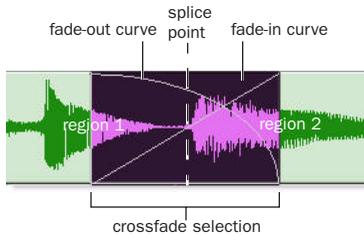


*Centered crossfade*

This type of selection creates a crossfade on both sides of the splice point, which affects the volume of region 1 and region 2. It is the most common type of crossfade.

This crossfade type requires that region 1 contain audio material beyond its end point, and region 2 contain audio material before its start point.

## Pre Crossfade
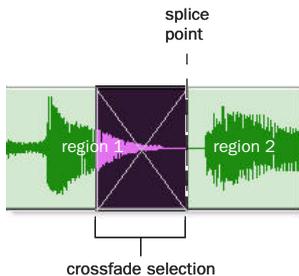


*Pre crossfade*

This type of selection creates a crossfade before the splice point. This lets you maintain the volume of the very beginning of region 2 instead of fading across it, which is useful if there is a strong attack at the beginning of region 2 that you want to preserve. When making selections for crossfades that occur on the border of two regions, you can use the Tab key to move the cursor to the exact beginning or end of a region.

This crossfade type requires that region 2 contain audio material before its start point.

## Post Crossfade
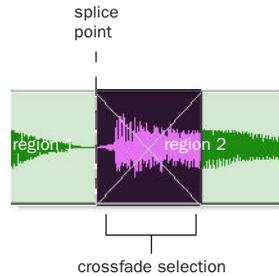


*Post crossfade*

This type of selection creates a crossfade after the splice point. It is useful if you want to maintain the amplitude of region 1 until its very end. When making selections for crossfades that occur on the border of two regions, you can use the Tab key to move the cursor to the exact beginning or end of a region.

This crossfade type requires that region 1 contain audio material beyond its end point.

# Fades Dialog

When choosing the Edit > Fades command you can use the Fades dialog to select, view, and preview fades and crossfades, and to edit the curves used to perform fades and crossfades. A fade-in shows the In Shape settings, but not the Out Shape settings, and likewise a fade-out shows the Out Shape settings, but not the In Shape settings.
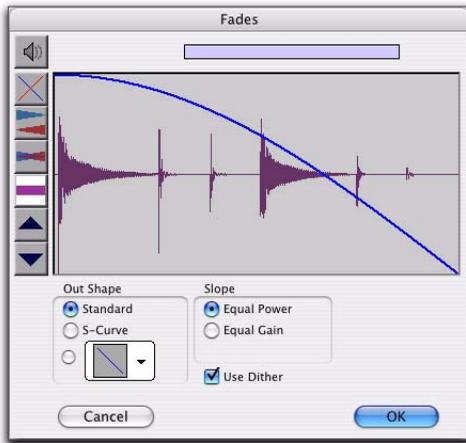


*Fades dialog, fade-out*
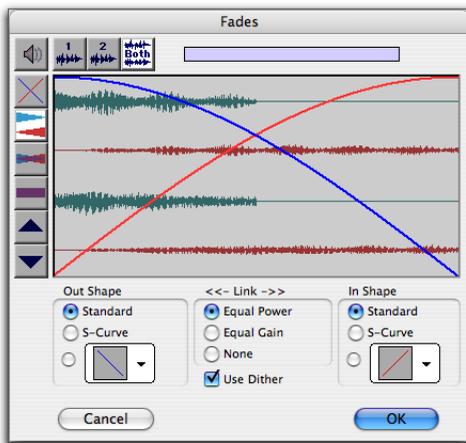


*Fades dialog, crossfade*

The controls in the Fades dialog include:

**Audition**



Click this button to audition fades. Pro Tools supports fade auditioning directly from your audio interface outputs.

**View First Track (Crossfades Only)**



If you are cross-fading between more than one track, this button allows you to view and preview the audio of the first in a pair of adjacent tracks.

**View Second Track (Crossfades Only)**



If you are cross-fading between more than one track this button allows you to view and preview the audio of the second in a pair of adjacent tracks.

**View Both Tracks (Crossfades Only)**



Click this button to display the waveforms of the first two adjacent tracks in a multitrack crossfade.

**Fade Curves Only**



Click this button to display the specified fade curves without showing the actual audio waveforms. This is the default view when you open the Fades dialog.

**Fade Curves and Separate Waveforms**



Click this button to display the specified fade curves along with separate views of the fade-in and fade-out waveforms.

**Fade Curves and Superimposed Waveforms**



Click this button to display the specified fade curves along with superimposed views of the fade-in and fade-out waveforms.

**Fade Curves and Summed Waveform**



Click this button to display the specified fade curves along with a single waveform representing the summation of the any crossfaded audio.

**Zoom In**



Click this button to scale the view of the waveform's amplitude upwards. Control-click (Windows) or Command-click (Mac) for the default view scale.

**Zoom Out**



Click this button to scale the view of the waveform's amplitude downwards. Control-click (Windows) or Command-click (Mac) for the default view scale.

## Fade-Out Shape Settings
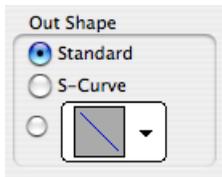


*Fade-Out Shape*

The Out Shape setting lets you define the shape of the fade-out from a region for a fade, or from region 1 for a crossfade.

**Standard** Selects a single continuous fade curve. This creates a general-purpose fade that can be edited by dragging the curve itself.

**S-Curve** Selects an S-shaped curve, which inverts its beginning and end characteristics. This makes it possible to fade out faster at the curve's start and slower at its end, for example. S-shaped curves can be useful with material that is difficult to crossfade effectively. S-curves can be edited by dragging the curve in the curve editor.

**Preset Curves** Seven commonly used preset curves are provided for fast crossfade creation. These can be edited by dragging the end points of the curve in the curve editor portion of this dialog. The seven presets are as follows:

◆ Preset Curve 1 stays at full volume throughout the fade, then immediately drops the volume at the end of the fade.



*Preset Curve 1*

◆ Preset Curve 2 fades out relatively slowly, keeping the volume fairly high throughout the duration of the fade.



*Preset Curve 2*

◆ Preset Curve 3 fades out slightly faster, keeping the volume slightly lower during the fade.



*Preset Curve 3*

◆ Preset Curve 4 fades out with a linear fade. This is the default curve.



*Preset Curve 4*

◆ Preset Curve 5 fades out quickly at the beginning of the crossfade.



*Preset Curve 5*

◆ Preset Curve 6 drops the volume even more quickly at the beginning of the fade.



*Preset Curve 6*

◆ Preset Curve 7 silences any audio at the beginning of the fade.



*Preset Curve 7*

## Link Settings

### (Crossfades Only)
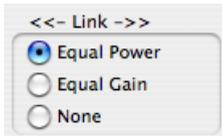


*Fade Link*

The Link setting links the selected fade-out and fade-in curves of a crossfade. If you adjust one curve, the corresponding curve is also adjusted. This ensures that the resulting crossfade is an *equal power* or *equal gain* crossfade, depending on which one you select.

**Equal Power** Recommended for material that is not phase coherent, as in the case of a crossfade between two completely different types of material. Use this option to avoid the volume drop that can occur with an Equal Gain crossfade. With this fade, you can Alt-click (Windows) or Option-click (Mac) the fade curve to reset it to its default shape.

**Equal Gain** Recommended for material that is phase-coherent or nearly phase-coherent, as in the case of a crossfade between identical regions/instruments (for example, a repeated drum loop). Use this option to avoid clipping that can occur when using an Equal Power crossfade. With this fade, you can Alt-click (Windows) or Option-click (Mac) the fade curve to reset it to its default shape.

**None** Disables linking between the fade-out and fade-in curves, and lets you freely adjust them separately, including start and end points. This option also allows you to create custom crossfade shapes.
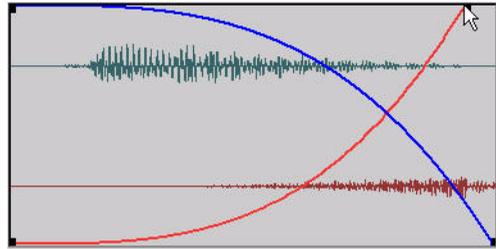


*Adjusting the end point of a fade curve*

When Link is set to Equal Power or Equal Gain, you can edit only the fade-in portion of the curve, by pressing Alt (Windows) or Option (Mac) while dragging. To edit only the fade-out portion of the curve, press Control (Windows) or Command (Mac) while dragging.

## Slope Settings

### (Fade-In or Fade-Out Only)
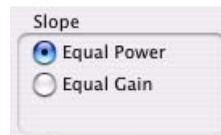


*Fade Link*

The Slope settings affect the slope of the fade-in or fade-out. Select either equal power or equal gain. For more information on equal power and equal gain fades, see "Link Settings" on page 484.

## Use Dither



*Dither option for Fades*

The Use Dither option turns on a preset, noise-shaped dither function that improves audio performance when fading in or fading out of silence, and crossfading between low amplitude regions. Dithering is usually not necessary when applying fades to regions with audio at high amplitudes. You can disable Dither while editing fades in the Fades dialog to speed up previews and fade recalculation, then re-enable Dither to create the final fade or crossfade.

## Fade-In Shape Settings
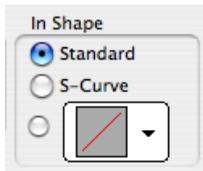


*Fade-in Shape*

The In Shape setting lets you define the shape of the fade-in to a region for a fade, or to region 2 for a crossfade.

**Standard** Selects a single continuous fade curve. This creates a general-purpose fade that can be edited by dragging the curve itself.

**S-Curve** Selects an S-shaped curve, which inverts its beginning and end characteristics. This makes it possible to fade in faster at the start of the curve, and slower at the end. S-shaped curves are useful with material that is difficult to fade effectively. S-curves can be edited by dragging the curve in the curve editor.

**Preset Curves** Seven commonly used preset curves are provided for fast creation. These can be edited by dragging the end points of the curve in the curve editor portion of this dialog. The seven presets are as follows:

◆ Preset Curve 1 fades in at full volume immediately at the beginning of the fade and keeps it there throughout the fade.



*Preset Curve 1*

◆ Preset Curve 2 fades in quickly in the beginning, reaching full amplitude fairly early in the fade.



*Preset Curve 2*

◆ Preset Curve 3 fades in moderately fast.



*Preset Curve 3*

◆ Preset Curve 4 fades in with a linear fade curve. This is the default curve.



*Preset Curve 4*

◆ Preset Curve 5 fades in slowly at the beginning of the fade.



*Preset Curve 5*

◆ Preset Curve 6 fades in even more slowly than the previous curve.



*Preset Curve 6*

◆ Preset Curve 7 silences any audio until the end of the fade.



*Preset Curve 7*

## Typical Curve Combinations

Following are the available combinations of fade-out and fade-in curves.

**Linear Crossfade** This is a good general purpose crossfade with a smooth, even transition between region 1 and region 2.
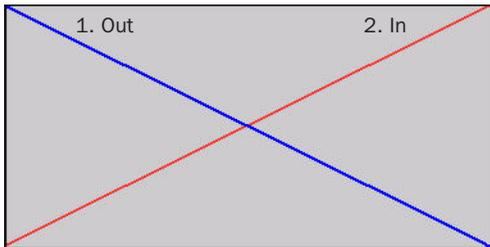


*Linear Crossfade*

**Equal Power Crossfade** This is a good general purpose crossfade useful in cases where a linear crossfade seems to create a noticeable drop in volume across the splice point.
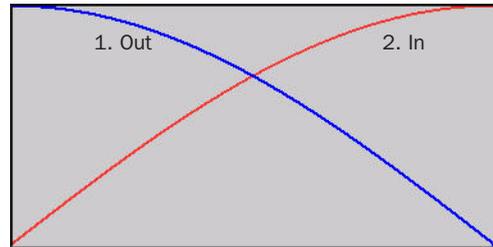


*Equal Power Crossfade*

**Overlap Fade** This combination of curves keeps both regions at full amplitude throughout the crossfade: region 2 "jumps in" at the beginning and region 1 "jumps out" at the end.



*Overlap Crossfade*

## Fade and Crossfade Preferences

You can set default fade and crossfade settings. These settings load as your "base" settings when you use the Create Fades command, and the Fade to Start and Fade to End commands.

**To set the fade and crossfade preferences:**

**1** Choose Setup > Preferences and click the Editing tab.

**2** Set the Pre-Roll and Post-Roll times for Fade previews.
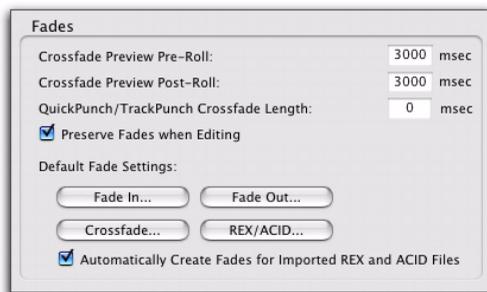


*Fade preferences*

**3** Click Fade In and set the default shape for fade-ins, then click OK.

**4** Click Fade Out and set the default shape for fade-outs, then click OK.

**5** Click Crossfade and set the default shape for crossfades, then click OK.

**6** Click OK.

# Creating Fades at the Beginnings and Ends of Regions

Pro Tools lets you create fade-ins and fade-outs at the beginnings and ends of regions.

With Pro Tools HD, you can also use an automatic fade-in/out option, which applies *real time* fade-ins/outs to all regions during playback. These fades are not written to disk, but are automatically applied during playback. For more information, see "Using AutoFades" on page 490.
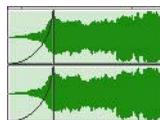


*Region with a fade-in*

## Creating Fade-Ins and Fade-Outs

Depending on how you make the selection, you can position a fade-in or fade-out at the exact beginning or end of a region, or position it so it extends into a blank area of the track. The length of the selection in the region determines the length of the fade-in or fade-out.

You can also fade to the beginning or end of a region from an insertion point.

Although fades appear to be discrete regions, they cannot be separated from the regions in which they were created.

When changing tempo in a tick-based audio track, fade-ins and fade-outs remain with their parent regions. Fades maintain their absolute duration and are consequently recalculated after any tempo changes.

**To create a fade-in:**

**1** Select the beginning of the region that you want to fade in. The selection must extend to the exact beginning of the region or a blank area prior to the region in the track.
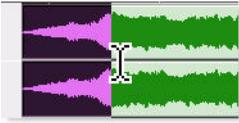


*Selecting the beginning of a region for a fade-in*

**2** Do one of the following:

- Choose Edit > Fades > Create.

– or –

- Press Control+F (Windows) or Command+F (Mac).

**3** Select the fade-in curve and configure the other Fade settings.

**4** Click the Audition button to audition the fade.

**5** Adjust the curve by dragging it or by selecting a different shape from the In Shape pop-up menu.

**6** Click OK.

Pro Tools calculates the fade and writes it to disk. The selected fade curve appears in the region.

**To create a fade-out:**

**1** Select the end of the region that you want to fade out. The selection must extend to the exact end of the region or a blank area after the region in the track.



*Selecting the end of a region for a fade-out*

**2** Do one of the following:

- Choose Edit > Fades > Create.

– or –

- Press Control+F (Windows) or Command+F (Mac).

**3** Select the fade-out curve and configure the other Fade settings.

**4** Click the Audition button to audition the fade.

**5** Adjust the curve by dragging it or by selecting a different shape from the Out Shape pop-up menu.

**6** Click OK.

Pro Tools calculates the fade and writes it to disk. The chosen fade curve appears in the region.

Fade lengths can be resized with any of the Trimmer tools, including Nudge Trim commands. See "Using the Trimmer Tools" on page 433 and "Trimming with Nudge" on page 471.

**To fade from the insertion point to a region start point:**

**1** Place the cursor at a location in the region.

**2** Do one of the following:

- Choose Edit > Fades > Fade To Start.

– or –

- Press Alt+D (Windows) or Control+D (Mac).

The fade is applied based on the Fade In preferences (see "Fade and Crossfade Preferences" on page 486).

**To fade from the insertion point to a region end point:**

**1** Place the cursor at a location in the region.

**2** Do one of the following:

- Choose Edit > Fades > Fade To End.

– or –

- Press Alt+G (Windows) or Control+G (Mac).

The fade is applied based on the Fade Out preferences (see "Fade and Crossfade Preferences" on page 486).

# Creating a Crossfade

**To create a crossfade between two regions:**

**1** With the Selector tool, click at the point where you want the crossfade to begin in the first region and drag to where you want it to end in the second region. Crossfade selections can begin and end anywhere in their respective regions.

**2** Do one of the following:

- Choose Edit > Fades > Create.

– or –

- Press Control+F (Windows) or Command+F (Mac).

**3** Use the view buttons to adjust the view of the crossfade. It may take a few moments to calculate the waveform display for long selections.

**4** Select an Out Shape and an In Shape.

**5** Select a Linking option.

**6** Click the Audition button to audition the crossfade. For long crossfades, it may take Pro Tools a few moments to calculate and load the audio into playback RAM.

**7** Do one of the following:

- Adjust the curves by selecting different preset shapes with the Out Shape and In Shape pop-up menus.

– or –

- Drag the Fade-In and Fade-Out curves to a custom shape. By choosing None as the Linking option, you can drag the beginning or end points of a fade curve to adjust its beginning or end point.

**8** Click the Audition button to audition the crossfade again.

**9** When the crossfade sounds right, click OK. The fade is calculated and written to disk, but the audio files and regions remain unchanged. Crossfades are stored in the Fade Files folder in the session folder.

*Crossfade lengths can be resized with any of the Trimmer tools, including Nudge Trim commands. See "Using the Trimmer Tools" on page 433 and "Trimming with Nudge" on page 471.*

**To remove a crossfade, do one of the following:**

▪ Select the area of the track containing any crossfades you want to delete and choose Edit > Fades > Delete.

▪ Select the crossfade with the Time Grabber tool and press Backspace (Windows) or Delete (Mac).

▪ Right-click the crossfade with any of the edit tools and select Delete Fades from the pop-up menu.

**To trim a crossfade:**

**1** Select the crossfade with the Time Grabber tool, or double-click it with the Selector tool.

**2** With any of the Trimmer tools, trim either side of the crossfade. The crossfade is recalculated to reflect the newly trimmed length.

## Crossfades on Tick-Based Audio Tracks

Crossfades are re-rendered after changing tempo in a tick-based audio track. The new crossfade is the same duration as the crossfade prior to the tempo change.

If there is not enough audio material to complete the crossfade, or if the new crossfade area falls outside of valid region boundaries, the crossfade is removed.

## Pre and Post Crossfade Selections

By making a selection that begins or ends precisely on the border of two regions, you can create "pre" or "post" crossfades. Use the Tab key to place the insertion point at the exact beginning or end of a region.

**To create a pre- or post-crossfade:**

**1** With the Selector tool, click in the track that contains the regions you want to crossfade.

**2** Do one of the following:
- Press Tab to move forward to the next region boundary.

– or –
- Press Control+Tab (Windows) or Option+Tab (Mac) to move back to the previous region boundary.

**3** Extend the selection as follows:
- Shift-drag to adjust your selection, or press Shift+Tab to extend the selection forward to the next region boundary.

– or –
- Press Control+Shift+Tab (Windows) or Option+Shift+Tab (Mac) to extend the selection back to the previous region boundary.

**4** Do one of the following:
- Choose Edit > Fades > Create.

– or –
- Press Control+F (Windows) or Command+F (Mac).

**5** Select a fade type and click OK.

# Using AutoFades

**(Pro Tools HD Only)**

Pro Tools HD can automatically apply real-time fade-ins and fade-outs to all region boundaries in the session. Specify the duration (0 to 10 ms) for automatic real-time fades with the Auto Region Fade In/Out Length preference in the Operation Preferences page). These fade-ins and fade-outs are performed during playback and do not appear in the Edit window, and are not written to disk.

The automatic fade-in/out option also has an effect on Voice borrowing in a session. Whenever a lower-priority virtual track "pops thru" a silence in a higher-priority track on the same voice, a fade-in and fade-out is applied to the transition.

This feature is especially useful in post production situations such as dialogue tracking. For example, you could assign both a dialogue track and a "room tone" track with matching background to the same voice. You could then set the AutoFade option to a moderate length (4 ms or so) so that whenever a silence occurred in the dialog, playback would switch smoothly to and from the background track without clicks or pops.

Using automatic fade-ins/outs saves you the trouble of editing to zero-crossings or creating numerous rendered fades in order to eliminate clicks or pops in playback. However, since these autofades are not written to disk, those clicks or pops still exist in the underlying sound file. Consequently, those anomalies still appear if the Duplicate AudioSuite plug-in or the Export Selected as Sound Files command (from the Region List) are used to duplicate multiple regions as a continuous file. To render these real-time auto fades to disk, choose File > Bounce to > Disk.

**To set the length of automatic fade-ins/outs:**

**1** Choose Setup > Preferences and click the Operation tab.

**2** Enter a value between 0 and 10 ms for the Auto Region Fade In/Out Length. A value of zero (the default) means that no auto-fading will occur.

**3** Click OK. The AutoFade value is saved with the session, and is automatically applied to all free-standing region boundaries until you change it.

# Creating Fades and Crossfades in Batches

Using Batch Fades, you can create many fades at once. Select across several regions and use the Create Fades command to create crossfades for each region transition. If your selection includes regions that already have crossfades, this feature lets you modify them.

**To apply crossfades between multiple regions:**

**1** With the Selector tool, click in the first region in which you want to create a crossfade. Make sure that the selection includes the entire region.

**2** Drag to extend the selection to include the last region you want to crossfade. Make sure that the selection includes the entire region.



*Selected regions for Batch Fades*

**3** Do one of the following:
- Choose Edit > Fades > Create.

– or –
- Press Control+F (Windows) or Command+F (Mac).

**4** In the Batch Fades dialog, select whether you want to Create New Fades, Create New Fade-Ins & Outs, Adjust Existing Fades, or a combination of these options.

If you select to create new fades *and* new fade-ins and outs, new crossfades are created at each region boundary that is bordered by another selected region, a fade-in is created at the start of the first region, and a fade-out is created at the end of the last region.
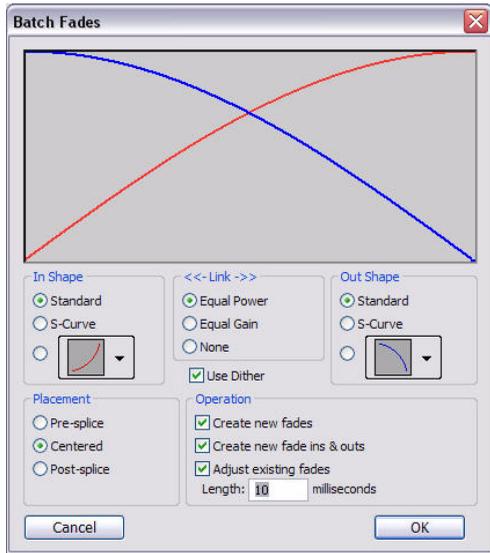


*Batch Fades dialog*

**5** Select the placement of the Fades: Pre-Splice, Centered, or Post-Splice (see "About Crossfades and Curves" on page 479).

**6** Enter a crossfade length in milliseconds.

**7** Click OK.

Pro Tools creates the fades for all selected regions.

💡 *Fade lengths can be resized with any of the Trimmer tools, including Nudge Trim commands. See "Using the Trimmer Tools" on page 433 and "Trimming with Nudge" on page 471.*

# Moving and Nudging Fades and Crossfades

Fades and crossfades can be moved or nudged in tracks, independently of their contributing regions. Moving or nudging fade-ins or fade-outs reveals or hides audio as the fade is moved from the edge of a contributing region. Moving or nudging crossfades changes the overlap point of the contributing regions. Moving or nudging fades is also constrained by underlying region boundaries.

## Moving or Nudging Fades or Crossfades within Regions

**To move or nudge a fade or crossfade within its contributing regions:**

**1** Select the fade or crossfade by doing one of the following:

- Use the Time Grabber tool to select the fade.

– or –

- Use the Selector tool to select a range that includes the fade.
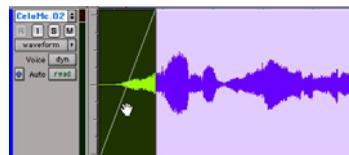


*Selecting a fade with the Time Grabber*

**2** Move the fade by doing one of the following:

- Drag the fade with the Time Grabber tool to a new location on the track.

– or –

- Nudge the fade by pressing Plus (+) or Minus (–) on the numeric keypad to move the fade forward or backward on the track.
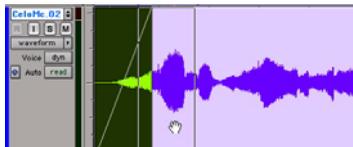


*Dragging the fade with the Time Grabber*
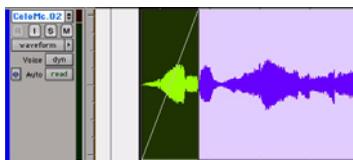


*Result of moved fade*

## Moving and Nudging Regions with Fades or Crossfades

### Moving Regions Containing Fades or Crossfades

When you move or nudge a region selection that contains a fade-in, fade-out, or crossfade, the fade moves with the selection.

**To move a region selection with fades or crossfades:**

**1** Do one of the following:

- Click a region with the Time Grabber tool (or double-click with the Selector tool) to select the region along with the fade (in or out).

– or –

- Select multiple regions that include the fades and crossfades you want to move.

**2** Move the region selection by doing one of the following:

- Drag the region selection with the Grabber tool to a new location on the track.

– or –

- Nudge the region selection by pressing Plus (+) or Minus (–) on the numeric keypad to move the region forward or backward on the track.
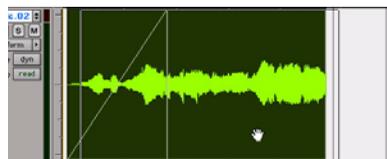


*Dragging a region with its fade*

### Nudging Regions Adjacent to Fade-Ins or Fade-Outs

When you nudge a region selection adjacent to a fade-in or fade-out, but do not select the fade, the adjacent fade stretches or shrinks to maintain the fade start or end point. The amount of change depends on the amount of audio material outside the fade start or end point.

**To a nudge region without its fade:**

**1** Select the region, but not the fade.
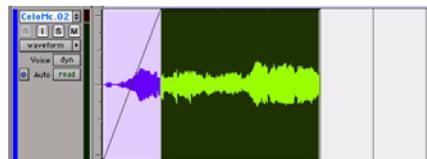


*Selecting a region without its fade*

**2** Nudge the region by pressing Plus (+) or Minus (–) on the numeric keypad.
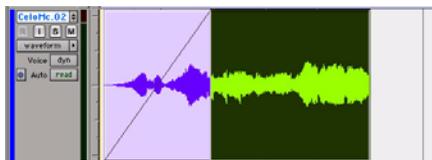


*Nudging a region without its fade*

## Moving Regions Adjacent to Crossfades

When you move either of the regions that contributes to a crossfade, the regions separate. The status of the fade depends on the Preserve Fades when Editing preference (in the Editing Preferences page).

**To separate crossfaded regions and retain the corresponding fades:**

**1** Choose Setup > Preferences and click the Editing tab.

**2** Select Preserve Fades when Editing.

**3** Click OK to close the Preferences dialog.

**4** Use the Time Grabber or Separation Grabber tool to select one of the contributing regions to a crossfade.
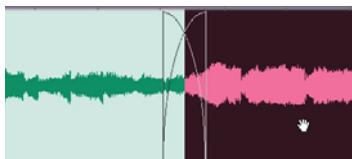


*Selecting a region with a crossfade*

**5** Drag the selected region with the Grabber.
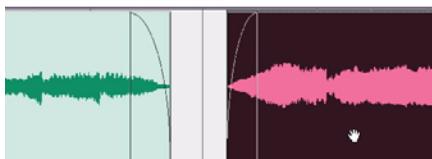


*Separating regions while preserving fades*

**To separate crossfaded regions and remove the fade:**

**1** Choose Setup > Preferences and click the Editing tab.

**2** Deselect Preserve Fades when Editing.

**3** Click OK to close the Preferences dialog.

**4** Use the Time Grabber or Separation Grabber tool to select one of the contributing regions to a crossfade.
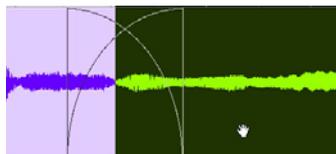


*Selecting a region with a crossfade*

**5** Drag the selected region with the Grabber.
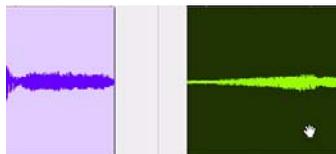


*Separating regions while removing fades*

## Nudging Regions Adjacent to Crossfades

When you nudge either of the regions that contributes to a crossfade, the fade stretches to preserve the relative position of the crossfade start and end points. The amount of stretch depends on the amount of overlap between the contributing regions.

If you nudge a region beyond the boundary of available audio for the crossfade, the fade is removed.

**To nudge a region and stretch its crossfade:**

**1** Use the Time Grabber tool to select one of the contributing regions to the crossfade.
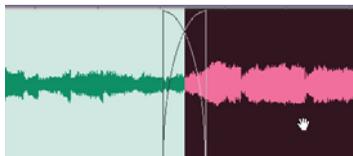


*Selecting a region with a crossfade*

**2** Nudge the region by pressing Plus (+) or Minus (–) on the numeric keypad.
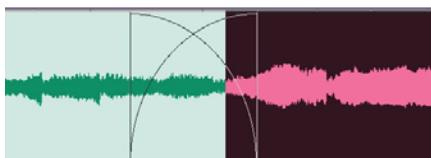


*Stretching the crossfade by nudging*

## Separating Regions That Include Fades or Crossfades

You can create regions from track material that overlaps with fades or crossfades. The fades from the source region are adjusted to the new region.

**To separate a region that overlaps with a fade or crossfade:**

**1** With the Selector tool, drag to select the material for the new region.

**2** Do one of the following:
- Choose Edit > Separate Region > At Selection

– or –

- Press Control+E (Windows) or Command+E (Mac).

Where your selection overlaps any fade-ins or fade-outs, the fade is trimmed to fit the selection.
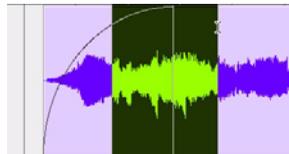


*Selecting material that overlaps a fade-in*
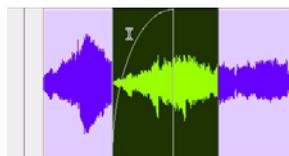


*Result of Separate Region command on fade-in*

Where your selection overlaps a crossfade, the crossfade is separated into a fade-out and fade-in at the selection boundary.



*Selecting material that overlaps a crossfade*
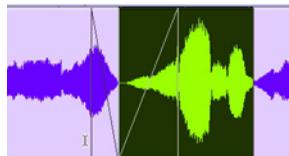


*Result of Separate Region command on crossfade*

## Trimming Regions That Include Fades or Crossfades

### Trimming a Region to a Fade Boundary

You can trim regions that are adjacent to fade and crossfade boundaries.

**To trim a region on a fade boundary:**

■ With the Trimmer tool, click the region boundary and drag to trim the region. The fade remains constant and follows the new region boundary.



*Dragging a region boundary with the Trimmer tool*

### Trimming to a Selection Across Fades or Crossfades

You can trim regions to selections that include fades or crossfades.

**To trim a region to a selection that includes fades, do one of the following:**

■ Make a selection in the track and choose Edit > Trim Region > To Selection. You can Trim across multiple regions and fades. Affected fades are adjusted to the new region boundaries.

– or –

■ Click with the Selector in the region and choose Edit > Trim Regions > Start to Insertion or End to Insertion. You can trim to region or fade boundary in the track.



*Trimming to a selection across multiple fades*

## Fade Boundaries and Shapes in Displayed Automation View

Fade boundaries and fade shapes are shown and can be edited in Automation views, allowing for more precise viewing and editing of automation data. For more information on Automation and Automation views, see Chapter 37, "Automation."
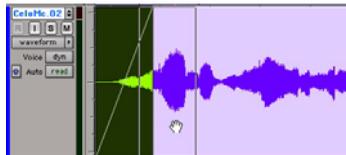


*Fade information in Automation view*

# Chapter 26: Elastic Audio

Elastic Audio provides track-based Real-Time and Rendered Time Compression and Expansion (TCE). Pro Tools Elastic Audio uses exceptionally high-quality transient detection algorithms, beat and tempo analysis, and real-time TCE processing algorithms. Elastic Audio lets you quickly and easily tempo conform and beat match audio to the session's Tempo ruler. It also provides an unprecedented degree of control over transient detection and TCE processing on an event-by-event basis.

With Elastic Audio, Pro Tools analyzes entire audio files for transient *events*. For example, an event can be a drum hit, a sung note, or chord played by a guitar. These detected events can then serve as control points for *warping* the audio. Pro Tools can warp (TCE) audio events automatically, such as automatically conforming audio to the session tempo or quantizing audio events, or you can warp audio manually using the standard editing tools in the new Warp Track View.

Elastic Audio is useful in several common workflows: working with loops, correcting performances, remixing, sound design and special effects, and film music and post production.

## Working with Loops

If you work with rhythmic loops, Elastic Audio lets you preview your loops in DigiBase browsers at their native tempo (BPM) or at the session tempo (BPM). You can even preview the loop while the session is playing back. When you find the loop you like, drag it from the browser and drop it into the session. The loop automatically conforms to the session tempo map and Bar|Beat grid.

## Correcting Performances

Elastic Audio lets you quantize audio to tighten up a performance or even manually re-align that one note that was played just a little late. Or, you might decide that the performance is excellent, but just a little under tempo. Tick-based Elastic Audio automatically warps audio to conform to tempo changes. When you change your tracks to tick-based and increase the session tempo, the audio automatically time compresses to match.

## Remixing

Elastic Audio lets you quickly beat match an entire song to the session tempo and Bar|Beat grid.

## Sound Design and Special Effects

You can use Elastic Audio to achieve special effects with extreme or widely variable TCE. Use the Varispeed algorithm to achieve tape-like effects for speed and pitch change.

### Film Music and Post Production

If you are scoring a film scene, use Elastic Audio to fit the music to the required duration. You can even use tempo changes to achieve accelerandos and ritardandos. If you are doing post production, use Elastic Audio to adjust for pull-up or pull-down factors.

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# Example Elastic Audio Workflow

In this workflow, you will be introduced to some common Elastic Audio tasks for working with loops:

- Create and configure a new session for this workflow.
- Locate and preview a loop in DigiBase at the session tempo.
- Import the loop at the session tempo on a tick-based, Elastic Audio–enabled track.
- Change the session tempo to change the tempo of the region on tick-based, Elastic Audio–enabled tracks.
- Quantize the audio to apply a Groove Template to the rhythm.

### Create and configure a new session:

**1** Create a new Pro Tools session.

**2** Set the session's Main Timebase ruler to Bars:Beats.

**3** Be sure to display the Tempo and Meter rulers.

**4** Use the default tempo of quarter-note equals 120 BPM.

### Locate and preview a loop in DigiBase at the session tempo:

**1** Open the Workspace (Window > Workspace).

**2** Navigate to the folder where you keep your drum loops. Double-click the folder name to open a volume browser of just the folder's contents.

**3** Select the loop you want to preview.

*Audition Paths for previewing are selected in the I/O Setup window (Choose Setup > I/O and click the Output tab).*

**4** Click the Preview button to preview the loop at its native tempo.
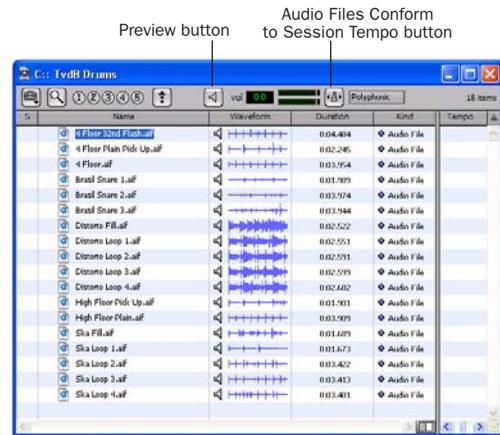


*Preview and Audio Files Conform to Session Tempo buttons in a DigiBase browser*

**5** Click the Audio Files Conform to Session Tempo button so that it highlights.

**6** Click the Preview button again and the file previews at the session tempo.

**7** Notice that if the loop was sample-based to begin with, the column to the left of the file name initially indicates that DigiBase is analyzing the file. When it is done a check mark appears in that column, the file's Duration is now measured in Bars and Beats instead of Minutes and Seconds, the Sample-based icon is replaced by the Tick-based icon, and the detected tempo of the file is displayed in the Tempo column.
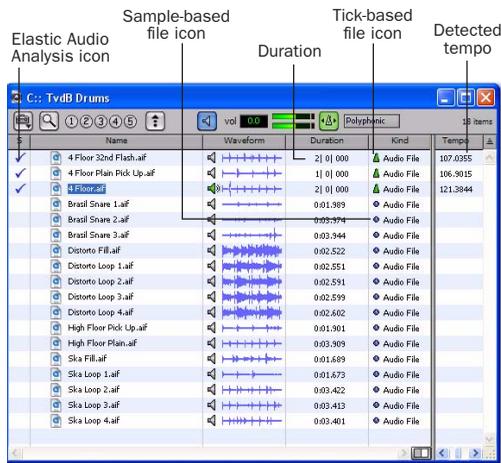


*Elastic Audio controls and indicators in DigiBase*

**8** Repeat the preceding steps to preview other loops at the session tempo.

**Import the loop at the session tempo:**

**1** Make sure that the Audio Files Conform to Session Tempo button is still highlighted. This ensures that the file will be imported as a tick-based region and can be conformed to the session tempo.

**2** Drag and drop the loop from the browser to the Track List in the session's Edit window.

�💡 *If All Files is selected as the Drag and Drop From Desktop Conforms to Session Tempo option in the Processing Preferences page, you can also drag and drop audio files from the Desktop and they are imported as tick-based Elastic Audio.*

**3** If there are no tracks in the session *and* the file is tick-based, you are prompted to either import the tempo from the file or use the session tempo. To keep the session tempo and have the loop conform to the session tempo, click Don't Import.



*Import Original Tempo from File dialog*

If there are tracks in the session, the file is imported and conformed to the session tempo.

**4** A new tick-based audio track is created with the Default Elastic Audio plug-in enabled. See Figure 1.
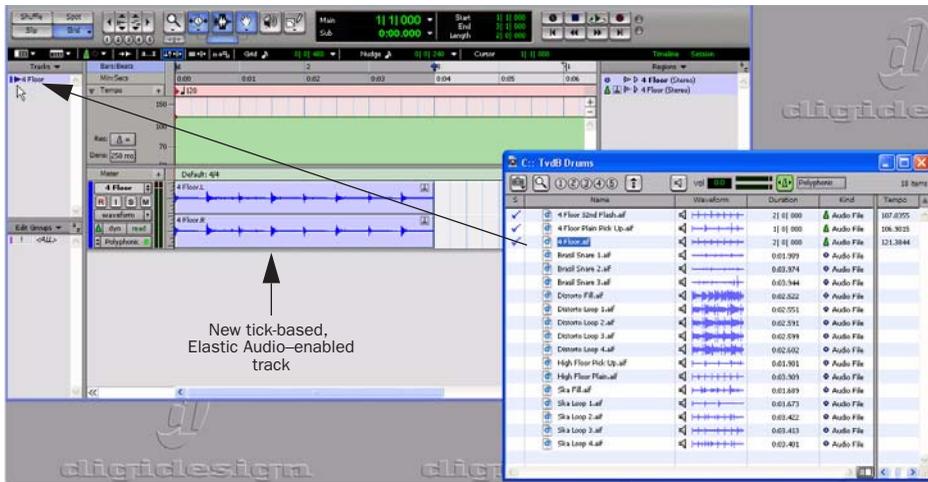


*Figure 1. Dragging and dropping a tick-based audio file from a DigiBase browser to the Track List*

**5** Since you chose to not import the file's original tempo, you will notice that the loop conforms to the tempo map and Bar|Beat grid of the session. A Warp indicator appears in both the region in the track and in the Region List. Also in the Region List, notice that there are two regions. One is the sample-based whole file region (the imported source file) and the other is the tick-based Elastic Audio–processed copy. See Figure 2.

💡 *You can also conform regions on Elastic Audio–enabled tracks to the session tempo using the Conform to Tempo command (see "Conform to Tempo" on page 607).*
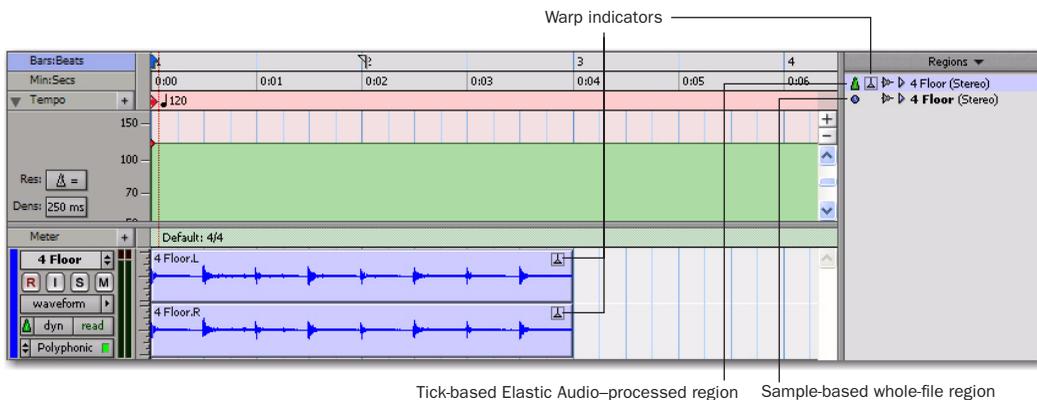


*Figure 2. Imported tick-based audio file with Elastic Audio processing*

**Change the session tempo to change the tempo of the region:**

**1** Change the tempo from the default 120 BPM to 110 BPM (see "Tempo" on page 602).
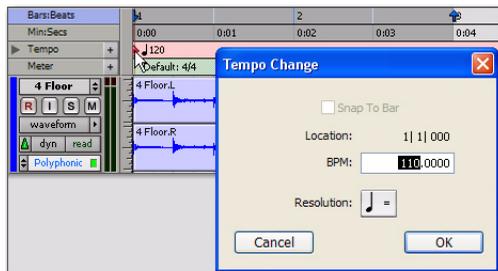


*Changing the default tempo*

**2** Notice that since the region is on a tick-based, Real-Time Elastic Audio–enabled track it automatically conforms to the new tempo.

**Quantize audio to apply a Groove Template:**

**1** Select the region on the tick-based, Real-Time Elastic Audio–enabled track.

**2** Choose Event > Event Operations > Quantize.

**3** In the What to Quantize section, make sure Elastic Audio Events is selected in the pop-up menu.

**4** From the Quantize Grid pop-up menu, select the desired Groove Template.

**5** Set any other options as desired.

**6** Click Apply.

**7** In Figure 3 below, notice that the audio has been quantized according to the selected Groove Template. In Warp view, you can see that Warp markers have been added at every Event marker near the Quantize Grid and were used to apply quantization to those events.
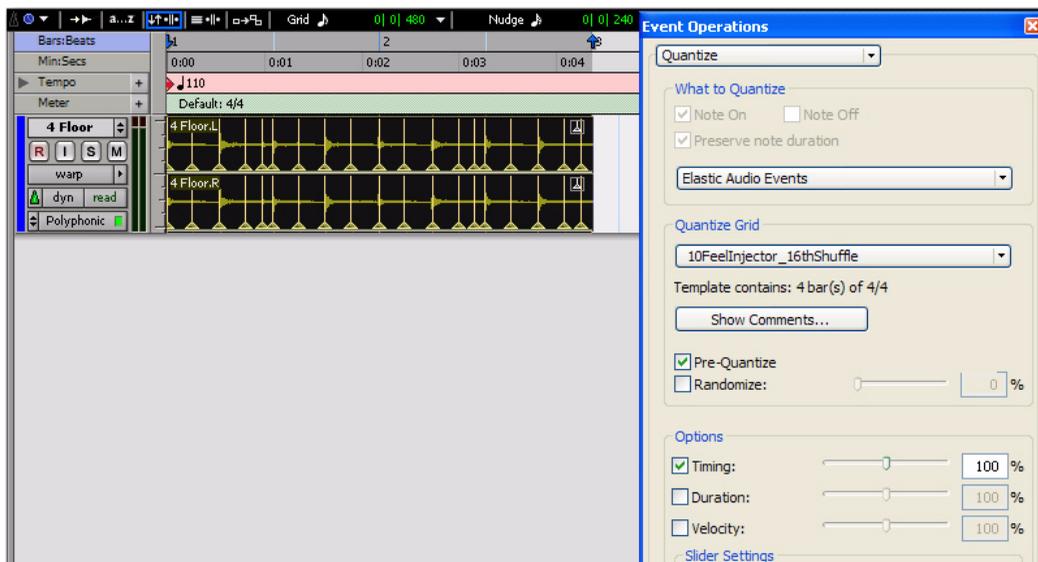


*Figure 3.  Quantized audio events (Warp markers) in Warp view*

# Elastic Audio Tracks

Any audio track in your Pro Tools session can be Elastic Audio enabled. Elastic Audio tracks can be either sample- or tick-based. Sample-based Elastic Audio–enabled tracks let you apply real-time or rendered Elastic Audio processing by editing in Warp view, applying Quantize, and using the TCE Trimmer tool. However, only tick-based Elastic Audio tracks also automatically apply Elastic Audio processing based on tempo changes.

*To have all new tracks be tick-based, enable the New Tracks Default To Tick Timebase option in the Editing preferences.*

*When creating new tracks by dragging and dropping audio from a DigiBase browser, if the Audio Files Conform to Session Tempo option is enabled, Pro Tools creates tick-based Elastic Audio–enabled tracks regardless of whether the Elastic Audio analyzed file is tick-based or sample-based. If the Audio Files Conform to Session Tempo option is not enabled, Pro Tools creates regular sample-based tracks.*

⚠ *With Pro Tools HD, Elastic Audio is disallowed on voiced tracks. Use dynamic voice allocation for tracks on which you want to use Elastic Audio. (Pro Tools LE only supports dynamic voice allocation, and cannot specifically allocate individual voices.)*

**To enable Elastic Audio on a track:**

**1** Create a new audio track or choose an existing audio track.

**2** Click the track's Elastic Audio Plug-in selector, and select the Elastic Audio plug-in appropriate to your track material and the results you want from the pop-up menu: Polyphonic, Rhythmic, Monophonic, Varispeed, or X-Form (see "Elastic Audio Plug-ins" on page 507).
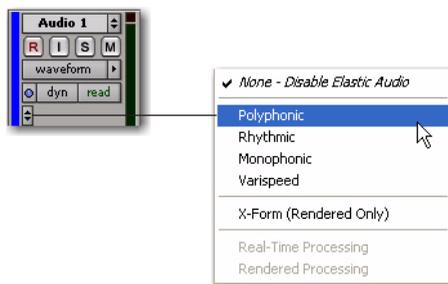


*Elastic Audio Plug-in pop-up menu*

Any audio regions on the track temporarily go offline while they are analyzed and come back online when the analysis is finished. The waveform for audio regions that are offline for Elastic Audio analysis appears grayed out.

When recording to a real-time Elastic Audio–enabled track, once recording is stopped, the newly recorded audio temporarily goes offline while it is analyzed and comes back online as soon as the analysis is finished.

**3** From the track's Elastic Audio Plug-in pop-up menu, select Real-Time Processing or Rendered Processing for Real-Time or Rendered Elastic Audio processing.

☞ *Elastic Audio processing can be Real-Time or Rendered. Real-Time Elastic Audio processing is immediate, but it is more demanding of system resources. Rendered Elastic Audio processing is non-real-time, but is less demanding of system resources. If you are working on a system with limited resources, use Rendered Elastic Audio processing. For more information, see "Real-Time and Rendered Elastic Audio Processing" on page 506.*

### To disable Elastic Audio on a track:

**1** From the track's Elastic Audio Plug-in selector, select *None – Disable Elastic Audio*.

**2** If the track had any Elastic Audio-based processing, you are prompted to Cancel, Revert, or Commit.
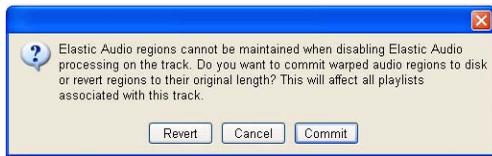


*Commit Elastic Audio dialog*

**Cancel** Leaves Elastic Audio enabled on the track.

**Revert** Removes any Elastic Audio processing, reverts regions on the track to their original duration, and disables Elastic Audio on the track.

**Commit** Renders and commits any Elastic Audio processing on the track, writes new files to disk, and disables Elastic Audio on the track.

### Committed Regions

Regions that are committed, either by disabling Elastic Audio on a track or by moving a region to a track without Elastic Audio enabled, are written to disk as new audio files. These new audio files include the audio in the region, plus any fades, and also an additional 5 seconds of audio before and after the region, if available.

### Alternate Playlists

Disabling Elastic Audio on a track affects all playlists on the track. All playlists on the track are committed or reverted depending on which option you choose.

### Creating New Tracks with Elastic Audio Enabled

New tracks are created with Elastic Audio automatically enabled in the following cases:

- When the Enable Elastic Audio On New Tracks option is enabled in the Processing Preferences page (see "Elastic Audio Options" on page 255).

- When dragging and dropping tick-based, Elastic Audio analyzed files from DigiBase browsers to the Track List or empty space in the Edit window with the Audio Files Conform to Session Tempo option enabled (see "Elastic Audio on Import" on page 258).

- When dragging and dropping REX or ACID files from the Desktop (if either REX and ACID Files Only or the All Files option is enabled for the Drag and Drop from Desktop Conforms to Session Tempo preference) or a DigiBase browser (if the Audio Files Conform to Session Tempo button is enabled) to the Track List or empty space in the Edit window (see "Importing ACID and REX Files" on page 261).

## Elastic Audio Track Controls

Audio tracks provide a new set of controls for Elastic Audio.



Elastic Audio Plug-in selector

Elastic Audio Plug-in button

Real-Time or Rendered Processing indicator
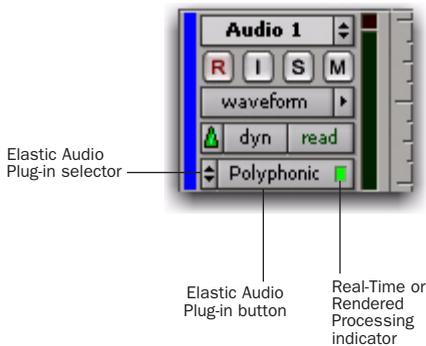
*Elastic Audio Track controls*

**Elastic Audio Plug-in Selector** Selects the Elastic Audio plug-in for Elastic Audio processing (see "Elastic Audio Plug-ins" on page 507). You can also use the Elastic Audio Plug-in selector to disable Elastic Audio processing, and to select either Real-Time or Rendered processing (see "Real-Time and Rendered Elastic Audio Processing" on page 506).

**Elastic Audio Plug-in Button** Displays the name of the selected Elastic Audio plug-in. Click the Elastic Audio Plug-in button to open the Elastic Audio Plug-in window (see "Elastic Audio Plug-ins" on page 507).

**Real-Time or Rendered Processing Indicator** Lights when Elastic Audio processing is real-time and dims when Elastic Audio processing is rendered (see "Real-Time and Rendered Elastic Audio Processing" on page 506).

## Elastic Audio Track Views

Pro Tools two track views for Elastic Audio–enabled tracks: Warp and Analysis.
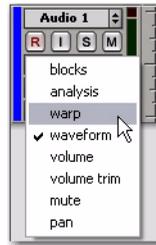


*Track View pop-up menu*

### Warp View

Warp view lets you manually "warp" (Elastic Audio process) audio. In Warp view you can create and edit Warp markers. If you are using Elastic Audio to correct the timing of a performance, or to achieve special effects, work in Warp view.

For detailed information on working in Warp view, see "Editing in Warp View" on page 511.

### Analysis View

Analysis view lets you edit detected Event markers. In most cases you will not need to use Analysis view. However, with material that does not have clear transients, you may want to work in Analysis view to add or relocate Event markers, or to delete erroneous Event markers. For example, when using Elastic Audio to correct the timing of a performance, you may need to add, move, or remove Event markers in Analysis view to achieve the highest quality Elastic Audio processing.

For detailed information on working in Analysis view, see "Editing in Analysis View" on page 518.

# Elastic Audio Analysis

When recording, pasting, moving, or importing un-analyzed audio to an Elastic Audio–enabled track, or when enabling Elastic Audio on an existing audio track, Pro Tools automatically analyzes the audio for transient events. In Waveform view, the waveform initially appears grayed out because regions go offline during Elastic Audio analysis. Once the analysis is complete, the audio comes back online. Elastic Audio analysis is file-based, which means that even if you are only working with a small region of a large file, the entire audio file is analyzed.

Elastic Audio analysis detects *transient events* in the audio file. These transient events are indicated by Event markers. Event markers are displayed in both the Warp and Analysis track views. Elastic Audio analysis also calculates the native tempo of the analyzed audio file and its duration in bars and beats.

Elastic Audio analysis data (detected events, tempo, and duration in Bars:Beats) is stored with the file. In DigiBase browsers, analyzed audio files are indicated by a check mark to the left of the file name, and these files display their duration in Bars|Beats, their timebase as ticks, and their native tempo in BPM.

## Tempo Detection

Elastic Audio analysis does its best to detect a regular tempo for all analyzed audio. Any audio containing regular periodic rhythm can be successfully analyzed for tempo and duration in bars and beats. Analyzed files in which a tempo was detected are treated as tick-based files. Tick-based files can be conformed to the session tempo for preview and import.

Analyzed files in which no tempo was detected are treated as sample-based files. If there is only a single transient in the file (such as with a single snare hit), no tempo will be detected. Also, longer files that contain tempo changes or rubato, or that do not contain regular periodic rhythmic patterns will probably not have a detected tempo and will be treated as sample-based files.

## Event Confidence

Transient events are detected with a certain degree of confidence. The level of confidence is based on the relative clarity of transients.

For example, a drum loop is likely to have clear, sharp transients. These will be detected with a high degree of confidence. However, a legato violin melody may not have clear, sharp transients, so transients will be detected with a lower degree of confidence.

*Note that peak amplitude is not the most important measure for event confidence. The clarity of transients is measured in part by the spectral transition from one moment to the next. This tends to favor higher frequency content in terms of event confidence. For example, changing the Event Sensitivity in the Elastic Properties window for a selected drum loop results in the clearer transients of the higher frequency hi-hat hits having more event confidence than the less well defined transients of the lower frequency kick drum hits even though kick drum hits have a higher peak amplitude.*

Pro Tools is very aggressive with its transient detection in order to detect every possible audio event. Consequently, it is possible to have erroneously detected events. These events will be analyzed with a low degree of confidence and can be filtered out by lowering the Event Sensitivity in the Elastic Properties window (see "Event Sensitivity" on page 524). Filtering out any false transients can result in higher quality Elastic Audio processing.

Conversely, for material with few clear transients, Elastic Audio analysis may not accurately detect audio events, and those detected may be detected with a low level of confidence. You can relocate or add Event markers where necessary in Analysis view (see "Editing in Analysis View" on page 518).

For example, a slow synth pad may not have clear transients and detected Event markers may be incorrectly located or may have not been detected at all. In Analysis view, you can relocate, remove, and add Event markers as necessary (such as where the chord changes). Accurately locating Event markers yields better results when applying Elastic Audio processing.

*When processing non-rhythmic audio (such as legato strings) with the Polyphonic plug-in, reducing the number of Event markers often yields better sounding results. You can either manually remove Event markers in Analysis view (see "Editing in Analysis View" on page 518) or lower the Event Sensitivity setting in the Elastic Properties window for the region you want to process (see "Elastic Properties Window" on page 522).*

## Real-Time and Rendered Elastic Audio Processing

Real-Time Elastic Audio processing means that any changes to Elastic Audio processing—whether it be a tempo change or a manual TCE warp—take effect immediately. However, Real-Time Elastic Audio processing can be very demanding on your system's resources. Consequently, you may want to use Rendered Elastic Audio processing in some cases. With Rendered Elastic Audio processing, when you make a change to Elastic Audio processing, any affected audio regions temporarily go offline, a new "rendered" audio file is generated, and any affected audio regions come back online.

*In rendered mode, any change you make is rendered using the original source audio to avoid generational loss from multiple subsequent edits.*

**To set an Elastic Audio track to Real-Time or Rendered:**

**1** Click the track's Elastic Audio Plug-in selector.

**2** From the pop-up menu, select the desired Elastic Audio plug-in.

**3** From the pop-up menu, select one of the following:

- Real-Time Processing

– or –

- Rendered Processing

*Select Real-Time processing for tick-based Elastic Audio processing (such as tempo changes). Rendered audio processing can be useful for sample-based Elastic Audio processing or if you need to save system resources.*
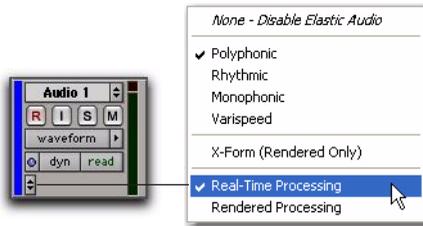
*Elastic Audio Plug-in selector and pop-up menu*

🔼 *To toggle between Real-Time and Rendered Elastic Audio processing, Control-Start-click (Windows) or Command-Control-click (Mac) the Elastic Audio Plug-in button.*

## About Rendered Files

Pro Tools creates temporary files for Rendered Elastic Audio processing. These files are kept in a new, auto-created Rendered Files folder in the session folder. Once you commit Rendered Elastic Audio processing to a track (by disabling Elastic Audio on a track and clicking Commit in the Commit Elastic Audio dialog), a new file is written to disk in the Audio Files folder, and the temporary rendered file from which it was created is deleted from the Rendered Files folder.

## Region Clip Indicator

### (Rendered Processing Only)

Since Rendered Elastic Audio processing is not real-time, it does not report clipping due to Elastic Audio processing in the Elastic Audio plug-in window. Instead, when clipping occurs due to Rendered Elastic Audio processing, the region displays an Elastic Audio Processing Clip indicator just to the left of the Warp indicator. To avoid clipping on playback, lower the Input Gain for the region in the Elastic Properties window (see "Elastic Properties Window" on page 522).
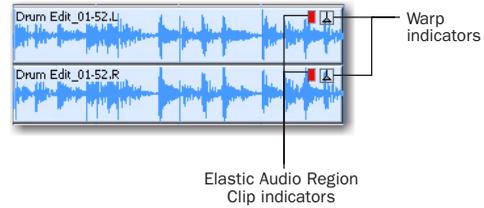


*Elastic Audio Region Clip indicator*

# Elastic Audio Plug-ins

Pro Tools provides several TCE algorithms for real-time and rendered track-based Elastic Audio processing. The selected Elastic Audio plug-in determines how the audio is processed. Each plug-in uses different algorithms for Elastic Audio processing. Different algorithms are better suited to different types of audio. Select the plug-in whose algorithm is appropriate to the material on the track you want to process.

Elastic Audio plug-ins have their own unique selector that is only available in the Edit window. You cannot insert Elastic Audio plug-ins on track Plug-in Inserts (TDM, RTAS, and hardware inserts).

Elastic Audio plug-ins provide few to no adjustable parameters. The adjustable controls, if any, for Elastic Audio plug-ins are available in the Elastic Audio Plug-in window. Elastic Audio plug-in parameters cannot be automated.

**To open an Elastic Audio Plug-in window:**

■ Click the Elastic Audio Plug-in button.
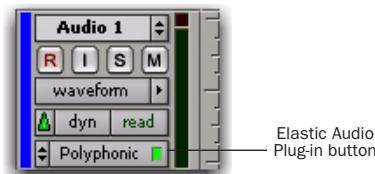


*Elastic Audio plug-in button*

## Elastic Audio Plug-in Window Controls

The Elastic Audio Plug-in window provides a set of controls in the window header that are common to all Elastic Audio plug-ins.
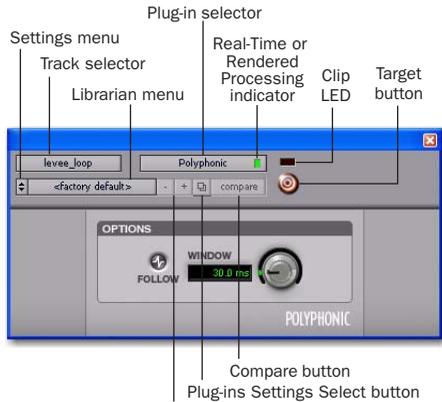


*Elastic Audio plug-in controls*

**Track Selector** Accesses any other audio track in the session.

**Plug-in Selector** Lets you select any Elastic Audio plug-in or disable Elastic Audio.

**Real-Time or Rendered Processing Indicator** Lights when Elastic Audio processing is real-time and dims when Elastic Audio processing is rendered (see "Real-Time and Rendered Elastic Audio Processing" on page 506).

**Clip LED** Lights red to indicate clipping in the Elastic Audio processing. Clipping can occur when time compressing audio. If clipping occurs, you can lower the Input Gain in the Elastic Properties window ("Input Gain" on page 524), or attenuate the Default Input Gain in the Processing Preferences page (see "Elastic Audio Options" on page 255).

You can also undo any Elastic Audio processing and apply an appropriate amount of AudioSuite Gain reduction, and then try the Elastic Audio processing again. The Clip LED only functions for Real-Time Elastic Audio processing; it does not function for Rendered Elastic Audio processing.

*For Rendered Elastic Audio processing, clipping is indicated by the appearance of the Elastic Audio Processing Clip indicator on the region (see "Region Clip Indicator" on page 507).*

**Settings Menu** Lets you copy, paste, save, and import plug-in settings.

**Librarian Menu** Recalls settings files saved in the plug-in's root settings folder or in the current session's Settings folder.

**Next (+) and Previous (–) Setting Buttons** Let you select the next or previous plug-in setting from the Librarian menu.

*You will lose the current settings if they are not saved before you use the Next and Previous Setting buttons. Always save your settings to the Librarian menu.*

**Plug-ins Settings Select Button** Accesses the Plug-in Settings dialog, which lists the settings files for the current plug-in. From this list, you can select a new setting, or audition a series of settings.

**Compare** Toggles between the original saved plug-in setting and any changes you have made to it so you can compare them.

**Target Button** When multiple Elastic Audio Plug-in windows are open, clicking this button selects that plug-in as the target for any computer keyboard commands. Deselecting the Target button lets you open another targeted Elastic Audio Plug-in window.

## Polyphonic

The Polyphonic plug-in is a general, all-purpose algorithm that is effective with a wide range of material. For complex loops and multi-instrument mixes, use the Polyphonic plug-in.

*The Polyphonic plug-in is the default plug-in for previewing and importing from Digi-Base browsers or the Region List.*



*Elastic Audio plug-in: Polyphonic*

### Follow

Selecting the Follow option enables an envelope follower that simulates the original acoustics of the audio being stretched. Click the Follow button to enable or disable envelope following.

### Window

The Polyphonic plug-in provides a single control for adjusting the analysis window size for TCE processing. Experiment with adjusting the Window size for different types of material until you achieve the best results. The following table provides some recommended Window sizes for different types of material.

| Type of Material | Recommended Window Size |
| --- | --- |
| General purpose | 30–40 ms |
| Percussive | 20 ms or lower |
| Pads and other legato material | 60 ms or higher |

*If you frequently work with distinct types of material, you may want to find the best Window settings for each type of material and save them as plug-in settings for quick and easy recall.*

## Rhythmic

The Rhythmic plug-in is best suited to material with clear attack transients, such as drums.



*Elastic Audio plug-in: Rhythmic*

### Decay Rate

The Decay Rate control determines how much of the decay from a transient is heard in the processed audio when time stretching. When the Rhythmic plug-in is selected, any gaps between transients resulting from time stretching are filled in with audio. The Decay Rate determines how much of this audio is heard by applying a fade out rate. Adjust the Decay Rate up to 100% to hear the audio that is filling the gaps created by the time stretching with only a slight fade, or adjust down to 1.0% to completely fade out between the original transients.

## Monophonic

The Monophonic plug-in is best suited to monophonic material where you want to keep the formant relationships intact, such as with vocals. The Monophonic plug-in is also well suited to monophonic instrumental lines, such as a bass track. The Monophonic plug-in provides no plug-in specific parameters.



*Elastic Audio plug-in: Monophonic*

⚠ *The Monophonic plug-in analyzes pitch as well as peak transients in order to provide higher quality TCE to pitched material. Consequently, analysis for the Monophonic algorithm takes longer than for the Polyphonic, Rhythmic, and Varispeed algorithms. Also, when switching from another Elastic Audio plug-in to Monophonic, Pro Tools reanalyzes any audio on the track to collect the extra analysis data.*

## Varispeed

Use the Varispeed plug-in to link time and pitch changes for tape-like speed change effects, and post production workflows. The Varispeed plug-in provides no plug-in specific controls.



*Elastic Audio plug-in: Varispeed*

💡 *Try using Varispeed with Quantize on drum loops for some interesting effects.*

## X-Form

### (Rendered Only)

The X-Form Elastic Audio plug-in is a modified version of Digidesign's standalone X-Form AudioSuite processing plug-in. The X-Form Elastic Audio plug-in is for Rendered Elastic Audio processing only and cannot process in real-time or as an AudioSuite plug-in. It provides the highest quality time compression algorithms for music production, sound design, and audio loop applications.



*Elastic Audio plug-in: X-Form*

### Quality

Select either Maximum or Low (Faster) from the Quality pop-up menu. Maximum is the slowest processing algorithm, but provides the highest quality results. Low (Faster) produces relatively good results and is much faster than the Maximum setting.

### Formant

For audio material with clear formants, enable Formant to preserve the formant shape of audio when applying TCE processing.

💡 *Audio with a fundamental pitch has an overtone series, or set of higher harmonics. The strength of these higher harmonics creates a formant shape, which is apparent if viewed using a spectrum analyzer. The overtone series, or harmonics, have the same spacing related to the pitch and have the same general shape regardless of what the fundamental pitch is. It is this formant shape that gives the audio its overall characteristic sound or timbre. When pitch shifting audio, the formant shape is shifted with the rest of the material, which can result in an unnatural sound. Keeping this shape constant is critical to formant correct pitch shifting and achieving a natural sounding result.*

# Editing in Warp View

In Warp view, you can manually "warp" (TCE) audio to correct or adjust the timing of a performance, or create special effects. In Warp view, you can add, move, and delete Warp markers. Warp markers are used to fix a specific point in the audio (typically a detected transient event) to a specific point in the Timeline. In this way, you can apply detailed and nuanced "warping" (TCE) of audio events.

**To display Warp view:**

**1** Click the Elastic Audio–enabled track's Track View selector.

**2** Select Warp from the Track View pop-up menu.
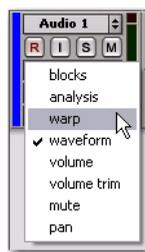


*Selecting Warp view for an Elastic Audio–enabled track*

⚠️ *Warp view is only available for Elastic Audio–enabled tracks.*

## Elastic Audio Markers in Warp View

Three types of markers are visible in Warp view: Event markers, Warp markers, and Tempo Event–generated Warp markers. Use Event markers and Warp markers as control points for applying Elastic Audio processing.
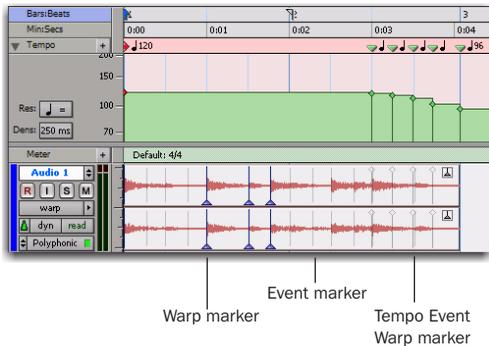


*Figure 4.  Elastic Audio markers in Warp view*

### Event Markers

Event markers indicate detected (or manually created) audio events. Event markers are only displayed in Warp view and Analysis view. In Warp view, Event markers appear as gray vertical lines that do not fully extend to the top and bottom of the track. With the Grabber tool in Warp view, you can drag Event markers to apply various kinds of warping depending on whether or not Warp markers are present in the region as well. In Warp view, you cannot add, relocate, or delete Event markers. Use Analysis view to edit Event markers (see "Editing in Analysis View" on page 518).

*The display of Event markers is dependent on Horizontal Zoom. If you are zoomed out too far, Event markers are not displayed. To see Event markers, zoom in.*

### Warp Markers

Warp markers anchor the audio to a specific point in the Timeline. Warp markers are only displayed in Warp view. In Warp view, a Warp marker appears as a thick black vertical line with a triangle at its base.

To better understand how Warp markers work, think of the audio region as a rubber band, the Timeline as a ruler, and Warp markers as pins. Warp markers can be used to pin a specific point of the rubber band (the audio) to a specific point on the ruler (the Timeline). If you pin down one point of the rubber band to one point on the ruler, use a second pin to pin down another point of the rubber band to another point on the ruler, and then place a third pin equally between them on the rubber band, but fix it to a point on the ruler closer to the second pin, the rubber band will be stretched (or expanded) between the first and middle pins, and relaxed (or compressed) between the middle pin and the last pin.

In Warp view, you can add, relocate (without warping), and delete Warp markers. You can also move a Warp marker to apply Elastic Audio processing (see "Warping Audio" on page 514).

**To add a Warp marker:**

▪ In Warp view, do one of the following:

- With the Pencil tool, click anywhere in the region to add a Warp marker at that location. If you click on an Event marker, a Warp marker is created on top of the Event marker.

- With the Grabber tool, Start-click (Windows) or Control-click (Mac) anywhere in the region to add a Warp marker at that location. If you click on an Event marker, a Warp marker is created on top of the Event marker.

- With the Grabber tool, if no Warp markers are present in the region, or if Warp markers are only present prior to the location where you want to add a new Warp marker, double-click an Event marker to add a Warp marker on top of the Event marker.

- With the Grabber tool, double-click anywhere in the region where an Event marker is not present to add a Warp marker at that location.

- With the Grabber tool, single-click any Event marker prior to another existing Warp marker in the region to add a Warp marker on top of that Event marker.

- With any Edit tool, Right-click anywhere in the region and select Add Warp Marker from the pop-up menu to add a Warp marker at that location. If there is an Edit selection, Warp markers are added at the selection start and end.

**To relocate a Warp marker (without applying warping):**

▪ With the Grabber or the Pencil tool, Start-click (Windows) or Control-click (Mac) and drag a Warp marker to a new location.

**To delete a Warp marker:**

▪ In Warp view, do one of the following:

- With the Grabber tool, double-click a Warp marker.

- With the Grabber or the Pencil tool, Alt-click (Windows) or Option-click (Mac) a Warp marker.

- With any Edit tool, Right-click a Warp marker and select Remove Warp Marker from the pop-up menu.

**To delete all Warp markers in a selection:**

**1** In Warp view, make an Edit selection that includes only the Warp markers you want to delete (and none of the Warp markers you want to keep).

**2** Do one of the following:

- Press Delete or Backspace on your computer keyboard.

– or –

- With any Edit tool, Right-click the Edit selection and select Remove Warp Marker from the pop-up menu.

**Tempo Event–Generated Warp Markers**

Tempo Event–generated Warp markers are not editable and are only displayed to indicate where Elastic Audio processing has been applied to conform the audio to Tempo Events. You will only see Tempo Event–generated Warp markers on tick-based tracks. In Warp view, Tempo Event–generated Warp markers appear as gray vertical lines that do not fully extend to the bottom of the track, and have a diamond at the top.

If you change the track timebase from ticks to samples, any Tempo Event–generated Warp markers convert to regular, editable Warp markers.

📓 *For more information, see "Tempo Changes and Tick-Based Elastic Audio Tracks" on page 606.*

## Warping Audio

In Warp view, you can manually warp audio in three specific ways: Telescoping Warp, Accordion Warp, and Range Warp.

⚠️ *Automation does not follow manual warping of audio regions, including TCE trimming and quantization of Elastic Audio. However, automation does follow tempo changes on tick-based tracks.*

### Telescoping Warp

Telescoping Warp can be applied to any audio region before or after a Warp marker as long as no other Warp marker precedes or follows it accordingly. The audio can be on a sample- or tick-based track. Telescoping Warp is especially useful for adjusting audio files to match the session tempo map and Bar|Beat grid.

**To apply Telescoping Warp to a region:**

- In Warp view, do one of the following:
  - With the Grabber tool, drag any Event marker that is after the last Warp marker in the region to the left or right to Telescope-Warp the audio that is after the Warp marker in or out. If no Warp marker is present in the region, one is created automatically at the region start. The region start remains anchored to its location on the Timeline.

  – or –

  - With the Grabber tool, Alt-click (Windows) or Option-click (Mac) and drag any Event marker that is before the first Warp marker in the region to the left or right to Telescope-Warp the audio that is before the Warp marker in or out. If no Warp marker is present in the region, one is created automatically at the region end. The region end remains anchored to its location on the Timeline.

before warping



after warping
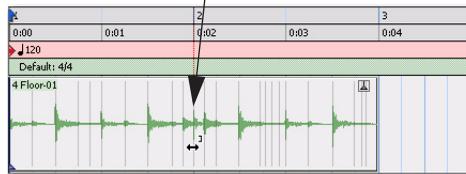


*Telescoping Warp with the region start fixed*

**Workflow Example**

**Beat match a song to the session tempo and Bar|Beat grid using Telescoping Warp:**

**1** Make sure the Main Timebase ruler is set to Bars:Beats.

**2** Set the default tempo and meter as desired.

**3** Select Grid mode.

**4** Import a song, or any other longer audio file from a DigiBase browser.

**5** Make sure that Elastic Audio is enabled on the track.

**6** Select Warp view.

**7** Make sure there are no Warp markers present on the region. If necessary, delete any exisiting Warp markers.

**8** With the Pencil tool, add a Warp marker at the bar 1 downbeat location within the region.

**9** With the Grabber tool, drag the single Warp marker to the bar in the Timeline where you want the downbeat of the audio file to start.

**10** Click and drag the Event marker on the downbeat of bar 2 of the region to Telescope warp the audio such that the Event marker matches the corresponding bar number in the Bars:Beats ruler.

**11** If the region's tempo varies, add a Warp marker to the next downbeat location at the tempo change and repeat the preceding steps.

## Accordion Warp

Accordion Warp applies Elastic Audio processing on both sides of a singe Warp marker in a region. This lets you expand or compress the audio equally on both sides of a fixed point. Accordion warp is useful for audio files where the downbeat occurs in the middle of the region.

**To apply Accordion Warp to a region:**

**1** In Warp view, add a single Warp marker at the point in the region that you want to remain fixed on the Timeline.

**2** With the Grabber tool, drag any Event marker that is before or after the single Warp marker to the left or the right.

before warping



after warping
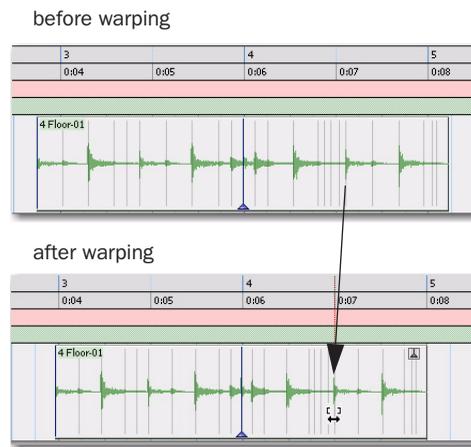


*Accordion Warping a region around a fixed point*

## Range Warp

Range Warp applies Elastic Audio processing between two fixed points in a region. To apply Range Warp, there must be at least two Warp markers present in the region.

**To apply Range Warp within a region:**

**1** In Warp view, add a Warp marker at the first point that you want to fix to the Timeline.

**2** Add another Warp marker to the end point that you want to fix to the Timeline.

**3** With the Grabber tool, drag an Event marker between the two Warp markers to the left or right. A Warp marker is added on top of the Event marker and the audio is compressed or expanded on either side of the clicked and dragged marker while the audio outside the bounding markers remains unaffected.
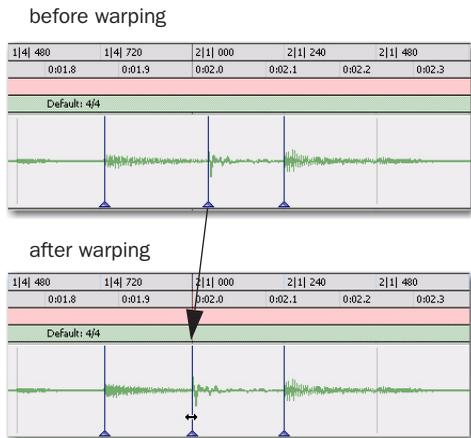


*Applying Range Warp between two Warp markers in a region*

## Range Warp with an Edit Selection

Pro Tools lets you apply Range Warp between bounding Warp markers, but keeps the timing intact between other Warp markers within an Edit selection.

**To apply Range Warp with an Edit Selection:**

**1** In Warp view, add a Warp marker at the first point that you want to fix to the Timeline.

**2** Add another Warp marker to the end point that you want to fix to the Timeline.

**3** Add any number of Warp markers in between.

**4** With the Selector tool, make an Edit selection that includes the Warp markers in between the bounding Warp markers.

**5** With the Grabber tool, drag any of the Warp markers within the Edit Selection to the left or the right.
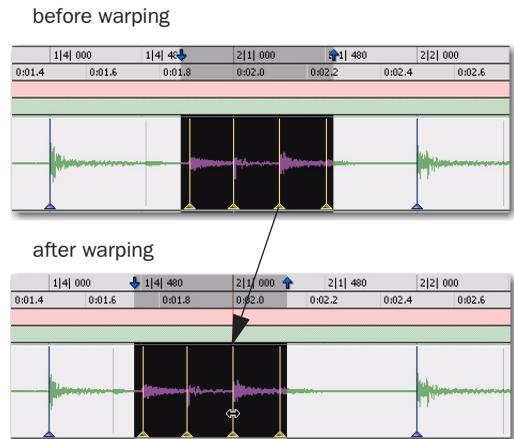


*Applying Range Warp to a selection between bounding Warp markers*

Elastic Audio processing is only applied to the audio between the bounding Warp markers and the first and last Warp markers in the Edit Selection. All audio between the first and last Warp markers in the Edit Selection maintain their relative timing.

### Individual Range Warp

Individual Range Warp applies warping to a single audio event in relation to the adjacent audio events.

**To apply Individual Range Warp:**

**1** In Warp view, with the Grabber tool, Shift-click a Warp marker or an Event marker. If not already present, Warp markers are automatically created on the adjacent Event markers.

**2** Drag to the left or right to warp the clicked event.

before warping



after warping
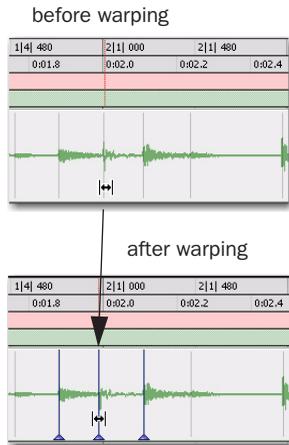


*Applying Individual Range Warp*

### Warped Regions

Regions that have been warped either manually or automatically by tempo change or quantization, display a Warp indicator in the upper right-hand corner of the region. This indicator is visible in any track view. Since unwarped regions can reside on Elastic Audio–enabled tracks, regions on Elastic Audio–enabled tracks do not necessarily display the Warp indicator. The Warp indicator only indicates that Elastic Audio processing has been applied to a region.



*Warp indicator in a region in Waveform view*

### Displaying the Warp Indicator

The Warp indicator for Elastic Audio regions can displayed or hidden.

**To toggle the display of the Warp indicator in Elastic Audio regions:**

■ Select or deselect View > Region > Warp Indicator.

### Out of Range Processing

Pro Tools lets you apply extreme amounts of Elastic Audio processing. However, at such extremes, it is possible to go out of the selected Elastic Audio plug-in's processing range. When this happens, it is possible that not every sample will be processed correctly and you may encounter audio drop outs.

The valid range for Elastic Audio TCE processing is 1/4x to 4x for all Elastic Audio plug-ins except X-Form, which supports 1/8x to 8x. TCE less than or greater than these ranges is effectively "out of range."

When out of range processing occurs, the section of the audio region that is out of range turns red. You can still apply Elastic Audio processing, but you are warned by the color change that the TCE factor is out of the normal range of Elastic Audio processing.



TCE Factor out of range
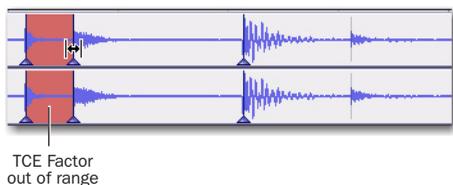
*Red indicates that the TCE Factor is out of range*

⚠ *The TCE Factor in the Elastic Properties window supports extreme ranges from 1–9999%. However anything outside of 25–400% will be "out-of-range" and will be displayed in red.*

## Removing Region Warping

If you have applied any warping to a region, you can remove warping and revert the region to its original duration. This can be useful if you are not satisfied with the results and want to revert to the pre-warped region. Warp markers are not deleted when applying the Remove Warp command, but any warping is undone.

**To remove region warping:**

**1** Select the region for which you want to remove warping.

**2** Do one of the following:

- Choose Region > Remove Warp.

– or –

- With any Edit tool, Right-click the region and select Remove Warp from the pop-up menu.

⚠ *Remove Warp can only be applied to regions and cannot be applied to region groups. To unwarp region groups you must first ungroup the region, then apply Remove Warp to the underlying regions, and then regroup those regions.*

## Edit Groups and Warp Editing

Elastic Audio–enabled tracks can be included in Edit Groups. For Elastic Audio–enabled tracks that are part of an Edit Group, applying Elastic Audio processing on one track likewise applies it to all other tracks within that Edit Group.

## Editing in Analysis View

In Analysis view, you can add, move, and delete Event markers. Usually, Pro Tools accurately detects all the transient events (Event markers) in an audio file and you will not need to work in Analysis view. However, Pro Tools may not accurately detect every audio event or may erroneously detect audio events with some types of audio material. This is especially true for audio without clear transients, such as legato strings, melismatic vocals, or a soft synth pad.

Use Analysis view to manually correct the presence and location of Event markers. The accurate identification of audio events yields the best results when applying Elastic Audio processing.

**To display Analysis view:**

**1** Click the Elastic Audio–enabled track's Track View selector.

**2** Select Analysis from the Track View Selector pop-up menu.
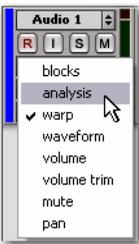


*Selecting Analysis view for an Elastic Audio–enabled track*

⚠ *Analysis view is only available for Elastic Audio–enabled tracks.*

⚠ *In Analysis view, you can only edit Analysis markers using the Edit tools. You cannot use the Edit tools for any region editing. Switch to Warp or Waveform views for region-based editing capabilities with the Edit tools.*

## Adding Event Markers

**To add an Event marker:**

■ In Analysis view, do one of the following:

- With the Pencil tool, click at the location where you want to add an Event marker.

- With the Grabber tool, double-click at the location where you want to add an Event marker.

- With the Grabber tool, Start-click (Windows) or Control-click (Mac) at the location where you want to add an Event marker.

- With any Edit tool, Right-click at the location where you want to add an Event marker and select Add Event Marker from the pop-up menu.



*Adding an Event marker with the Pencil tool*

## Moving Event Markers

**To move an Event marker:**

■ In Analysis view, do one of the following:

- With the Pencil tool, drag the Event marker to a new location.

– or –

- With the Grabber tool, drag the Event marker to a new location.



*Moving an Event marker*

## Deleting Event Markers

**To delete an Event marker:**

■ In Analysis view, do one of the following:

- With the Pencil tool, Alt-click (Windows) or Option-click (Mac) the Event marker you want to delete.

- With the Grabber tool, Alt-click (Windows) or Option-click (Mac) the Event marker you want to delete.

- With the Selector tool, make an Edit selection that includes any Event markers you want to delete and press Delete or Backspace on your computer keyboard.

- With the Selector tool, make an Edit selection that includes any Event markers you want to delete, Right-click the selection, and choose Remove Event Marker from the pop-up menu.



*Deleting an Event marker with the Pencil tool*

## Edit Groups and Event Editing

Elastic Audio–enabled tracks can be included in Edit Groups. For Elastic Audio–enabled tracks that are part of an Edit Group, editing Event markers on one track likewise apply to all other tracks within that Edit Group.

If corresponding Warp markers are not already present on Elastic Audio–enabled tracks that are part of an Edit Group, new Warp markers are created on those tracks when you add or move a Warp marker on any track that is part of the Edit Group.

# Moving Elastic Audio Between Tracks

Pro Tools analyzes, conforms, and commits audio in different ways when moving audio regions between tracks with Elastic Audio enabled and tracks without Elastic Audio enabled. Table 27 on page 521 shows the different results for moving regions between real-time Elastic Audio–enabled tracks, Rendered Elastic Audio–enabled tracks, and audio tracks without Elastic Audio.

*Table 27. Moving Elastic Audio between tracks*

| From | To | Result |
| --- | --- | --- |
| Real-time Elastic Audio–enabled track | Rendered Elastic Audio–enabled track | Render region with destination track's Elastic Audio plug-in |
| Real-time Elastic Audio–enabled track | audio track (no Elastic Audio) | Render region with source track's Elastic Audio plug-in and commit the region to the destination track |
| Rendered Elastic Audio–enabled track | Real-time Elastic Audio–enabled track | Apply real-time Elastic Audio processing using the destination track's Elastic Audio plug-in |
| Rendered Elastic Audio–enabled track | audio track (no Elastic Audio) | Commit to track |
| Audio track (no Elastic Audio) | Real-time Elastic Audio–enabled track | Calculate Elastic Audio analysis and apply real-time Elastic Audio processing using the destination track's Elastic Audio plug-in |
| Audio track (no Elastic Audio) | Rendered Elastic Audio–enabled track | Calculate Elastic Audio analysis and render the region using the destination track's Elastic Audio plug-in |

⚠ *Regions that are committed, either by disabling Elastic Audio on a track or by moving a region to a track without Elastic Audio enabled, are written to disk as new audio files (see "Committed Regions" on page 503.)*

# Elastic Properties

Each region on an Elastic Audio–enabled track has specific Elastic Audio properties (such as tempo, meter, TCE factor, and Input Gain).

The Elastic Properties window lets you view and change the properties for selected regions. For example, you can reduce the Input Gain for Elastic Audio processing to avoid clipping that can occur during processing.

From the Elastic Properties window, you can also filter Event markers for Elastic Audio regions on tick-based tracks. Filtering Event markers can result in better quality Elastic Audio processing of material with ambiguous transients.

### To view the Elastic Properties for a region:

**1** Select a region on an Elastic Audio–enabled track. The track can be either sample- or tick-based.

**2** Do one of the following:

- Choose Region > Elastic Properties.

– or –

- Right-click the region and choose Elastic Properties from the pop-up menu.

## Elastic Properties Window

The Elastic Properties window displays information about Elastic Audio processing and analysis for one or more regions. You can also use the Elastic Properties window to adjust Elastic Audio processing and analysis data.

There are different Elastic Properties available in the Elastic Properties window, depending on whether the track is tick-based or sample-based. If the track is sample-based, a reduced set of Elastic Audio Properties are displayed.
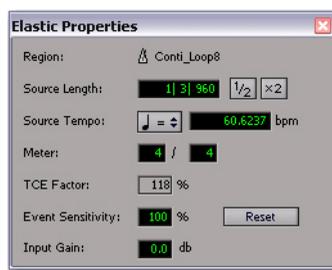


*Elastic Properties, tick-based*



*Elastic Properties, sample-based*

### Region

The Region property displays the name of the region and indicates whether or not the region is on a tick or sample-based track. If more than one region is selected, the number of selected regions is displayed. If regions on both tick and sample-based tracks are selected, only the reduced set of properties are displayed.

### Source Length (Tick-Based Tracks Only)

The Source Length property displays the length of the region based on the source file in bars and beats. If the length of the source file was analyzed incorrectly, you can change it.

### To change the Source Length of a region:

**1** Open the Elastic Properties window for the region.

**2** Do one of the following:

- Type the correct bar, beat, and tick values in the Source Length field.
- If the duration was incorrectly analyzed as being half the duration of the source file, click the x2 button.
- If the duration was incorrectly analyzed as being twice the duration of the source file, click the 1/2 button.

☼ *Changing the duration of a region on an Elastic Audio–enabled track using the TCE Trimmer tool updates the Source Length in the Elastic Properties window.*

### Source Tempo (Tick-Based Tracks Only)

The Source Tempo property displays the average tempo of the source file, which is calculated based on the detected transient events and the length of the file. If the tempo of the source file was analyzed incorrectly, you can change it.

### To change Source Tempo of a region:

**1** Open the Elastic Properties window for the region.

**2** Select the correct note value for the beat from the Tempo Resolution pop-up menu. For example, if the source file is in 5/8, select 1/8 note.
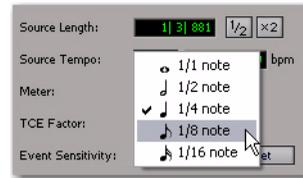


*Elastic Properties, selecting the Tempo Resolution*

**3** Do one of the following:

- Type the tempo in the Source Tempo field.
- If the tempo was incorrectly analyzed as being half the tempo of the source file, click the x2 button.
- If the tempo was incorrectly analyzed as being twice the tempo of the source file, click the 1/2 button.

### Meter (Tick-Based Only)

Elastic Audio analysis does not calculate meter and assumes all files are in 4/4. If you work with meters other than 4/4, use the Meter property to correctly identify the source meter.

### To change Meter of a region:

**1** Open the Elastic Properties window for the region.

**2** Click in the Meter nominator field and type the correct number of beats per measure. For example, if the region is in 3/4, type 3.

**3** Click the Meter denominator field and type the correct note value. For example, if the meter is in 6/8, type 8.

### TCE Factor

The TCE Factor property displays the percentage of change applied to the source file. On tick-based tracks, this property is display only and cannot be edited. On sample-based tracks, you can change the TCE Factor to apply TCE to the region. The percentage of the TCE factor is always calculated in relation to the source file.

### Event Sensitivity

The Event Sensitivity property lets you filter Event markers based on the analysis confidence level. The confidence level for any detected transient event is based, in part, on the clarity of the transient. For example, if the file is a drum loop, loud accented hits will be analyzed with a higher degree of confidence than a soft, unaccented hit.

The Event Sensitivity acts like a threshold for showing only the transient events that were detected with a high degree of confidence. In Warp or Analysis track views you will see the number of Event markers decrease or increase as you lower or raise the Event Sensitivity.

Lowering the event sensitivity can help reduce the number of erroneously detected transients. In turn, this can result in better sounding Elastic Audio processing. Pro Tools preserves the detected transients when applying TCE in order to avoid flamming and granulation of the transients. Consequently, false transients are also preserved and the resulting sound quality can be less than desirable. If you are working with audio material that does not have clearly defined transients, you may want to lower the Event Sensitivity in the Elastic Properties, or you may want to even edit the Event markers in Analysis view.

*For REX files, Pro Tools converts the slices as Events with 100% confidence. Consequently, setting the Event Sensitivity from 99% to 1% does not filter out any events based on slices. However, if you set the Event Sensitivity to 0%, all markers are filtered out regardless.*

### Input Gain

It is possible to encounter clipping when time compressing audio. Real-Time Elastic Audio plug-ins provide a Clip indicator to let you know when clipping has occurred. Rendered Elastic Audio regions display a Clip indicator on the region when clipping has occurred (see "Region Clip Indicator" on page 507).

If you encounter clipping when processing Elastic Audio, use the Input Gain property to attenuate the gain of the audio signal before it is processed.

## AudioSuite Processing and Elastic Audio Regions

Real-Time Elastic Audio processing is non-destructive. However, since AudioSuite plug-ins process the entire region and write a new audio file (or actually apply destructive processing), when applying AudioSuite processing to regions on Elastic Audio–enabled tracks, any Elastic Audio processing is rendered first, the rendered file is then processed by AudioSuite, and the resulting new audio file is analyzed for Elastic Audio processing.

# Fades and MicroFades

## Fades and Elastic Audio Processing

When applying fades to warped regions (regions that have been processed by Elastic Audio), the audio selected for the fade is first rendered and then the fade is generated based on the rendered audio file. While you can create fades and crossfades on regions on Elastic Audio–enabled tracks, neither Real-Time nor Rendered Elastic Audio processing can be applied to fades. Consequently, fades always retain their absolute duration and fades must be recalculated after any Elastic Audio processing has been applied to the underlying audio.

For example, if you change the session tempo, a region on a tick-based Elastic Audio–enabled track will change its duration (in minutes and seconds) to match the new tempo, but any fades that are part of that region do not change duration. The underlying audio is processed to match the tempo change, then it is rendered, and then the fade is regenerated. Even though the underlying audio changes, the absolute duration of the fade does not.

In Warp view, you will notice that Event markers never appear in fades and that Warp markers cannot be added within fades. As a general rule, apply fades to regions on Elastic Audio–enabled tracks only after you have finshed any manual warp editing.

⚠️ *Region groups that contain regions with fades are not allowed on Elastic Audio–enabled tracks.*

## Microfades

Real-time Elastic Audio processing is not completely deterministic. Consequently, depending on where you start playback, the part of a region being played might actually be a few samples longer or shorter. When fades or crossfades are applied to warped regions, the audio waveform at the boundary between the (real-time) region and the (rendered) fade may not actually be continuous.

For example, if there are two butt-spliced regions on a Real-Time Elastic Audio–enabled track, Elastic Audio processes them separately even though they are contiguous on the track. As a result, the audio may not really be contiguous after Elastic Audio processing and there may be an audible pop when playing back across the transition between the two regions.

To help compensate, Pro Tools applies microfades to region boundaries on Real-Time Elastic Audio–enabled tracks. Microfades are small real-time fades at region boundaries intended to mitigate artifacts across region boundaries, or between an Elastic Audio processed region and a rendered Fade file. Microfades are very short; they are only about 1.5 milliseconds long (64 samples at 44 kHz, 128 samples at 96 kHz, and 256 samples at 192 kHz).

## Approximate Waveforms

Another consequence of Real-Time Elastic Audio processing is that the drawing of the waveforms is only approximate. For example, if you bus record a Real-Time Elastic Audio processed track, you will notice that the Waveform on the source track does not necessarily exactly match the recorded track. However, be assured that what you hear is an accurate rendition of the Real-Time Elastic Audio processing even if the waveform drawing on the source track is only approximate.

# Elastic Audio Preferences

Pro Tools provides several preferences for Elastic Audio. These preferences determine which Elastic Audio plug-in is used for preview and import, and whether or not new tracks are created with Elastic Audio enabled using the selected default plug-in.



*Processing Preferences, Elastic Audio*

**Default Plug-in** Lets you select any Real-Time Elastic Audio plug-in as the default plug-in for previewing and importing Elastic Audio. The selected Default Elastic Audio plug-in is also used when new tracks are created with Elastic Audio enabled. The Elastic Audio Plug-in selector in DigiBase browsers inherits the selected Default Plug-in. Likewise, changing the selected plug-in in DigiBase browsers updates the selected Default Plug-in in the Processing preferences page.

**Default Input Gain** Lets you attenuate the signal input to Elastic Audio plug-ins by 0 to –6 dB for preview and import. If you experience clipping due to Elastic Audio processing during preview or after import, you may want to set the Default Input Gain to slightly attenuate the audio signal input for Elastic Audio processing. This preference also applies to any audio imported to an Elastic Audio–enabled track.

If you commit any regions on a track (by disabling Elastic Audio on the track) that were imported with Input Gain, their region-based In put Gain is reset to 0.

The Elastic Properties window inherits the Default Input Gain preference. To apply further region-based Input Gain for Elastic Audio processing, select the region and adjust the Input Gain setting in the Elastic Properties window (see "Elastic Properties Window" on page 522).

**Enable Elastic Audio on New Tracks** When selected, new tracks are created with Elastic Audio enabled. The selected Default Plug-in is used.

*If the Enable Elastic Audio on New Tracks option is selected, you may want to also select the New Tracks Default to Tick Timebase option in the Editing Preferences page.*

# Chapter 27: MIDI Editing

Pro Tools provides powerful MIDI editing tools. You can create and edit individual MIDI notes and controller events with the Pencil, Trim, and Grabber tools in the Edit window. You can use the various Event Operations (such as Quantize, Transpose, Change Velocity, and Change Duration) to destructively transform groups of MIDI notes in terms of pitch, timing, dynamics, and phrasing. You can also use Real-Time Properties to nondestructively affect MIDI on playback or play-through. Pro Tools also provides numerous zoom and view tools that are optimized for MIDI editing.

📖 *For information on region-specific editing for both MIDI and audio, see Chapter 24, "Editing Regions and Selections."*

## Mirrored MIDI Editing

Mirrored MIDI Editing lets you edit MIDI regions and have your edits apply to every MIDI region of the same name. This can be particularly useful when editing looped MIDI regions.

**To enable Mirrored MIDI Editing, do one of the following:**

■ Select Options > Mirror MIDI Editing.

 – or –

■ Enable the Mirrored MIDI Editing button in the Edit window.



Mirrored MIDI Edit button

*Mirrored MIDI Edit button in the Edit window*

In Mirrored MIDI Editing mode, the Mirrored MIDI Editing button blinks Red once as an edit is made to alert you that your edit is being applied to more than one region.

**To disable Mirrored MIDI Editing, do one of the following:**

■ Deselect Options > Mirror MIDI Editing.

 – or –

■ Disable the Mirrored MIDI Editing button in the Edit window.

⚠️ *If Mirrored MIDI Editing mode is disabled, and you edit notes of looped regions in Notes View, the edit flattens the loop. Similarly editing region groups separates the region groups.*

# The Pencil Tool

The Pencil tool is useful for creating and editing MIDI data. The first five Pencil tool shapes (Free Hand, Line, Triangle, Square, and Random) can be used to enter pitches with varying durations and velocities (note velocities are determined by the Pencil tool shape). The various Pencil tool shapes can be particularly useful for drawing and editing different types of MIDI control data—for example, try using Line for volume, Triangle for pan, Free Hand for pitch bend, and Square or Random for velocity.

📄 *Parabolic and S-Curve Pencil shapes are used for drawing tempo events only in the Tempo Editor. See "Drawing Tempo Events" on page 608.*

**To select the Pencil tool shape:**

**1** Click the Pencil tool icon in the Tool Bar for the Pencil tool shape pop-up menu.

**2** Select a Pencil tool shape.
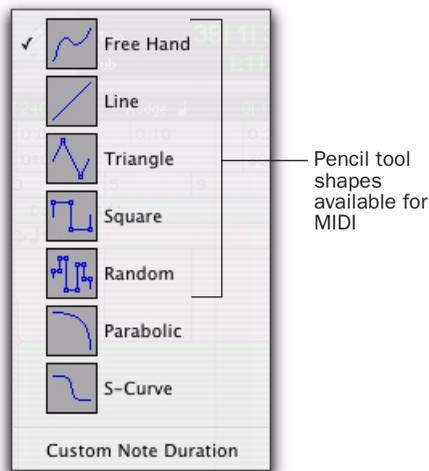


*Pencil tool shape pop-up menu*

## Free Hand

When in Notes View, the Free Hand shape inserts a single MIDI note whose velocity is defined by the Default Note On Velocity MIDI preference. The pitch, location, and duration of the note are determined by where on the MIDI track you click and release with the mouse.

When editing MIDI velocities or continuous controller data, the Free Hand shape draws freely according to the movement of the mouse. The shape is reproduced as a series of steps according to the Pencil Tool Resolution When Drawing Controller Data MIDI preference.

## Line

When in Notes View, the Line shape inserts a series of MIDI notes on a single pitch whose velocities are defined by the Default Note On Velocity MIDI preference. The duration of each note is determined by the current Grid value.

When editing MIDI velocities or continuous controller data, the Line shape draws in a straight line from click to release. MIDI continuous controller values change in steps according to the Pencil Tool Resolution When Drawing Controller Data MIDI preference.

## Triangle

When in Notes View, the Triangle shape inserts a series of MIDI notes on a single pitch whose velocities oscillate between the defined Default Note On Velocity MIDI preference and 127 according to a triangle pattern. The duration of each note is determined by the current Grid value.

When editing MIDI velocities or continuous controller data, the Triangle shape draws a triangular pattern that changes direction according to the current Grid value. MIDI controller values change in steps according to the Pencil Tool Resolution When Drawing Controller Data MIDI option in the MIDI Preferences page.

### Square

When in Notes View, the Square shape inserts a series of MIDI notes on a single pitch whose velocities alternate between the defined Default Note On Velocity MIDI preference and 127. The duration of each note is determined by the current Grid value.

When editing MIDI velocities or continuous controller data, the Square shape draws a square pattern that repeats at a rate based on the current Grid value.

### Random

When in Notes View, the Random shape inserts a series of MIDI notes on a single pitch whose velocities change randomly within the range between the defined Default Note On Velocity MIDI preference and 127. The duration of each note is determined by the current Grid value.

When editing MIDI velocities or continuous controller data, the Random shape draws a series of random values that change at a rate based on the current Grid value.

# Custom Note Duration

The Custom Note Duration command lets you define the default note duration for inserting notes manually.

**To select a Custom Note Duration:**

**1** Click the Pencil tool icon in the Tool Bar for the Pencil tool shape pop-up menu.

**2** Select Custom Note Duration. A note icon (the Custom Note Duration button) will appear below the Pencil tool icon in the Tool Bar.



*Pencil tool with note icon*

**3** Click the note icon for the Custom Note Duration pop-up menu, and select a note duration.

The note icon changes to show the selected note value.
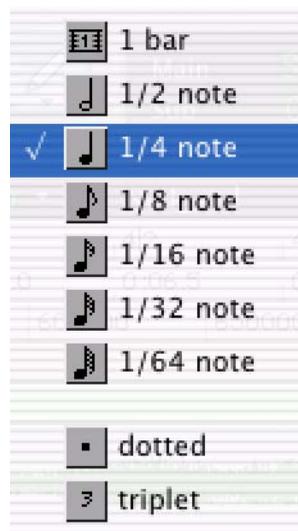


*Custom Note Duration pop-up menu*

# Setting the Grid Value

When inserting MIDI notes with the Pencil tool, the Grid value determines the duration of each note, or other characteristics, based on the Pencil tool shape (see "The Pencil Tool" on page 528).

**To set the Grid value for MIDI editing:**

**1** Set the Main Time Scale to Bars:Beats (see "Setting the Main Time Scale" on page 598).

**2** From the Grid Value pop-up menu, select a note value (such as 1/4, 1/8, or 1/16).

**3** Verify the default session meter and tempo (see "Setting the Default Meter" on page 325 and "Setting the Default Tempo" on page 325).

📄 *For more information on Grid mode, see "Grid" on page 422.*

# Inserting MIDI Notes

In addition to recording, step recording, and importing MIDI into Pro Tools, you can manually insert MIDI notes using the Pencil tool.

💡 *When inserting MIDI notes or other MIDI data with the Pencil tool, MIDI region boundaries are created on the nearest bar-lines.*

**To insert a MIDI note:**

**1** Set the MIDI or Instrument track to Notes View.

**2** Select the Pencil tool and make sure it is set to Free Hand. The cursor will change to the Pencil tool when located over the playlist area of a MIDI or Instrument track in Notes View.



*Pencil tool set to Free Hand*

**3** To insert quarter notes on the beat, set the Main Time Scale to Bars:Beats, and set the Edit mode to Grid and the Grid value to quarter notes (0|1|000).

**4** Move the Pencil tool into the playlist area for the MIDI or Instrument track. Use the Edit window's ruler and the track's mini-keyboard to locate the pitch and time location you want.

When using the Pencil tool, the Cursor location and value are displayed in the Options Bar.



*Cursor location and value*

**5** When you reach the pitch and time location you want, click to insert the note.
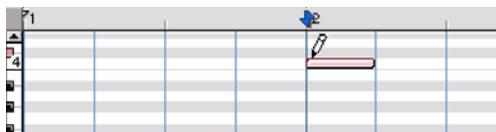


*MIDI note inserted with the Pencil tool*

💡 *With the Smart Tool active (see "Using the Smart Tool" on page 439), Start-click (Windows) or Control-click (Mac) to change the cursor to the Pencil tool and insert MIDI notes; Option-Control-click (Mac) or Alt-Start-click (Mac) to delete notes.*

💡 *With the Grid mode enabled, the start point of the MIDI note snaps to the nearest Grid boundary by default. With the Free Hand Pencil tool, press Control (Windows) or Command (Mac) after clicking and holding to temporarily suspend snap to grid.*

The velocity for inserted notes is determined by the Default Note On Velocity MIDI option in the MIDI Preferences page. When in Grid mode, the duration of the note is determined by the Edit window's Grid value. The duration of the note can also be determined by the Custom Note Duration value (see "Custom Note Duration" on page 529).

If the Play MIDI Notes when Editing option in the MIDI Preferences page is enabled, each note sounds as it is inserted.

The Pencil tool can be dragged after clicking (and before releasing) to adjust the note's pitch or duration. Click and drag right to lengthen the note without changing its start point. Click and drag left to shorten the note without changing its end point.



*Adjusting the duration for an inserted note*

💡 *With the Grid mode enabled, the end point of the MIDI note snaps to the nearest Grid boundary by default. Control-drag (Windows) or Command-drag (Mac) with the Pencil tool to temporarily disable snap to grid.*

The Line, Triangle, Square, and Random Pencil tool shapes can be used to enter a series of identical pitches with varying velocities. The length and spacing for the inserted notes are determined by the current Grid value, or by the Custom Note Duration value. The note velocities are determined by the Pencil tool shape.

Use the Square shape for alternating velocities of loud and soft. Use the Triangle shape for a ramp up and down of velocities. The Line shape enters notes with identical velocities.

**To insert a series of notes with random velocities:**

**1** Set the MIDI or Instrument track to Notes View.

**2** Select the Pencil tool and make sure it is set to Random.



*Pencil tool set to Random*

**3** Set the Main Time Scale to Bars:Beats. In addition, set the Edit mode to Grid and the Grid value to quarter notes (0|1|000).

With these settings, the notes are inserted spaced one quarter note apart.

**4** Click at the point to insert the first note and drag to the right until the number of notes you want have been inserted.



*Inserting a series of notes with the Pencil tool*

# Manually Editing MIDI Notes

All aspects of a MIDI note can be edited from the Edit window, including start and end points, duration, pitch, and velocity. The Selector, Grabber, and Pencil tools can operate on individual notes or groups of notes.

## Selecting MIDI Notes

MIDI notes must be selected, before they can be edited.

**To select MIDI notes, do one of the following:**

▪ With the Pencil tool or any Grabber tool, Shift-click each note.

▪ With any Grabber tool, move the cursor to where there are no notes (the Marquee appears) and click and draw a rectangle around the group of notes you want to edit.
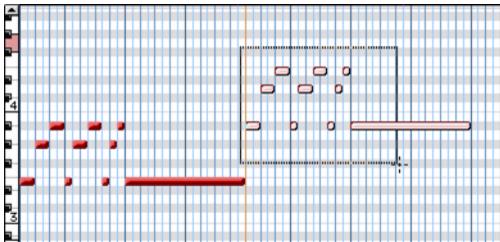


*Selecting notes with a Grabber tool*

When using a Grabber tool, if any portion of the rectangle touches a note (either its start or end point), the note is included in the selection. However, selections made with a Grabber tool do not include underlying controller and automation data for the MIDI track.

▪ With the Selector tool, drag across a range of notes.



*Selecting notes with the Selector tool*

When using the Selector tool, a note's start point must be included in order for it to be selected. When a MIDI or Instrument track is in Notes or Regions View, selections made with the Selector tool include all underlying controller and automation data.

**To deselect one or more notes from a selection:**

▪ With the Pencil tool or any Grabber tool, Shift-click the notes so they become deselected.

📄 *You can also select notes in the Select/Split Notes window. See "Select/Split Notes" on page 578.*

### Selecting and Auditioning MIDI Notes with the Mini-Keyboard

Use the mini-keyboard on MIDI and Instrument tracks to select and play notes on that track. You can click on the mini-keyboard with any Edit tool.

**To play a note on a MIDI or Instrument track, and select all notes of that pitch on the track (if present):**

■ With any Edit tool selected, click a key on the mini-keyboard.



*Playing a note with the mini-keyboard and selecting all notes of that pitch*

🔲 *Alt-click (Windows) or Option-click (Mac) to play notes without making a selection.*

🔲 *Control-click (Windows) or Command-click (Mac) to select or deselect notes, and to make noncontiguous selections.*

**To select and play a range of notes on a MIDI or Instrument track:**

■ With any Edit tool selected, click a key and drag up or down on the mini-keyboard.
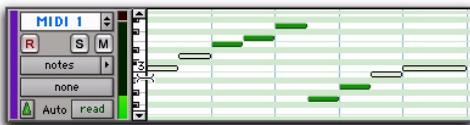


*Playing a note with the mini-keyboard and selecting all notes of that pitch*

🔲 *You can also Shift-click on the mini-keyboard to extend or contract the range of notes.*

## Transposing Notes

MIDI notes can be transposed by dragging up or down with the Pencil tool or any Grabber tool. If several notes are selected before dragging, each is transposed.

**To transpose a MIDI note:**

**1** Set the MIDI or Instrument track to Notes View.

**2** Select the Pencil tool or any Grabber tool.

**3** While pressing Shift, drag the note up or down.
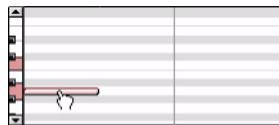


*Transposing with a Grabber tool*

The Shift key ensures that the transposed note retains its start point. While dragging, each new note sounds and the Cursor Location Value indicator (in the Edit window) indicates the number of semitones and direction (+/–) for the transposition.

💡 *To transpose a copy of the note, leaving the original unchanged, press Alt (Windows) or Option (Mac) while dragging.*

📄 *MIDI notes can also be transposed using the Transpose Event Operation (see "Transpose" on page 576) or MIDI Real-Time Properties (see "MIDI Real-Time Properties" on page 549).*

## Moving Notes

Like regions, MIDI notes can be dragged left or right with the Pencil tool or any Grabber tool to change their start point. If several notes are selected before dragging, they are all moved together.

**To move a MIDI note:**

**1** Set the MIDI or Instrument track to Notes View.

**2** With the Pencil tool or any Grabber tool, drag the note left or right (press Shift while dragging to preserve the note's pitch).

As the note is dragged, the Cursor Location Value indicator (in the Edit window) displays the new start point.

If the Edit mode is set to Grid, the dragged note snaps to the nearest Grid boundary. If the Edit mode is set to Spot, the Spot dialog opens.

*To copy the selected notes, leaving the originals intact, press Alt (Windows) or Option (Mac) while dragging.*

*The placement of MIDI notes can also be adjusted with Shift (see "Shift Command" on page 664) or Nudge (see "Nudging Regions" on page 472).*

## Trimming Note Start and End Times

Like regions, start and end points for MIDI notes can be adjusted with the Trimmer tool. If several notes are selected when performing the trim, each note is changed.

*The Trimmer tool can also be used on MIDI regions. For more informations, see "Time Compression/Expansion Trimmer Tool Functionality on MIDI Regions" on page 537.*

**To change the start or end points for a group of MIDI notes:**

**1** Set the MIDI or Instrument track to Notes View.

**2** Using the Pencil tool or any Grabber tool, Shift-click each note you want to trim.

**3** Do one of the following:
- Select the Trimmer tool.

– or –

- Use the Pencil tool.

**4** Move the cursor near the beginning of any of the highlighted notes, so the Trimmer tool appears. Drag right to shorten the notes, or drag left to lengthen them.
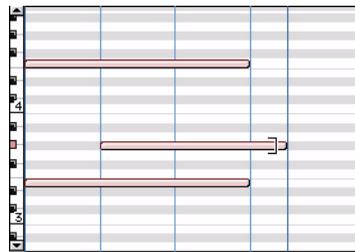


*Changing note end times with the Trimmer tool*

If using Grid mode, the dragged start or end point snaps to the nearest Grid boundary. If using Spot mode, the Spot dialog opens, where you can enter the new location for the note's start or end point.

*When in Grid mode, use the Control key (Windows) or the Command key (Mac) to temporarily disable Grid mode.*

Notes can also be trimmed with the Trim Region to Selection command (see "Trim Region to Selection Command" on page 470) and the Trim To Insertion command (see "Trimming with Nudge" on page 471).

## Manually Editing Note Velocities

When a MIDI or Instrument track is set to Velocity View, each note's attack velocity is represented with a velocity stalk. The taller the velocity stalk, the higher the velocity value (0–127).

**To edit MIDI velocity:**

**1** Set the MIDI or Instrument track to Velocity View.

**2** Select any Grabber tool.

**3** Do one of the following:

• Drag the top (diamond) of the velocity stalk up or down.
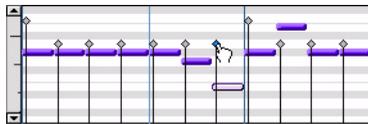


*Dragging a velocity stalk*

– or –

• If two notes have the same start time (with velocity stalks on top of each other), Control-drag (Windows) or Command-drag (Mac) the actual note up or down.
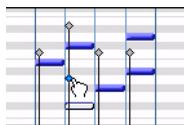


*Editing simultaneous velocities*

Drag up to increase the velocity value, or down to decrease it. While dragging, the diamond turns blue and the associated note becomes selected. The dragged velocity values are reflected in the Cursor Location Value indicator (in the Edit window).

The velocities for a range of notes can be edited with any Pencil tool.

**To draw velocity values for a crescendo:**

**1** Set the MIDI or Instrument track to Velocity View.

**2** Select the Pencil tool with the shape set to Line.

**3** Click at the beginning of the note range, near the bottom of the velocity range, and drag to the right and up until the line encompasses the range of notes you want to include in the fade.
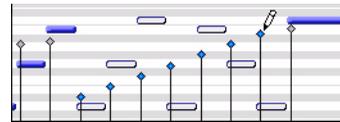


*Changing velocities with the Line shape*

You can also use the Trimmer tool to scale the velocities for all selected notes. This is useful if you like the velocity relationship between the notes, but want them all to be louder or softer.

*When in Velocity View, the Trimmer tool can be used to trim note durations in addition to changing velocities.*

**To scale velocities with the Trimmer tool:**

**1** Set the MIDI or Instrument track to Velocity View.

**2** Using the Selector tool or any Grabber tool, select the range of notes to be edited.

**3** With the Trimmer tool, click near the range of selected notes and drag up or down. Dragging up increases the velocities for each note and dragging down decreases them.
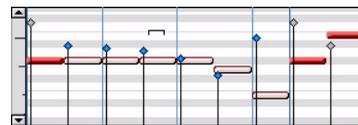


*Changing velocities with the Trimmer tool*

## Typing in Note Attributes

When an individual note is selected with the Pencil tool or any Grabber tool, its attributes are displayed in the Event Edit area.
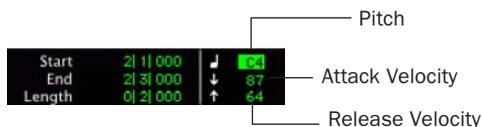


*Event Edit Area showing MIDI track information*

Pitch is listed by note name and octave number. Attack and release velocities are listed with their MIDI values (0–127). Edit Selection Start, End, and Length times are displayed in the Main Time Scale.

### To change an attribute for a MIDI note:

**1** In the MIDI or Instrument track's playlist area, select the note with the Pencil tool or any Grabber tool.

**2** Click in the Attributes text box and do one of the following:

- Enter the new value on the numeric keypad.
- Press the Up or Down Arrow to increment or decrement to the new value.
- Drag up or down to scroll to the new value.
- Play the new note value on your MIDI keyboard controller.

Press Forward Slash (/) to move between the fields in the Event Edit area.

📄 *You can also change attributes of MIDI notes in the MIDI Event List (see Chapter 29, "MIDI Event List").*

## Multiple Notes and Event Edit Area

When multiple notes are selected, you can enter values in the Event Edit area fields to affect all selected notes. A triangle (delta symbol) to the left of the displayed note indicates that multiple notes are selected.

A new value in the Start field moves the first note in the selection to that location, with all other notes moving with it.
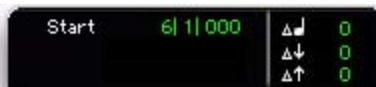


*Multiple notes in the Event Edit area*

Values entered in the pitch and velocity fields add to or subtract from the values for all selected notes. For example, to transpose all selected notes down an octave, enter a value of –12 for pitch.

## Deleting MIDI Notes

In addition to deleting selected notes with the Clear command in the Edit menu, individual notes can also be deleted with the Pencil tool.

### To delete a group of MIDI notes with the Clear command:

**1** Using the Grabber or Selector tool, select the notes to be deleted (see "Selecting MIDI Notes" on page 532).

**2** Do one of the following:

- Choose Edit > Clear to delete the selected notes. The track's underlying controller data remains intact.

– or –

- Press the Backspace (Windows) or Delete (Mac) key.

⚠ *When deleting MIDI notes within a time range selection, all underlying controller and automation data is also deleted.*

**To delete a single MIDI note with the Pencil tool:**

■ With the Pencil tool selected, Alt-click (Windows) or Option-click (Mac) the note. The Pencil tool changes to an Eraser when Alt (Windows) or Option (Mac) is pressed.
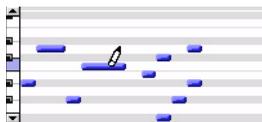


*Deleting a note with Pencil tool*

💡 *Program change events and Sysex events can also be deleted by Alt-clicking (Windows) or Option-clicking (Mac) them with the Pencil tool.*

# Time Compression/Expansion Trimmer Tool Functionality on MIDI Regions

The Time Compression/Expansion Trimmer tool is useful for matching a MIDI region to the length of another region, a tempo grid, or any other reference point.



*Time Compression/Expansion Trimmer tool*

With the Time Compression/Expansion Trimmer tool, you can move the MIDI region's start or end point to expand or compress the region, scaling the MIDI data accordingly regardless of the track's timebase (ticks or samples).

before trimming
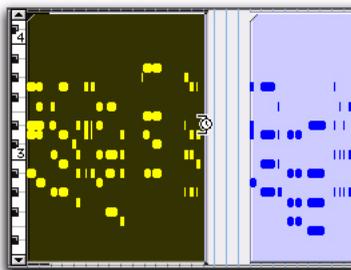


after trimming
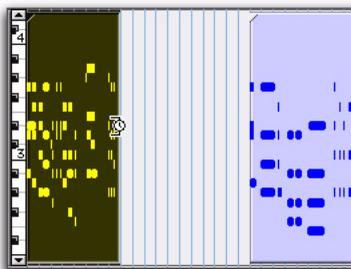


*Scaling a MIDI region with the Time Compression/Expansion Trimmer tool*

## Using the Time Compression/ Expansion Trimmer Tool in Grid Mode

The Time Compression/Expansion Trimmer tool (TCE Trimmer tool) can be used in Grid mode to match a region to the tempo of a session or a section of a session, or to create "double time" or "half time" performances.

**To compress or expand MIDI regions in Grid mode:**

**1** Set the Edit mode to Grid.

**2** Set the MIDI or Instrument track to Regions View.

**3** Select the TCE Trimmer tool.

**4** With the TCE Trimmer tool, drag the MIDI region's start or end point to compress or expand the region to the Grid (for example, by quarter notes). A new MIDI region is automatically created, and appears both in the playlist and in the Region List.

## Using the Time Compression/ Expansion Trimmer Tool in Slip Mode

**To compress or expand MIDI regions in Slip mode:**

**1** Set the Edit mode to Slip.

**2** Set the MIDI or Instrument track to Regions View.

**3** Select the TCE Trimmer tool.

**4** With the TCE Trimmer tool, drag the MIDI region's start or end point to compress or expand the region freely A new MIDI region is automatically created, and appears both in the playlist and in the Region List.

## Using the Time Compression/ Expansion Trimmer Tool in Spot Mode

In Spot mode, clicking with the TCE Trimmer tool in a region opens the Spot dialog. You can specify the location where you want the region to start or end, or the duration of the region, and the region is automatically compressed or expanded as specified.

**To compress or expand MIDI regions in Spot mode:**

**1** Set the Edit mode to Spot.

**2** Set the MIDI or Instrument track to Regions View.

**3** Select the TCE Trimmer tool.

**4** Click the MIDI region near its start or end point. The Spot dialog opens. Using any Time Scale, enter a new start or end time (or duration) for the region, and then click OK. A new MIDI region is automatically created, and appears both in the playlist and in the Region List.

## Using the Time Compression/ Expansion Trimmer Tool in Shuffle Mode

In Shuffle mode, the trimmed region will always begin at the original region's start point regardless of whether you trim from the front to the rear or from the rear to the front.

**To compress or expand MIDI regions in Shuffle mode:**

**1** Set the Edit mode to Shuffle.

**2** Set the MIDI or Instrument track to Regions View.

**3** Select TCE Trimmer tool.

**4** With the Time Compression/Expansion Trimmer tool, drag the MIDI region's start or end point to compress or expand the region freely. A new MIDI region is automatically created, and appears both in the playlist and in the Region List.

# Continuous Controller Events

Continuous controller events for MIDI and Instrument tracks are displayed in the form of a line graph with a series of editable breakpoints. Controller events for MIDI and Instrument tracks differ from automation data for audio tracks in that the breakpoints are stepped (instead of vector-based), where each breakpoint represents a single controller event.
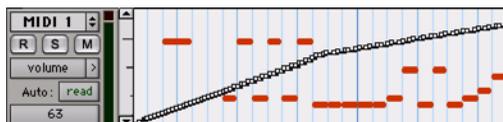


*MIDI track displaying volume events*

Continuous controller events that can be inserted and edited in Pro Tools include:

- volume
- pan
- pitch bend
- aftertouch (mono)
- MIDI controllers, 0–127

⚠ *Polyphonic aftertouch cannot be viewed in the Edit window. To view polyphonic aftertouch in Pro Tools, use the MIDI Event List (see Chapter 29, "MIDI Event List").*

MIDI controller #7 (volume) and #10 (pan) are treated by Pro Tools as automation data. This means that these controller events (along with Mutes) can be recorded and automated from the Mix window; in addition, each MIDI or Instrument track's automation mode affects how these events are played back and recorded. While a MIDI track's volume, pan, and mute events can be suspended, all other controller events in the track always play. Instrument tracks support both MIDI volume, pan, and mute, and audio volume, pan, and mute.

To avoid overwriting existing MIDI volume and pan automation data, record in MIDI Merge mode. When recording in MIDI Merge mode, existing volume and pan data play back while recording new MIDI data.

Continuous controller events (including volume and pan) can be recorded from an external MIDI controller (such as a keyboard or control surface), and they can be inserted in a MIDI track's playlist using the Pencil tool or any Grabber tool.

## Inserting and Editing Controller Events

Continuous controller events can be edited with any of the following methods:

◆ Individual breakpoints can be dragged with any Grabber tool to adjust their location or value.

◆ A group of selected breakpoints can be scaled up or down with any of the Trimmer tools.

◆ New controller events can be drawn in with the Pencil tool to replace existing events. Events can be drawn with the Pencil tool (set to Free Hand, Line, Triangle, Square, or Random).

◆ Controller events can be cut or copied and pasted, as well as nudged or shifted.

💡 *To copy continuous MIDI controller events and paste to a different MIDI controller, use Special Paste (Edit > Paste Special > To Current Automation Type). For example, you might want to use the same control data for volume and a cut-off filter, or for pan and pitch bend. For more information, see "Special Paste Function for Automation Data" on page 809.*

⚠️ *Edits to volume data affect all tracks within an enabled Edit Group. This is not the case, however, for other controller playlists (such as pan). To insert and edit other controller types across all tracks in an Edit Group, press the Start key (Windows) or Control (Mac) while performing the edits.*

## Resolution for Inserted Controller Events

When inserting controller events with the Pencil tool, the density of the events is determined by the Pencil Tool Resolution When Drawing Controller Data preference in the MIDI Preferences page.

**To set the Pencil tool resolution:**

**1** Choose Setup > Preferences, then click the MIDI tab.

**2** Enter a value (1 to 100 milliseconds) for Pencil Tool Resolution When Drawing Controller Data.

**3** Click OK.

To edit a continuous controller event with the Pencil tool, the controller first has to be added to the Automated MIDI Controllers list.

💡 *The controller is automatically added to the Automated MIDI Controllers list when you record controller information from an external device.*

**To manually enable a continuous controller for automation:**

**1** Click the Track View selector for the MIDI or Instrument track you want to edit, and select Add/Remove Controller from the controllers pop-up.
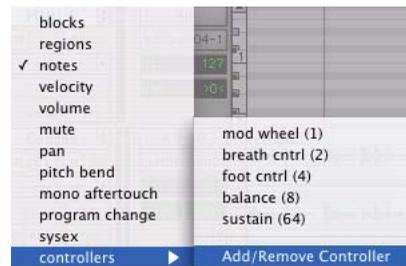


*MIDI Controllers pop-up*

**2** Select the MIDI controller range for the controller you want to automate.

**3** Select the continuous controllers that to automate from the list on the left, and click Add.
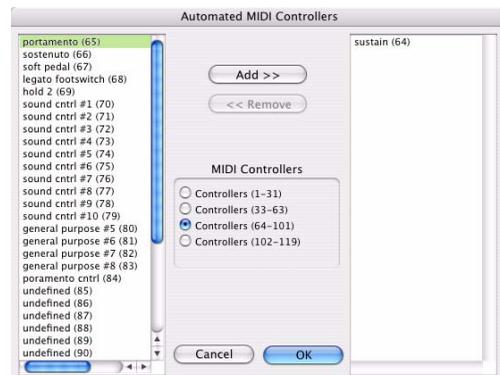


*Automated MIDI Controllers dialog*

**4** Click OK to close the Automated MIDI Controller dialog.

*When you record continuous controller information from an external MIDI device, the controller is automatically added to the MIDI Controllers list.*

# Patch Select (Program and Bank Changes)

Each MIDI and Instrument track can have a default program change that is sent each time the track plays. Additional program changes can be inserted at any point within the track.

## About Program and Bank Changes

The MIDI protocol lets you choose from a range of 128 programs (0–127). However, most MIDI instruments have several banks of 128 programs. To specify a bank, a *bank select* message must be sent. Some instruments use Controller 0 to switch the bank while others use Controller 32; some use a combination of the two. The Patch Select dialog in Pro Tools lets you use either of these bank select messages when inserting a program change event. Check the manufacturer's documentation for your MIDI device to see which Controller value it uses.

*If you do not know what bank select command your instrument uses, you can record MIDI to Pro Tools while making a bank change from the instrument. Then review the bank select information your instrument has recorded into Pro Tools in the MIDI Event List.*

*Some older MIDI devices (such as the Kurzweil K1000) use a program change instead of a Bank Select message to switch banks. For these devices you may find it necessary to send two program change messages to access a particular program, where the first sets the bank and the second sets the program.*

## Default Program Change

The default program change for each MIDI track is specified by clicking on the Patch Select button, from either the Mix or Edit window. Once specified, the default program change message is sent to your instrument when playing the track.

**To set the default program change for a MIDI or Instrument track:**

**1** From the Mix or Edit window, click the Patch Select button.



Patch Select button, (Edit window)      Patch Select button, (Mix window)

*Patch Select button*

**2** Do one of the following:

- In the Patch Select dialog, select a program number.
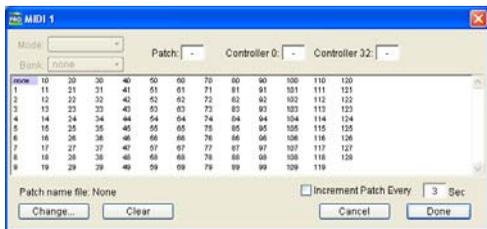


*Patch Select dialog*

– or –

- If you are using patch name files, choose a bank from the pop-up menu in the upper left of the Patch Select dialog and select a patch name. See "Patch Names" on page 542.



*Choosing a bank in Patch Select dialog*

**3** Click Done.

Once selected, the program number (or patch name) appears in the Patch Select button in the Edit window.
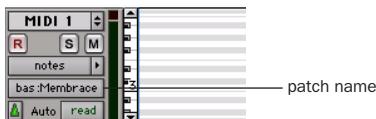


*Patch Select button, Edit window*

Unlike recorded and inserted program change events, the default program change does not appear in the track's playlist.

To clear the default program change, select None in the Patch Select dialog.

## Patch Names

Pro Tools supports XML (Extensible Markup Language) for storing and importing patch names for external MIDI devices (such as MIDI instruments). Pro Tools installs MIDI patch name files (.midnam) for the factory default patch names of many common MIDI devices.

☼ *MIDI patch name files (.midnam) can be edited in any text editor, or you can use third-party patch librarian and editor software to create your own custom patch names.*

Patch name files are sorted by manufacturer and are located:

- On Windows, in Program Files\Common Files\Digidesign\MIDI Patch Names\ Digidesign
- On Mac, in /Library/Audio/ MIDI Patch Names/Digidesign

### To import MIDI patch names into Pro Tools:

**1** Choose Setup > MIDI > MIDI Studio, and verify the MIDI Device definition in the MIDI Studio Setup window (Windows) or Audio MIDI Setup (Mac).

📖 *See your Getting Started Guide for information on configuring MIDI on Windows and Mac systems.*

**2** Verify the MIDI track's output is correctly assigned to the MIDI device.

**3** Click the MIDI track's Patch Select button.

**4** In the Patch Select dialog, click the Change button.
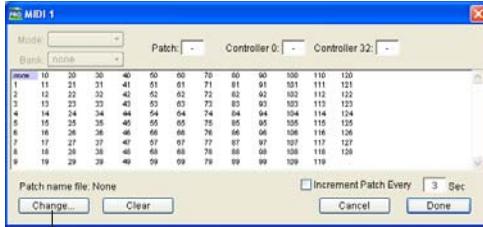


Change button

*Patch Select dialog*

**5** In the Open dialog, navigate to one of the following:

- On Windows, Program Files\Common Files\Digidesign\MIDI Patch Names\Digidesign\<name of manufacturer>

– or –

- On Mac, /Library/Audio/MIDI Patch Names/Digidesign/<name of manufacturer>

**6** Select the MIDI Patch Name file (.midnam) for the MIDI device.

**7** Click Open.

**8** The Patch Select dialog is populated by patch names from the selected file, and the Patch Name Bank pop-up menu appears in the upper left hand corner of the window.
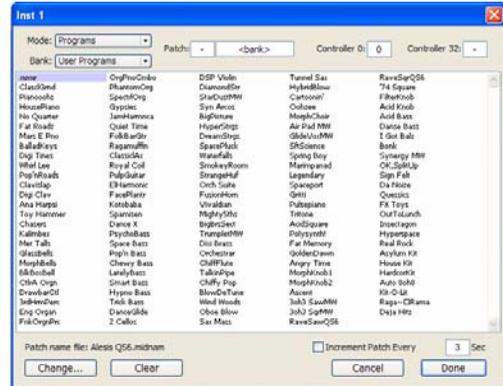


*Patch Select dialog with patch names*

Once patch names have been imported into Pro Tools, they are available for that MIDI device in all subsequent sessions.

⚠ *Pro Tools does not let you import a patch name file that does not match the model and manufacturer information selected in the MIDI Studio Setup window (Windows) or in the Audio MIDI Setup (Mac).*

**To clear patch names:**

**1** In the Patch Select dialog, click the Clear button.

**2** Click Done.

## Inserting and Editing Program Changes

Program changes can be inserted into a track's playlist with the Pencil tool. Existing program changes can be edited, moved, and copied and pasted.

💡 *On some instruments, changing programs during playback can interrupt playback. To avoid this, place program change events in the track where there are no notes sounding.*

**To insert a program change with the Pencil tool:**

**1** Set the MIDI or Instrument track to Program Change view.

**2** If you want the inserted event to snap to a Grid value, enable Grid mode.

**3** Click with the Pencil tool in the track's playlist at the point where you want to insert the program change.

**4** In the Patch Select dialog, select a program number (or name) and, if necessary, specify a bank change value.

**5** Click Done to insert the program change event in the track's playlist.
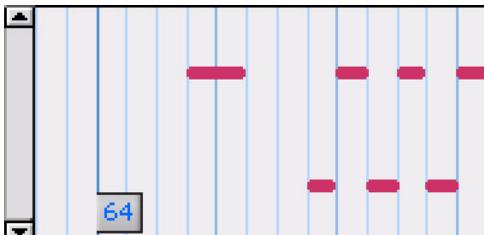


*Program change event*

**To edit a program change event:**

**1** With the Pencil tool or any Grabber tool, double-click the program change event you want to edit.

**2** In the Patch Select dialog, select the new program number (or name) and, if necessary, specify a bank change value.

**3** Click Done.

**To move a program change event:**

■ With the Pencil tool or any Grabber tool, drag the program change event left or right.

If the Edit mode is set to Grid, the dragged event snaps to the nearest Grid boundary. If the Edit mode is set to Spot, the Spot dialog opens.

💡 *The placement of program changes can also be adjusted with Shift (see "Shift Command" on page 664) or Nudge (see "Nudging Regions" on page 472).*

**To delete a program change event:**

**1** Do one of the following:
- With the track set to Program Change View, click the program change event with any Grabber tool to select it.

– or –

- If the region contains other events you want to delete, select the entire region with any Grabber tool (when the track is displaying regions).

**2** Do one of the following:
- Choose Edit > Clear to remove the selected events from the track.

– or –

- Press the Backspace (Windows) or Delete (Mac).

💡 *Individual program change events can also be deleted by Alt-clicking (Windows) or Option-clicking (Mac) them with the Pencil tool.*

## Auditioning Programs

When the Patch Select dialog is open, Pro Tools can automatically scroll through the different patches for a track's assigned MIDI device.

**To audition patches:**

**1** If you want to audition patches for a MIDI track or Instrument during playback, click Play in the Transport window.

**2** Open the Patch Select dialog by clicking the Patch Select button, or by inserting or editing a program change event in a MIDI or Instrument track.

**3** Click a program number—the starting point from which you will scroll through the patches.

**4** Enter a value for the number of seconds that will elapse between each program change.

**5** Select the option for Increment Patch.

After the specified number of seconds, Pro Tools selects the next patch and transmits the program change to the track's assigned MIDI device.

**6** When you are finished auditioning settings, click Done to stop incrementing patches, and to close the Patch Select dialog.

## System Exclusive Events

System Exclusive (Sysex) events can be recorded to MIDI or Instrument tracks in Pro Tools (see "MIDI Step Input" on page 375). Once the events are recorded, they appear in the track's playlist as blocks when the Track View is set to Sysex.



*Sysex event block*

While the contents of recorded System Exclusive events cannot be directly edited in Pro Tools, the events can be moved or nudged, copied and pasted, or deleted.

**To move a Sysex event:**

**1** Set the MIDI or Instrument track to Sysex View.

**2** With any Grabber tool, drag the Sysex event left or right.

If the Edit mode is set to Grid, the dragged event snaps to the nearest Grid boundary. If the Edit mode is set to Spot, the Spot dialog opens.

*The placement of Sysex event blocks can also be adjusted with Shift (see "Shift Command" on page 664) or Nudge (see "Nudging Regions" on page 472).*

**To delete one or more Sysex events:**

**1** Do one of the following:

  • With the track to Sysex View, click the Sysex event with any Grabber tool to select it.

  – or –

  • If the region contains other Sysex events you want to delete, select the entire region with any Grabber tool (when the track is displaying regions).

**2** Do one of the following:

  • Choose Edit > Clear to remove the selected events from the track.

  – or –

  • Press the Backspace (Windows) or Delete (Mac).

💡 *Individual Sysex event blocks can also be deleted by Alt-clicking (Windows) or Option-clicking (Mac) them with the Pencil tool.*

# Note and Controller Chasing

## Note Chasing

*Note Chasing* allows long, sustained MIDI notes to be heard when playing from a point after their start time. For example, if a note's start time is at 1|1|000 and lasts for 8 measures (until 9|1|000), note chasing lets you begin playing from bar 5 and still hear the note that started at 1|1|000 as it continues to sustain until 9|1|000.

Note Chasing is something that can turned on and off individually for each MIDI or Instrument track. By default, new MIDI and Instrument tracks have Note Chasing enabled.

**To enable Note Chasing for a MIDI track:**

■ Click the track's Playlist selector and select the option for Note Chasing.
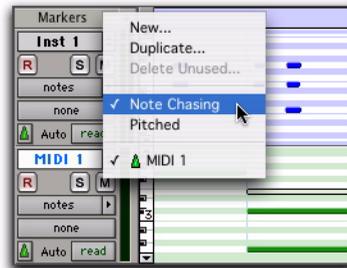


*Note Chasing enabled in Playlist selector*

Make sure to disable Note Chasing when working with samplers that are playing loops. If a MIDI track, for example, is triggering a 4-bar drum loop and you begin playing at bar 3, the loop will begin playing at the wrong time and be out of synchronization with the other tracks.

## Controller and Program Chasing

Pro Tools always chases continuous controller events and program changes for MIDI tracks. This ensures that controller values and patches for MIDI devices are always appropriately set.

For example, suppose a MIDI track lasting 32 measures starts with a volume of 127 and in the last bar fades the volume down to 0. If after playing the track in its entirety you attempt to play from bar 8, the initial volume of 127 is chased and sent to the track's assigned device—otherwise the track would not be heard since the most recent volume event sent would have been 0.

Chasing also occurs for a MIDI track's default program change, along with any program change events residing within the track. Therefore, if you have chosen a default program change for a track, when playing from any point within the track, the program change event is sent to the track's assigned device.

### Default Controller Values and Chasing

Though new MIDI tracks appear to have default values for continuous controller playlists, this is actually not the case. For example, when viewing a MIDI track's Mod Wheel playlist, you'll see that the breakpoint line is set to a default of zero. However, since the modulation wheel on your synth may purposely be set to a different value, the default value in the track is not transmitted when playing.

For example, if you insert a Mod Wheel change from 0–90 towards the end of the track, and you then play from the beginning of the track, or from anywhere before the change, the Mod Wheel value remains at 90 until the 0 value is reached, which is likely not what you want.

To ensure that the default controller value for a playlist is sent (and chased), click the initial breakpoint at the beginning of the track, move it slightly, and set it back to the default value.

## Offsetting MIDI Tracks

Pro Tools can offset MIDI tracks globally or individually.

*With Pro Tools HD, when Delay Compensation is active, MIDI and Instrument tracks are automatically delay-compensated to provide low latency monitoring. For more information, see "Delay Compensation for MIDI" on page 745.*

### Global MIDI Playback Offset

Pro Tools offers a MIDI offset preference that allows MIDI and Instrument tracks to play back earlier or later (than audio tracks) by a specified number of samples. The offset affects playback only and does not alter in any way how MIDI data is displayed in the Edit window.

This capability is provided in large part to compensate for the audio monitoring latency in Pro Tools LE. If you are monitoring the output of external MIDI instruments with an external mixer or sound system (or headphones), there is no latency. If, however, you are monitoring the output of your MIDI devices through a Pro Tools LE interface (such as Mbox 2), your MIDI tracks sound slightly later than your audio tracks. The larger the setting for the H/W Buffer Size (128, 256, 512, or 1024 samples), the larger the latency.

By configuring the Global MIDI Playback Offset, you can align your MIDI tracks to play back slightly earlier (by a specified number of samples), thereby compensating for any latency when monitoring audio in Pro Tools LE.

**To configure the Global MIDI Playback Offset:**

**1** Choose Setup > Preferences and click the MIDI tab.

**2** For the Global MIDI Playback Offset option, enter the number of samples (–10,000 to 10,000) for the offset. A negative value causes the MIDI tracks to play back earlier than the audio tracks; a positive value causes the MIDI tracks to play back later.

To allow for monitoring latency in Pro Tools LE, set the offset to a value that is roughly equivalent to the H/W Buffer Size.

**3** Click OK.

*The Global MIDI Playback Offset can also be set from the MIDI Track Offsets window. You can also apply MIDI Real-Time Properties delay to offset MIDI (see "MIDI Real-Time Properties" on page 549).*

## Individual MIDI and Instrument Track Offsets

You can offset individual MIDI and Instrument track offsets in Pro Tools to compensate for delays in MIDI devices (the time it takes to trigger events on a sampler or synth).

For example, if you have some kick drums that are being played by an audio track in Pro Tools and want them to be exactly synchronized with kick drums that are being played by a MIDI device, you may need to use a MIDI offset. In this example, it will usually take at least 5 ms to trigger the MIDI notes, and it could take even longer, depending on the MIDI device.

You can measure the latency for a MIDI device assigned to a MIDI track by recording its audio output back into Pro Tools. Compare the sample locations for the recorded audio events against the original MIDI notes to calculate the latency.

**To configure a MIDI or Instrument track offset for a track:**

**1** Choose Event > MIDI Track Offsets.
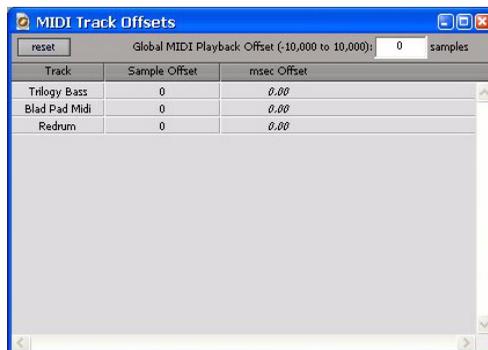


*MIDI Track Offsets window*

**2** Click in the Sample Offset column for the MIDI track and enter the number of samples (–10,000 to 10,000) for the offset. A negative value causes the MIDI or Instrument tracks to play back earlier than the audio tracks; a positive value causes the MIDI or Instrument tracks to play back later.

The equivalent offset in milliseconds is displayed in the msec Offset column. This value cannot be edited, but updates when a new value is entered in the SMPTE Offset column.

**3** Press Enter (Windows) or Return (Mac) to accept the entered offset value.

To reset all offsets for all MIDI and Instrument tracks, click the Reset button in the upper left of the window.

# Stuck Notes

If you encounter stuck notes with any of your MIDI devices, you can silence them with the All MIDI Notes Off command.

**To turn off all stuck notes:**

■ Choose Event > All MIDI Notes Off.

*Press Control+Shift+Period (.) (Windows) or Command+Shift+Period (.) (Mac) for the All MIDI Notes Off command.*

# Remove Duplicate Notes

The Remove Duplicate Notes command is useful for removing duplicate notes from a MIDI performance. If a note starts within the first 25% of the duration of a note of the same pitch which is already sounding (or within an eighth-note, whichever is shorter), it is considered a duplicate and is combined with the previous note. If it starts later than that, the first note is shortened so that it ends at the same tick at which the new one starts.

**To remove duplicate notes:**

**1** Make an Edit selection including the duplicate notes you want to remove.

**2** Choose Event > Remove Duplicate Notes.

# MIDI Real-Time Properties

MIDI Real-Time Properties let you change some MIDI properties of MIDI and Instrument tracks (or MIDI regions) during playback. There are five types of MIDI Real-Time Properties: Quantize, Duration, Delay, Velocity, and Transpose.

MIDI Real-Time Properties can be adjusted during playback, so you can listen for the desired results. Once you have found the settings you want, you can write the settings to the selected tracks or regions. This overwrites the corresponding MIDI properties on selected tracks or regions and resets the Real-Time Properties display to its default settings.

Real-Time Properties can be adjusted in the Real-Time Properties View in the Edit window, or in the Real-Time Properties window.

## Real-Time Properties View

Real-Time Properties View in the Edit window only applies to tracks. To apply Real-Time Properties to regions, use the Real-Time Properties window (see "Real-Time Properties Window" on page 550).

**To enable Real-Time Properties View in the Edit window:**

■ Select View > Edit Window > Real-Time Properties.
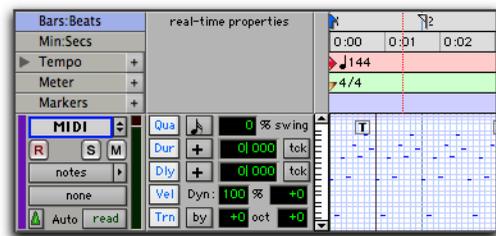


*Real-Time Properties column in the Edit window*

For Micro, Mini, and Small track heights, the Real-Time Properties column only displays one or two properties, accordingly. The first one or two properties that are enabled are displayed automatically.

**To select a different Real-Time Property in Mini or Small track height view:**

■ Control-click (Windows) or Command-click (Mac) on a real-time property element to select a different element from the pop-up menu.

## Real-Time Properties Window

Using the Real-Time Properties window, you can apply Real-Time Properties to selected tracks or regions.

**To open the Real-Time Properties window:**

■ Choose Event > MIDI Real-Time Properties.



*Real-Time Properties window with properties enabled*

The Real-Time Properties window can be used to apply either track-based or region-based Real-Time Properties by making an Edit selection and selecting tracks or regions from the Apply To pop-up menu.

## Expanded Real-Time Properties Window

In the Real-Time Properties window, Quantize, Duration, and Velocity each provide an expand/collapse triangle to show or hide additional settings.
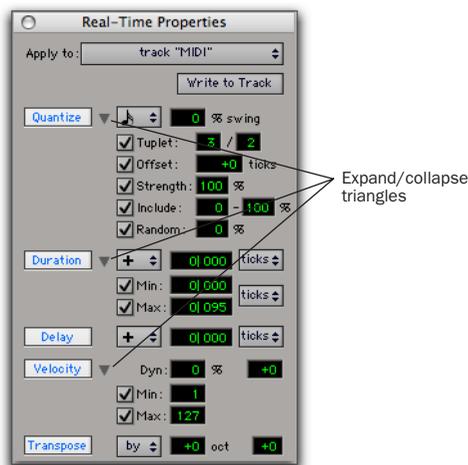


*Real-Time Properties window, expanded view*

## Enabling Real-Time Properties

**To enable Real-Time Properties:**

**1** Select a track, or make an Edit selection.

💡 *When using Real-Time Properties, enable Link Track and Edit Selection mode to make a track selection from an Edit selection (see "Linking or Unlinking Track and Edit Selections" on page 448).*

**2** In Real-Time Properties View in the Edit window, or in the Real-Time Properties window, select the desired Real-Time Properties by clicking the property name (Quantize, Duration, Delay, Velocity, or Transpose). Enabled Real-Time Properties are highlighted and display their settings.

**3** If you are using the Real-Time Properties window and Link Track and Edit Selection mode is enabled, select the track or region to affect from the Apply To pop-up menu.

**4** Configure the Real-Time Properties settings (see "Real-Time Properties Settings" on page 551).

Enabled Real-Time Properties are heard on playback and play through for the selected tracks and regions.

## Real-Time Properties Settings

### Quantize

Quantize either can be based on a grid or a groove template. For grid quantize, additional tuplet and grid offset settings are available in addition to the standard MIDI quantize properties. For groove quantize, additional controls are provided to set the extent to which the groove's duration and velocities are applied. Both grid and groove quantize also let you set a strength amount, an "include" range, and a randomize amount.

**Quantize Pop-Up Menu** Select the desired quantize value, including all standard note rhythm values between whole notes and 64th notes, including dotted and triplet options. This pop-up menu also provides access to all standard and custom groove templates.
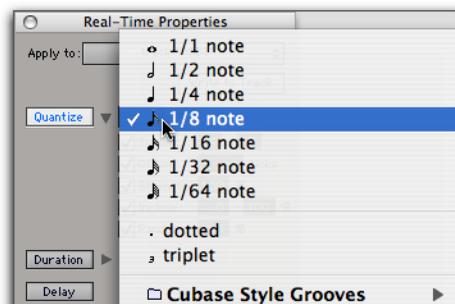


*Selecting a Grid Quantize value or a Groove Template*

**Swing Value** Enter the desired amount of swing as a percentage between 0 and 300%.

**Tuplet Value** Enable Tuplet and enter the ratio for the tuplet (1–99), such as 3 to 2 or 5 to 4. Tuplet is only available in the expanded Real-Time Properties window.

**Offset Value** Enable Offset and enter the desired offset value in Ticks between –2000 and 2000. Offset is only available in the expanded Real-Time Properties window.

**Strength Value** Enable Strength and enter the amount as a percentage between 0 and 100%. Strength is only available in the expanded Real-Time Properties window.

**Include** Enable Include and enter the range between 0 and 100%. Include is only available in the expanded Real-Time Properties window.

**Random** Enable Random and enter a percentage between 0 and 100%. Random is only available in the expanded Real-Time Properties window.

### Duration

Duration can be used to increase or decrease the duration of MIDI notes by a fixed amount or by a percentage. This is useful for creating legato or staccato passages.

### Duration Mode Pop-Up Menu

Select one of the following options from the Duration Mode pop-up menu: Set, Add, Subtract, Scale, Legato/Gap, or Legato/Overlap.
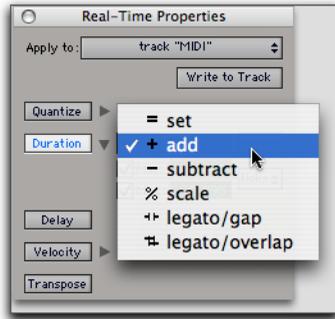


*Selecting a Duration mode*

**Set** Select to set notes to the specified duration.

**Add** Select to add the specified duration to the current duration of each note.

**Subtract** Select to subtract the specified duration from the current duration of each note.

**Scale** Select to scale the current duration of each note by a percentage from 1 to 400%.

**Legato/Gap** Select to extend each note to the following note. The specified duration is the subtracted to create a consistent gap between notes.

**Legato/Overlap** Select to extend each note to the following note. The specified duration is then added to create a consistent amount of overlap.

### Duration Amount

If the Ticks or Notes pop-up menu is set to ticks, enter a duration as a number of quarter-notes plus a number of ticks, such as 4|000. If the Ticks or Notes pop-up menu is set to a note size, enter a number to by which to multiply that note size, such as 7 16th-notes.

### Ticks or Notes Pop-Up Menus

The Ticks or Notes pop-up menu lets you select either Ticks or a note size for Note Durations. There is also a Ticks or Notes pop-up menu for the Minimum and Maximum Durations options.

### Minimum and Maximum Durations

Enable either or both minimum and maximum durations and enter a value in quarter notes plus ticks or as a multiple of a note size. The Minimum and Maximum Durations options are only available in the expanded Real-Time Properties window.

### Delay

Delay lets you delay or advance all MIDI data in the selected region or track. Select "+" from the Delay pop-up menu to delay MIDI data, or select "–" to advance MIDI data. Select Ticks or Milliseconds from the Ticks or Milliseconds pop-up menu. Enter the Delay amount in Tick or Millisecond values. Delay is limited to a maximum of value of 2000 ms or 999 ticks.

### Velocity

Velocity lets you change MIDI velocity by a percentage or by constant value. Enter a percentage value in the Dynamics field to scale velocity around the median velocity of 64. You can also enter an offset by adding (+) or subtracting (–) values between 1 and 127. You can also enter Minimum and Maximum Velocity value limits. The Minimum and Maximum Durations options are only available in the expanded Real-Time Properties window.

Velocity can be applied as a Real-Time Property to MIDI Input and Thru.

## Transpose

Transpose lets you transpose MIDI notes up or down by a specified number of octaves and semitones, or in key by scale steps (based on the Key Signature ruler). You can also transpose to a specified pitch. Select By, To, or In from the Transpose pop-up menu to transpose by an interval, to a specific pitch, or in key by scale steps.

To transpose by an interval, enter the desired number of octaves and semitones as a positive or negative numbers.

To transpose to a specific pitch, enter the desired MIDI note.

To transpose in key by scale steps, enter the desired number of steps as a positive or negative numbers. For example, enter +2 to transpose up by thirds in key (a unison plus a second equals a third).

Transpose can be applied as a Real-Time Property to MIDI Input and Thru.

## Real-Time Properties On Tracks and Regions

Real-Time Properties can be configured to apply to an entire track (all regions on that track), or on a region-by-region basis. Track-level properties also provide real-time MIDI input processing of velocity and transposition.

The presence of track-based Real-Time Properties are indicated by a "T" displayed in the upper right-hand corner of MIDI regions. Region-based Real-Time Properties are indicated by an "R" displayed in the upper right-hand corner of the region. Regions boundaries are indicated in Notes View.
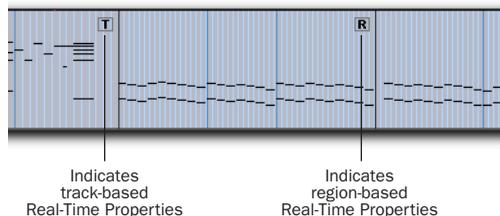


*Track-based and region-based Real-Time Property indicators*

## Region-Based Real-Time Properties

Region-based Real-Time Properties can only be applied using the Real-Time Properties window (Event > MIDI Real-Time Properties). Real-Time Properties can be applied to multiple regions. Once Real-Time Properties have been assigned to a region, the region can be moved or copied and pasted and retain its Real-Time Properties.

## Track-Based Real-Time Properties

All track-based Real-Time Properties consistently apply to MIDI sequences throughout the entire track. However, regions with region-based Real-Time Properties will take precedence over any track-based Real-Time Properties. You can clear region-based Real-Time Properties by selecting the region and clicking the Clear Region Properties button in the Real-Time Properties window (see "Writing Real-Time Properties to Tracks or Regions" on page 554).

For greater flexibility, when Real-Time Properties are assigned on a track basis they are actually contained in a track playlist. This lets you create multiple playlists containing different Real-Time Property settings.

## Writing Real-Time Properties to Tracks or Regions

Once you have found the settings you want, you can write Real-Time Properties to the selected tracks or regions using the Real-Time Properties window. Real-Time Properties are applied to the current MIDI data on the track or in a region.

**To write Real-Time Properties to tracks:**

**1** Enable Link Track and Edit Selection mode.

**2** Select one or more tracks to which you want to apply Real-Time Properties.

**3** Open the Real-Time Properties window (Event > MIDI Real-Time Properties).

**4** Select Tracks from the Real-Time Properties Apply To pop-up menu.

**5** Configure the Real-Time Property settings as desired.

**6** Do one of the following:
- Click the Write to Track button in the Real-Time Properties window.

– or –
- Choose Track > Write MIDI Real-Time Properties.

**To write Real-Time Properties to regions:**

**1** Select one or more regions to which you want to apply Real-Time Properties.

**2** Open the Real-Time Properties window (Event > MIDI Real-Time Properties).

**3** If Link Track and Edit Selection mode is enabled, select Regions from the Real-Time Properties Apply To pop-up menu.

**4** Configure the Real-Time Property settings as desired.

**5** Click the Write to Region button.

**To clear Real-Time Properties from a region:**

**1** Select the region for which you want to clear Real-Time Properties.

**2** Open the Real-Time Properties window (Event > MIDI Real-Time Properties).

**3** Select Regions from the Real-Time Properties Apply To pop-up menu.

**4** Click the Clear Region Properties button.

## Real-Time Properties In the MIDI Event List

In the MIDI Event List, the presence of track-based Real-Time Properties are indicated by a "T" displayed to the right of each event. Region-based Real-Time Properties are indicated by an "R."



Track/region column

*Track-based and region-based Real-Time Properties indicated in the MIDI Event List*

📄 *For more information on the MIDI Event List, see Chapter 29, "MIDI Event List."*

## Display of Real-Time Properties Effects

The Display Events as Modified by the Real-Time Properties option determines if Pro Tools displays the effects of Real-Time Properties in both the Edit window and the MIDI Event List. The Edit window and the MIDI Event List display the effects of Real-Time Properties when the Display Events as Modified by Real-Time Properties option is enabled. With this option disabled, the effects of Real-Time Properties are heard but not seen—you see the notes and other MIDI events with their original location, pitch, duration, or velocity, but you hear them as they are affected by the Real-Time Properties settings.

**To enable or disable the Display Events as Modified by Real-Time Properties option:**

**1** Choose Setup > Preferences.

**2** Click the MIDI Tab.

**3** Enable or disable the Display Events as Modified by Real-Time Properties option.
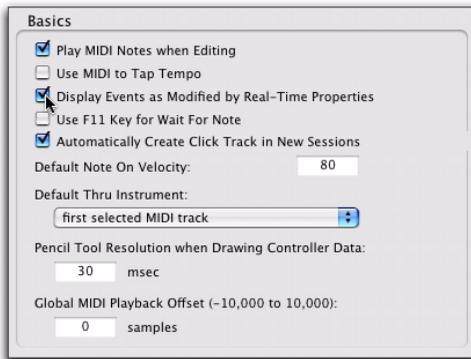


*Display Events as Modified by Real-Time Properties option, MIDI Preferences page*

**4** Click OK.

## Real-Time Properties Effects Displayed in the MIDI Event List

The MIDI Event List takes into account the effect of Real-Time Properties whenever the Display Events as Modified by Real-Time Properties option is enabled. When editing or inserting an event in a track or region with active Real-Time Properties, Pro Tools takes the properties into account and edits or inserts the event in a different place if necessary to match the effect of the Real-Time Properties.

## Real-Time Properties Effects Displayed in the Edit Window

In the Edit window with the Display Events as Modified by Real-Time Properties preference enabled, MIDI events appear where they sound. However, MIDI events are not actually written to their modified locations until you write the Real-Time Properties to the track or region.

When moving MIDI events, the actual locations (pitch or time) move by the amount the events are dragged, but the effect of Real-Time Properties is displayed.

When inserting an event in a track or region with active properties, Pro Tools takes the properties into account and edits or inserts the event in a different place if necessary to match the effect of the Real-Time Properties.

# Chapter 28: Event Operations

## Event Operations Window

The Event Operations window provides commands to transform groups of MIDI notes to affect pitch, timing, and phrasing. The Quantize and Restore Performance Event Operations can also be applied to audio region start times (or sync points) and Elastic Audio events.

The Event Operations window has nine pages, one for each Event Operations command.

- Quantize
- Restore Performance
- Flatten Performance
- Change Velocity
- Change Duration
- Transpose
- Select/Split Notes
- Input Quantize
- Step Input

The Event Operations window can be left open, This provides quick access to apply a command or try out different options for a particular command.

💡 *You can also apply quantize, duration, delay, and transpose nondestructively using MIDI Real-Time Properties. See "MIDI Real-Time Properties" on page 549.*

**To open a specific Event Operations window page:**

■ Choose Event > Event Operations, followed by one of the Event Operations (such as Quantize).
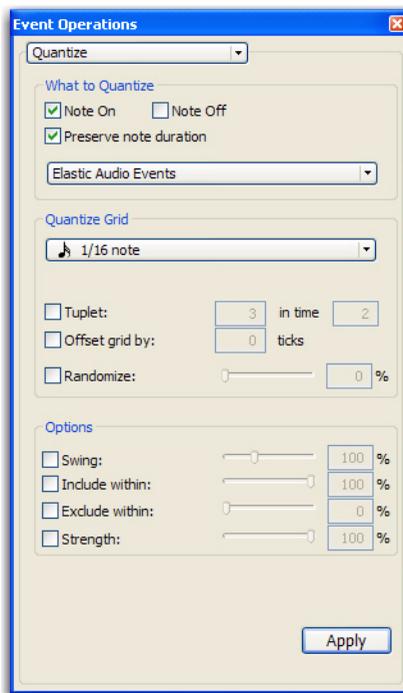


*Event Operations window (Quantize page shown)*

**To open the last active Event Operations window page:**

■ Choose Event > Event Operations > Operations Window.

⬚ *To open the last active Event Operations window page, press Alt+3 (Windows) or Option+3 (Mac).*

💡 *If the Event Operations window is already open, you can select any of the pages from the pop-up menu at the top of the window.*

**To apply an Event Operations command, do one of the following:**

■ Click Apply or press Enter on the numeric keypad. This applies the command and leaves the window in the foreground.

– or –

■ Press Enter on the QWERTY keyboard (Windows) or Return (Mac). This applies the command and closes the window.

⚠ *When using the Event Operations window and MIDI Real-Time Properties at the same time, Event Operations are applied to the actual MIDI data. MIDI Real-Time Properties continue to applied on top of the actual MIDI data.*

**To undo a command in the Event Operations window:**

■ Choose Edit > Undo.

## Using the Event Operations Window

Use the following methods to configure options in the Event Operations window:

◆ To move forward and back through the various fields, press Tab or Shift+Tab.

◆ Increment or decrement selected fields with the Up and Down Arrow keys. Press and hold these keys to scroll quickly through the values.

◆ Click and drag up or down in a selected field to scroll to a new value.

◆ Press Control (Windows) or Command (Mac) while adjusting sliders for finer resolution.

◆ For selected pitch and velocity fields, play a note on your MIDI controller keyboard to automatically enter it.

◆ Changing a value for a particular control (such as the Swing Percentage in the Quantize window), automatically enables the control.

## Quantize

The Quantize command can be applied to MIDI notes, audio regions, and Elastic Audio events. For MIDI, quantization adjusts MIDI note locations and durations so that timing is improved, or so that a particular rhythmic "feel" is achieved. For audio regions, quantization adjusts the start times (or sync points) of audio regions. For Elastic Audio, quantization adjusts to the location of detected transient events and applies Elastic Audio processing accordingly.

The Quantize Event Operations window lets you apply Grid Quantize based on rhythmic values (such as 1/16 note) or using Groove Quantize based on Groove Templates. Slightly different options are provided for Grid Quantize and Groove Quantize.

The Quantize Event Operation and Quantize to Grid commands can both be used to quantize regions. However, each command also has a specific additional use.

Use the Quantize to Grid command (Region > Quantize to Grid) to adjust the start points (or sync points) for selected regions. The Quantize to Grid command can be applied to both MIDI and audio regions (see "Quantizing Regions to Grid" on page 474).

The Quantize Event Operation, on the other hand, can be applied to MIDI notes and Elastic Audio events individually in addition to audio region start times (or sync points). Some notes or events may be moved back in time, others forward. For MIDI notes only, some may be shortened, some lengthened, and some more drastically affected than others.

📄 *You can also quantize MIDI input, see "Input Quantize" on page 580.*

💡 *The settings in the Quantize window are saved with each session. To store your favorite settings for use in future sessions, save them as part of a session template (see "Creating Custom Session Templates" on page 105).*

**To open the Quantize window:**

■ Choose Event > Event Operations > Quantize.

⇧ *Press Alt+0 on Windows or Option+0 on Mac to open the Quantize window.*
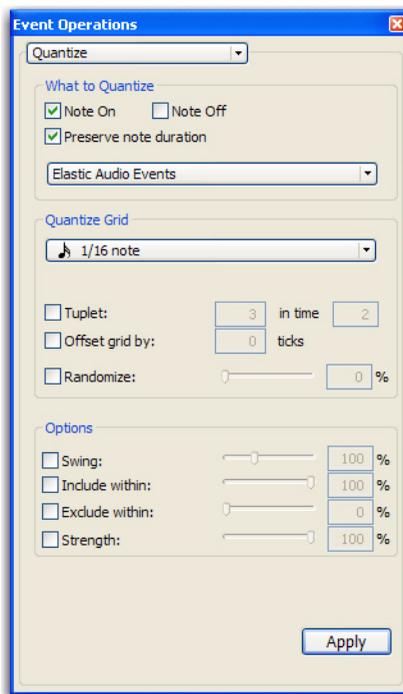


*Event Operations window, Quantize*

**To select Grid Quantize:**

■ From the Quantize Grid pop-up menu, select a note value.

**To select Groove Quantize:**

■ From the Quantize Grid pop-up menu, select a groove template.

## Grid Quantize

The Quantize window can apply Grid Quantize when a specific rhythmic value is selected in the Quantize Grid pop-up menu. When a groove template is selected in the Quantize pop-up menu, Groove Quantize can be applied. For information on Groove Quantize, see "Groove Quantize" on page 564.

## What to Quantize

The What to Quantize options determine what aspects of any selected MIDI notes are quantized: Note Ons (attacks), Note Offs (releases), or both. You can also select whether to quantize audio regions or Elastic Audio events. Depending on what type of track material is selected, not all options will be available. If only MIDI is selected, the Audio Regions and Elastic Audio Events options are unavailable. If only audio is selected, the Note On, Note Off, and Preserve Note Duration options are not available.

**Note On** When selected, note start points are quantized.

**Note Off** When selected, note end points are quantized.

**Preserve Note Duration** When selected, note durations are preserved.

When deselected with the Note On option selected, note end points are not moved.

When deselected with the Note Off option selected, note start points are not moved.

If the options for both Note On and Note Off are selected, the Don't Change Durations option is unavailable.

Figure 5 shows how MIDI notes are adjusted by the different What To Quantize options.
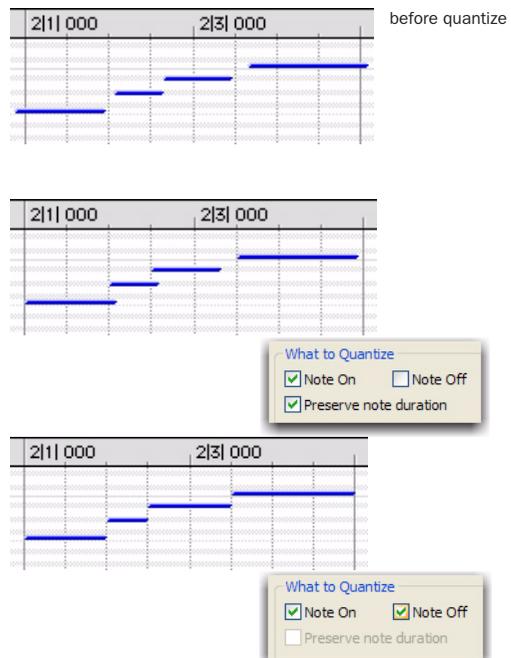


*Figure 5. What To Quantize examples*

**Audio Regions** When selected in the What to Quantize pop-up menu, Quantize is applied to region start times (or sync points if present) for selected audio regions. MIDI regions are not affected. Typically, you will only want to apply quantization to sliced audio regions or region groups (such as imported REX files or regions created using the Separate Regions at Transients command or Beat Detective). Quantization can be applied to mixed selections of MIDI notes and audio regions.

**Elastic Audio Events** When selected in the What to Quantize pop-up menu, Quantize is applied to detected transient events within the Edit selection on Elastic Audio–enabled tracks. Quantization can be applied to mixed selections of MIDI notes and Elastic Audio events. Warp

markers are created automatically on top of Event markers nearest the quantize grid. Quantize then uses these Warp markers to apply quantization.

## Quantize Grid

**Quantize Grid Pop-Up Menu** Determines the beat boundaries to which MIDI notes, Elastic Audio events, and audio region start points are aligned. Any size from whole notes (1/1) to sixty-fourth notes (1/64), including dotted and triplet values, can be selected for the Grid size.

*Relative Grid mode does not affect the Quantize Grid.*

**Tuplet** Select the Tuplet option to quantize according to irregular note groupings, such as quintuplets (5 in the time of 4). The Quantize Grid for tuplets is calculated from the note size selection and the Tuplet value. For example, if an sixteenth note equals 240 ticks, quintuplet sixteenth notes with 5 in time of 4 would yield a Grid size of 192 ticks or (240 ticks/5)*4.

**Offset Grid By** Offsets the Quantize Grid forward or back in time by a specified number of ticks. Use this option to achieve a pushed feel (by using positive values) or a laid back feel (by using negative values).

*To Quantize just the backbeats, set the Quantize Grid to half-notes with an Offset of 960 ticks.*

**Randomize** When selected, MIDI notes, Elastic Audio events, and audio regions are moved randomly forward or back in time (after the Quantize occurs). For example, with the Quantize Grid set to eighth notes and Randomize set to 50%, notes and events are placed up to a 32nd note before or after the beat boundary. The Randomize setting also affects note durations (if Releases is selected).

## Options

Additional Quantize options include:

**Swing** When selected, every other Grid boundary is shifted by the specified percentage value (0–300) to achieve a "swing" feel. A Swing value of 0% yields no swing, while 100% yields a triplet feel. Settings above 100% progressively narrow the swing until the maximum of 300%, at which every other Grid boundary is moved to the next Grid point.
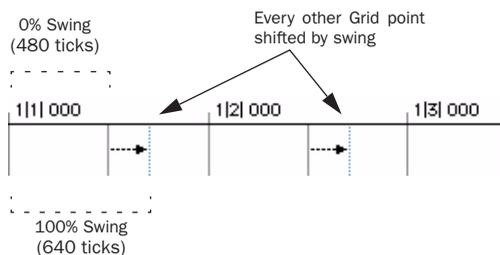


*100% Swing, eighth note Grid*

**Include Within** When selected, MIDI Note Ons and MIDI Note Offs, Elastic Audio events, and audio regions are only quantized if located within the specified percentage of the Quantize Grid. Use this option to clean up downbeats without affecting notes that are "swung" or wildly off the beat.

Figure 6 shows the Quantize Grid set to quarter notes with the Include Within option set to 50%. In this example, only the MIDI Note Ons and MIDI Note Offs falling within the shaded area (equivalent to an eight note area around each beat) are quantized.
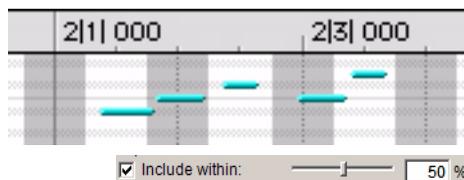


*Figure 6. Include Within option*

**Exclude Within** When selected, MIDI Note Ons and MIDI Note Offs, Elastic Audio events, and audio regions are not quantized if located within the specified percentage of the Quantize Grid. Use this option to preserve the feel of events close to the beat, while correcting others that are drastically away from the beat.

Figure 7 shows the Quantize Grid set to quarter notes with the Exclude Within option set to 25%. In this example, MIDI Note Ons and MIDI Note Offs falling within the shaded area (equivalent to a sixteenth note area around each beat) are not quantized.
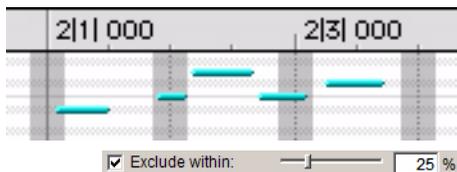


*Figure 7. Exclude Within option*

**Strength** When selected, MIDI notes, Elastic Audio events, and audio regions are moved a percentage toward the Quantize Grid. Lower percentages preserve the original feel of the events, higher percentages align the notes more tightly to the Grid.

## Grid Quantize Examples

The following examples illustrate some of the more common uses for Grid Quantize.

If you intend to loop playback while quantizing, you may want to deselect Options > Link Timeline and Edit Selection. This ensures that the play range does not change when selected events are moved in the course of quantizing and undoing.

⚠️ *After quantizing, you can use Restore Performance to revert to the original version (see "Restore Performance" on page 571.)*

## Straight Quantize

**To quantize to a straight sixteenth note feel:**

**1** Select the range of MIDI notes, Elastic Audio events, or audio regions to be quantized.

**2** Choose Event > Event Operations > Quantize.

**3** Under What to Quantize, select the Note On option for quantizing MIDI notes. To also quantize MIDI note durations, select the Note Off option. If you are quantizing audio, select Audio Regions or Elastic Audio Events from the pop-up menu.

**4** From the Quantize Grid pop-up menu, select sixteenth notes (1/16). Make sure that the other options for Tuplet, Offset Grid By, and Swing are not selected.

**5** Ensure that the remaining Quantize options are deselected.

**6** Click Apply.

## Quantizing While Preserving the Original "Feel"

You can quantize less strictly, to preserve the original feel of your recorded MIDI and audio tracks.

**To quantize while preserving the original feel:**

**1** Select the range of MIDI notes, Elastic Audio events, or audio regions to be quantized.

**2** Choose Event > Event Operations > Quantize.

**3** Under What to Quantize, select the Note Off option for quantizing MIDI notes. To also quantize MIDI note durations, select the Note Off option. If you are quantizing audio, select Audio Regions or Elastic Audio Events from the pop-up menu.

**4** From the Quantize Grid pop-up menu, select the note value you want to use.

**5** Ensure that the other options for Tuplet, Offset Grid By, and Swing are not selected.

**6** Select the Exclude Within option with a value of 10–15%.

**7** Select the Strength option with a value of 70–80%.

**8** Ensure that the remaining Quantize options are deselected.

**9** Click Apply.

**10** Audition the change. If the desired effect is not achieved, undo the edit and experiment with different values for Exclude Within and Strength.

### Quantizing with Swing

If you are working with MIDI hi-hats or bass lines or audio equivalents, you may want to apply more of a swing feel when quantizing.

**To quantize with an eighth note swing feel:**

**1** Select the range of MIDI notes, Elastic Audio events, or audio regions to be quantized.

**2** Choose Event > Event Operations > Quantize.

**3** Under What to Quantize, select the Note Off option for quantizing MIDI notes. To also quantize MIDI note durations, select the Note Off option. If you are quantizing audio, select Audio Regions or Elastic Audio Events from the pop-up menu.

**4** From the Quantize Grid pop-up menu, select eighth notes (1/8).

**5** Select the Swing option with the Swing percentage you want:

- For a light swing, use 12%.
- For a tighter swing-like groove, use 24%.
- For a true "triplet-like" swing feel, use 50–75%.

**6** Ensure that the options for Tuplet, Offset Grid By, and Randomize are not selected.

**7** Click Apply.

**8** Audition the change. If the desired effect is not achieved, undo the edit and experiment with different Swing percentages.

### Quantizing with Randomize

If quantized events sound too mechanical or "on the beat," use the Randomize option in the Quantize window to make them sound more natural.

**To "humanize" the rhythmic feel of events:**

**1** Select the range of MIDI notes, Elastic Audio events, or audio regions to be quantized.

**2** Choose Event > Event Operations > Quantize.

**3** Under What to Quantize, select the Note Off option for quantizing MIDI notes. To also quantize MIDI note durations, select the Note Off option. If you are quantizing audio, select Audio Regions or Elastic Audio Events from the pop-up menu.

**4** From the Quantize Grid pop-up menu, select the note value you want to use.

**5** Select the Randomize option and enter a value of 5%.

**6** Click Apply.

**7** Audition the change. If the desired effect is not achieved, undo the edit and experiment with different Randomize percentages.

## Experimenting with Quantize

When using the Quantize command, you may have to experiment with many of the controls to achieve the results you want. Try different values for Include and Exclude Within, and Strength; these controls determine which notes are affected and how drastically they are changed. Additionally, use the Randomize control, which adds a percentage of randomness to the quantize, to make tracks sound less "mechanical."

## Groove Quantize

In the Quantize window, you can apply Groove Quantize when a groove template is selected in the Quantize Grid pop-up menu. Groove quantize adjusts MIDI note locations and durations, Elastic Audio events, and audio regions according to a *groove template* rather than a strict quantization grid. Groove templates extract the particular rhythmic feel of a recorded audio or MIDI performance so that is can be applied to another MIDI sequence or audio selection. DigiGroove templates can be generated using Beat Detective.
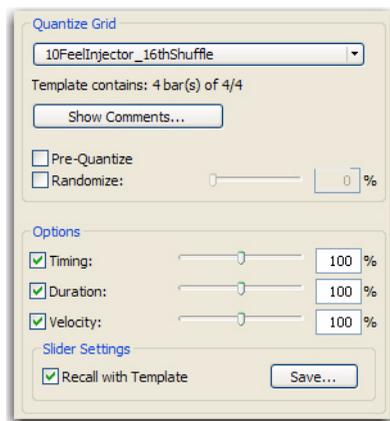


*Quantize options with a groove template selected*

## Groove Templates

Groove templates (such as DigiGroove templates) are "quantization maps" derived from real musical performances. The rhythmic character of each performance is analyzed and stored as a groove template. Groove templates can be used to transfer the feel of a particular performance to MIDI notes (Timing, Duration, and Velocity), Elastic Audio events, and audio regions.

DigiGroove templates can be created using Beat Detective. Beat Detective analyzes an audio selection for transient peaks according to a defined threshold and maps the rhythmic relationships to a 960 parts per quarter note (ppq) template. Beat Detective can also analyze a MIDI selection for note ons and velocities to generate groove templates. These template can then be used with Groove Quantize, as well as with Beat Detective.

📖 *For information on Beat Detective and creating groove templates, see Chapter 34, "Beat Detective."*

DigiGroove templates are also available from Digidesign and third-party manufacturers.

💡 *Numerical Sound's Feel Injector Templates (960 ppq) are supported in Pro Tools, but DNA Groove Templates (192 ppq) are not.*

## Quantize Grid

**Quantize Grid Pop-Up Menu** Determines which groove template to use for quantization. All groove template files in the Grooves folder are available in the Quantize Grid pop-up menu.

The directory path for the Grooves folder is:

- On Windows: C:\Program Files\ Digidesign\Pro Tools\Grooves
- On Mac: Applications/Digidesign/ Pro Tools/Grooves

If you organize your groove templates in sub-folders in the Groove folder, they appear as sub-menus in the pop-up menu. Once you have selected a groove template, specific information about the template's meter and duration (in bars) is displayed under the pop-up menu.

**Show Comments** The Comments field displays any comments saved with the groove template from Beat Detective. The Comments field cannot be edited in the Quantize page, but can be edited when saving a groove template from the Groove Quantize page.

**Pre-Quantize** Enable to hard quantize the selected MIDI notes to a sixteenth-note grid before applying Groove Quantize.

## Options

**Timing** Enable to apply Groove Quantize to the selected MIDI notes, Elastic Audio events, or audio regions. Use the slider to change the amount of quantization applied to the selection. If the slider is set to 0%, there is no change in timing. A setting of 100% moves notes to the underlying template locations. If the slider is set to 200%, events move to a tick location that is twice the difference between the original event location and the position of the referenced template event.

For example, if an event was played at Bar 1|1|060 (a 16th note), and the corresponding template event is at 1|1|073, a slider value of 100% results in the event being shifted to 1|1|073 (a slider value of 200% shifts the note to 1|1|086).

The default value for the Timing slider is 100%.

**Duration** Enable to influence the durations of the selected MIDI notes. The Duration option does not apply to audio selections. At a setting of 100%, durations are changed to match the current groove template. Set to 200%, durations increase and decrease based on the ratio of the original duration of the selected notes and the durations in the template.

The default value for the Duration slider is 100%.

⚠ *Beat Detective does not extract duration information from audio performances. Digi-Groove templates created using Beat Detective contain a fixed duration value that is 50% of the selected template resolution (see "Defining a Beat Detective Selection" on page 686).*

**Velocity** Enable to influence the velocities of the selected MIDI notes. The Velocity option does not apply to audio selections. If the slider is set to 0% there is no change to the selected velocities, a setting of 100% sets all velocities to match the current groove template. A velocity setting of 200% typically results in over-exaggerated velocities—loud notes increasing and soft notes decreasing in volume.

For example, if two adjacent notes have equal velocities of 80, and the two corresponding template velocities are 70 and 90, setting the slider to 200% changes the velocities to 60 and 100.

The default value for the Velocity slider is 100%.

## Slider Settings

### To Save the groove template with the current Options Slider Settings:

**1** In the Quantize window, select Recall with Template if you want to restore all Groove Quantize Options to the settings that are saved with the current template

**2** Click the Save button.
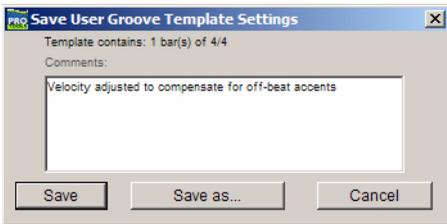


*Save User Groove Template Settings dialog*

**3** Enter or edit any comments you want to save with the template.

**4** Do one of the following:

- Click the Save button to save the groove template with the current Options Slider Settings.

– or –

- Click the Save As button to make a copy of the groove template with the current Options Slider Settings. In the resulting Save dialog, enter a name for the copy and click Save.

Slider settings can be lost if any of the following operations are performed without saving the settings first:

- Another Event Operations window is selected.
- The Event Operations window is closed.
- You switch to another groove template.

## Applying Groove Templates

Groove templates can be of any length and can be applied to any number of bars. Typically, you will apply groove templates to selections of the same bar length and meter. However, groove templates can be applied to different meters—for example, a groove template in 6/8 can be applied to a selection in 4/4. Also, it is not necessary to start on the downbeat when making a selection to apply a groove template.

### To apply Grove Quantize:

**1** With the Grabber or Selector tool, select the MIDI notes, Elastic Audio events, or audio regions you want to Groove Quantize.

**2** Choose Event > Event Operations > Quantize.

**3** Select a groove template from the Grid Quantize pop-up menu.

**4** Enable Timing, Duration, and Velocity as desired, and adjust their sliders to the percentages you want.

**5** If desired, enable Pre-Process using Quantize.

**6** Click the Apply button.
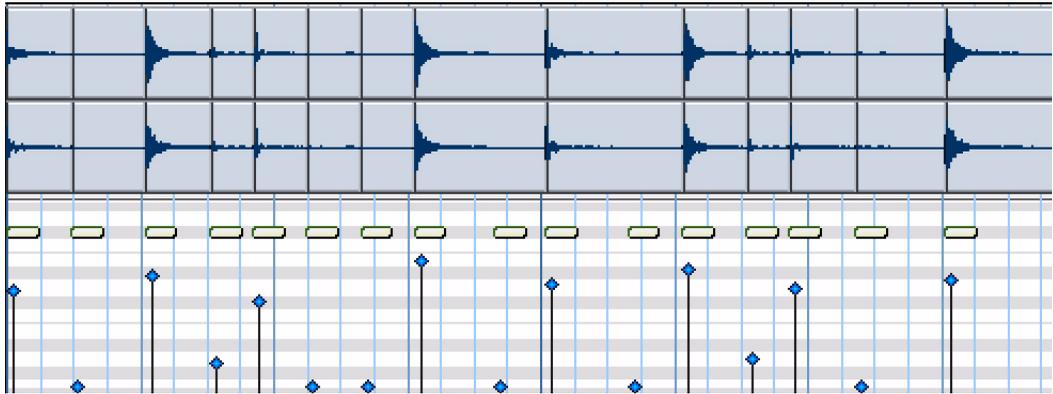
*Figure 8. A DigiGroove template (derived from the audio shown) applied to a series of sixteenth-notes with Timing and Velocity both set to 100%*

## Mapping Groove Templates

Pro Tools applies groove templates relative to the song start. For example, a two-bar groove template repeats starting at every odd-numbered bar in the session (bar 1, 3, 5, 7…).



*2-bar groove template, repeating template grid*

### Template Mapping for Equal Meters And Odd Numbered Bars

If a two-bar groove template is applied to a selection of one bar of the same meter, only the first bar of the template is used. If the selection does not encompass bar boundaries, for example 1|2|000 to 2|1|000, the groove template only modifies the selected notes.
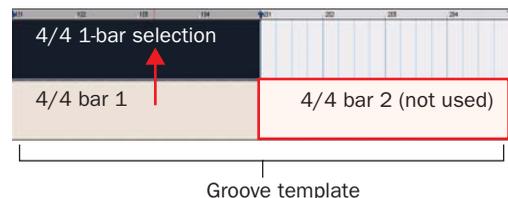


*Applying 2-bar groove template to a 1-bar selection, odd numbered bar*

### Template Mapping for Equal Meters And Even Bars

If a selection starts on an even bar, only the appropriate portion of the groove template will be used. For example, if the selection is two bars long and starts on an even bar, the template applies bar 2 before bar 1.
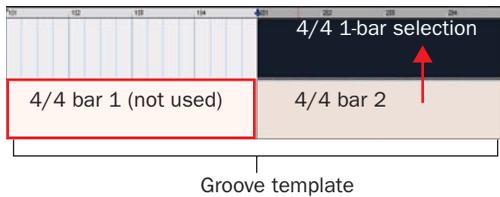


*Applying a 2-bar groove template to a 1-bar selection, even numbered bar*

### Template Mapping for Unequal Meters

In cases where the Groove Templates and track selections are based on different meters, the template will be repeated or truncated to match the number of beats in the selection.

For example, if the Groove Template contains fewer beats than the selection, such as a one-bar template in 6/8 being applied to a one-bar selection in 4/4, the template repeats to make up the difference.
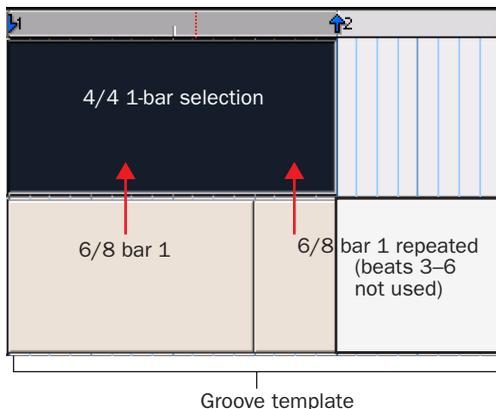


*Applying a 1-bar groove template in 6/8 to a 1-bar selection in 4/4*

If the Groove Template contains more beats than the selection on a track, such as a one-bar template in 6/4 being applied to a two-bar selection in 4/4, only uses the appropriate number of beats.
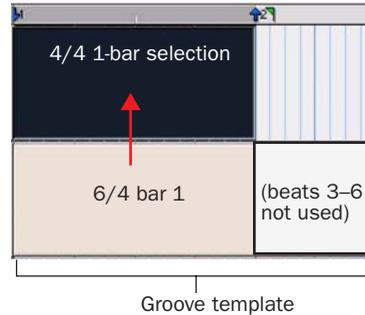


*Applying a 1-bar groove template in 6/4 to a 1-bar selection in 4/4*

### Behavior for Mixed Meters

If the selection contains mixed meters, the groove template will always be mapped so that the downbeats are aligned. For example, if the Groove Template consists of one-bar of 4/4 and it is being applied to a selection of one-bar of 4/4 followed by a bar of 7/16 and one-bar of 5/8, the downbeat of the Groove Template is aligned with the downbeats in the selection and only uses the appropriate number of beats from the Groove Template.
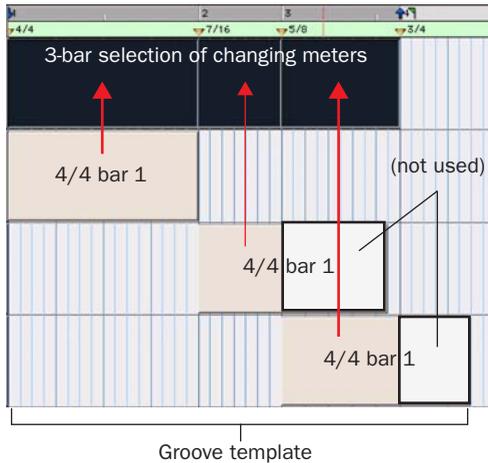
*Applying a 1-bar groove template in 4/4 to a 3-bar selection in different meters*

💡 *You can reset the groove template grid by adding a new meter marker (it can be the same meter). The groove template will restart at the meter marker regardless of the measure number or whether or not the meter has actually changed.*

## Quantizing Elastic Audio

Pro Tools lets you apply Quantize to Elastic Audio events as well as MIDI notes. Quantize can be applied to Event and Warp markers closest to the quantize grid on Elastic Audio–enabled tracks, regardless of whether they are sample- or tick-based. When quantizing, Event markers closest to the quantize grid are promoted to Warp markers and all Warp markers closest to the quantize grid are quantized based on the Quantize settings.

Quantization can also be applied to region start times (or sync points) on all audio tracks, whether they are Elastic Audio–enabled, or sample- or tick-based. This lets you quickly quantize audio regions without applying TCE, and is especially useful when working with "one-shot" regions (single-event regions) such as sliced regions or region groups.

📄 *Use Restore Performance to undo quantization of audio and MIDI. See "Restore Performance" on page 571.*

**To quantize Elastic Audio events:**

**1** Select the audio you want to quantize on Elastic Audio–enabled tracks. (Audio not on Elastic Audio–enabled tracks will not be quantized.)

**2** Choose Events > Event Operations > Quantize.

**3** In the Quantize window, select Elastic Audio Events from the What to Quantize pop-up menu.
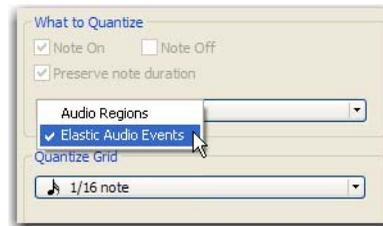


*Selecting Elastic Audio Events for What to Quantize*

**4** Set the Quantize Grid and Options settings as desired.

**5** Click Apply.

The Warp and Event markers closest to the Quantize Grid are quantized accordingly. TCE is applied between these markers and all other markers maintain their position relative to the Quantize Grid.



before quantizing

after quantizing
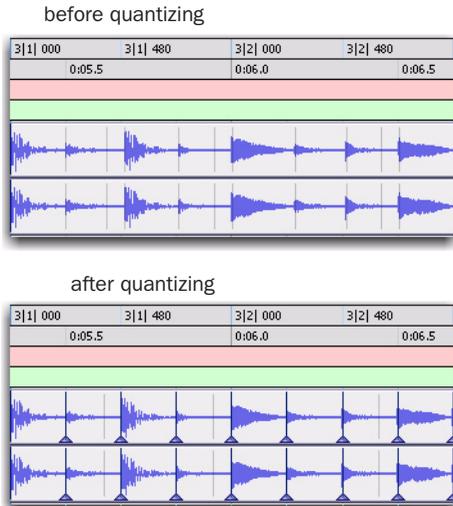
*Quantized Elastic Audio Events in Warp view*

## Quantizing Audio Regions

Pro Tools lets you quantize audio region start times (or sync points) using the Quantize operation. Audio region start times (or sync points) are quantized to the nearest quantize grid value.

**To quantize audio regions:**

**1** Select the audio regions you want to quantize.

💡 *Quantizing region groups only adjust the location of the region group start (or sync point). To quantize the underlying sliced regions in a region group, you must first ungroup, then quantize, and then regroup. For more information on region groups, see "Region Groups" on page 675.*

**2** Choose Events > Event Operations > Quantize.

**3** In the Quantize window, select Audio Regions from the What to Quantize pop-up menu.

**4** Set the Quantize Grid and Options settings as desired.

**5** Click Apply.

The region start times (or sync points if present) are quantized according to the quantize settings.



before quantizing

after quantizing
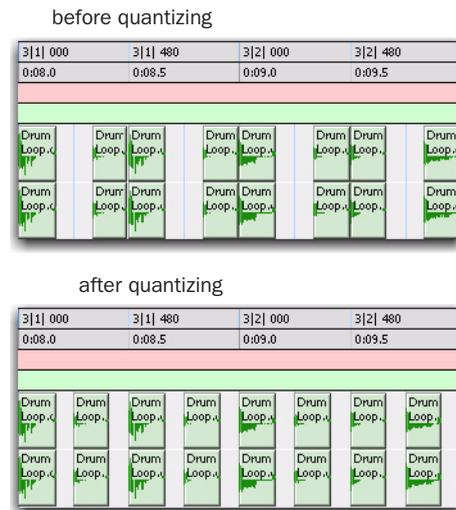
*Quantized audio regions*

## Quantizing Mixed Selections

You can apply Quantize to both MIDI notes and audio regions, or both MIDI notes and Elastic Audio events at the same time. However, you cannot apply Quantize to both audio regions and Elastic Audio events at the same time.

# Restore Performance

The Restore Performance command reverts all selected MIDI notes to their original state (when first recorded or manually inserted), even after the session has been saved, or the Undo queue has been cleared. Restore Performance can also be applied to quantized Elastic Audio Events or quantized audio regions.
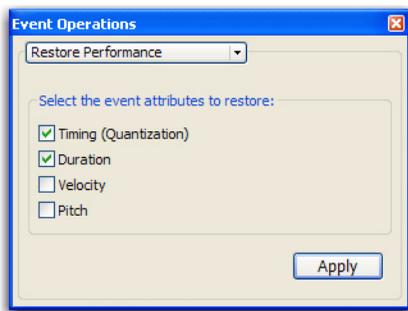


*Event Operations window, Restore Performance page*

💡 *The Restore Performance command can be undone.*

The following MIDI note, Elastic Audio Event, and audio region attributes can be restored:

**Timing (Quantization)** Restores the original start times of the selected notes, audio regions, and Elastic Audio Events. For MIDI only, this changes the durations of selected notes if the Duration option is not enabled.

**Duration** Restores the original durations of the selected notes. If the Timing (Quantization) option is not enabled, the start times of selected notes are not restored and the end times are affected. Duration has no effect on audio.

**Velocity** Restore the original velocities of the selected notes. Velocity has no effect on audio.

**Pitch** Restores the original pitches of the selected notes. Pitch has no effect on audio.

**To restore the original time, duration, velocity, or pitch for selected MIDI notes, audio regions, or Elastic Audio Events:**

**1** Select the MIDI notes, audio regions, or Elastic Audio Events you want to restore.

**2** Choose Event > Event Operations > Restore Performance.

**3** Select which performance attributes to restore.

**4** Click Apply.

Any changes made through the Quantize, Change Duration (MIDI only), Change Velocity (MIDI only), or Change Pitch (MIDI only) commands are undone and the original "performance" is restored. Also, any MIDI notes that were recorded with Input Quantize enabled are restored (see "Input Quantize" on page 580).

⚠ *Restore Performance does not undo cut, copied, pasted, or otherwise manually moved MIDI notes, audio regions, or Elastic Audio events.*

⚠ *Restore Performance does not undo Duration changes made by trimming the start of a note. Trimming the start of a note essentially changes the note's timing, and therefore is treated by Pro Tools the same as if it were manually moved.*

### Removing Input Quantize

Restore Performance can be used to remove quantization on input for MIDI notes. For example, if you recorded a performance with Input Quantize on, you can still restore the performance as it was actually played.

📖 *For information on Input Quantize, see "Input Quantize" on page 580.*

## Flatten Performance

The Flatten Performance command "locks in" the current performance for selected notes, creating a new "restore to" state for the specified note attributes when using Restore Performance.
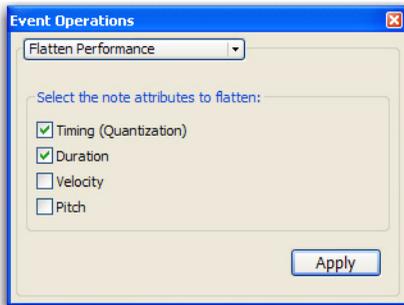


*Event Operations window, Flatten Performance page*

💡 *The Flatten Performance command can be undone.*

**To flatten the performance:**

**1** With the Grabber or Selector tool, select the MIDI notes you want to flatten.

**2** Choose Event > Event Operations > Flatten Performance to open the Restore Performance page.

**3** Select the note attributes to flatten. (For descriptions of these attributes, see "Flatten Performance" on page 572).

**4** Click Apply.

## Change Velocity

The Change Velocity command automatically adjusts Note On (attack) and Note Off (release) velocities for selected MIDI notes. Use it to make notes louder or softer, or to create crescendos or decrescendos.

Velocities can also be edited manually with the Pencil and Grabber tools (see "Manually Editing MIDI Notes" on page 532).
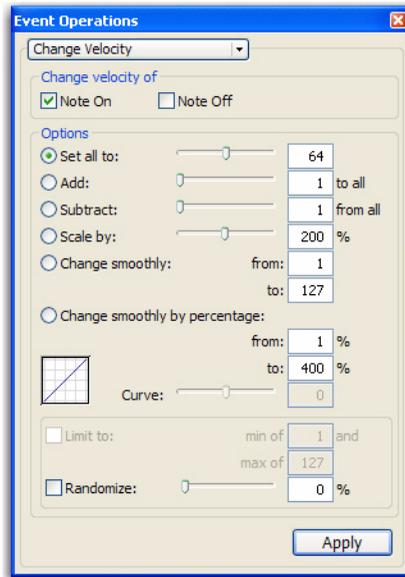


*Event Operations window, Change Velocity page*

📖 *You can also change velocity non-destructively in real-time using MIDI Real-Time Properties. See "MIDI Real-Time Properties" on page 549.*

*Velocity values usually affect the loudness of MIDI notes. Depending on how velocity is mapped with any MIDI instrument, velocities may also affect other aspects of an instrument's sound (such as filter cutoff, envelopes, and modulations).*

*The settings in the Change Velocity window are saved with each session. To store your favorite settings as the default for use in future sessions, save them as part of a session template (see "Creating Custom Session Templates" on page 105).*

**Note On** Applies the Change Velocity options to the MIDI Note On.

**Note Off** Applies the Change Velocity options to the MIDI Note Off.

*While there are options for adjusting both the Note On (attack) and Note Off (release) velocities for notes, most MIDI devices ignore release velocity information. To see if your instrument supports release velocities, refer to the manufacturer's documentation.*

**Set All To** Sets all velocities to the specified value (1–127).

**Add** Adds to existing velocity values by the specified amount (1–127).

**Subtract** Subtracts from existing velocity values by the specified amount (1–127).

**Scale By** Scales all velocities by a percentage amount (1–400%).

**Change Smoothly** Allows velocities to change smoothly from one value to another over time.

**Change Smoothly by Percentage** Allows velocities to change smoothly from one percentage value to another over time.

The curve for this change can be adjusted (+/– 99) to affect how gradually the change occurs.

**Limit To** When selected, restricts the Change Velocity command to a minimum and maximum range.

**Randomize** When selected, the Change Velocity command is randomized by the specified percentage value. For example, using "Set all to" with a value of 64, along with a Randomize value of 50%, yields velocities anywhere between 48 and 80 (+/– 25% of the velocity value).

## Velocity Ranges

The valid range for MIDI note velocities is 1–127. The Change Velocity command will never result in moving velocities outside this range; 1 is always the lowest and 127 is always the highest. This means that you can encounter situations where the Change Velocity command has no effect on a particular note.

For example, if a note with a velocity 64 is scaled by 200%, the new velocity would be 127. Attempting to scale or increase the velocity any further yields no further change.

## Fading Velocities

**To change velocities smoothly over time:**

**1** Select the range of MIDI notes to be edited.

**2** Choose Event > Event Operations > Change Velocity.

**3** Select the Change Smoothly option with the range set from 127 to 0.

**4** Click Apply.

### Preserving Existing Velocity Relationships

To partially preserve the existing velocity relationships and still achieve velocity fades, use the option for Change Smoothly by Percentage. Figure 9 illustrates the difference between the two Change Smoothly options.



*Original velocities*



*After Change Smoothly by Percentage, 100% to 20%*



*After Change Smoothly, from velocity of 100 to 10*
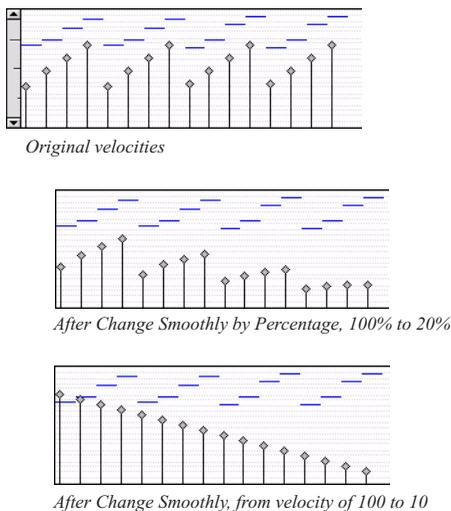
*Figure 9. Change Smoothly by Percentage*

## Scaling Velocities

Many times existing note velocities already have the relationship between them that you want, but are either too soft or too loud overall. In these instances, use the Scale By option.

**For example, to make velocities 20% louder:**

**1** Select the range of MIDI notes to be edited.

**2** Choose Event > Event Operations > Change Velocity.

**3** Select the Scale By option with the percentage value set to 120.

**4** Click Apply.

## Change Duration

The Change Duration command adjusts durations for selected MIDI notes. Use it to affect the articulation of the selected notes by making them more staccato or legato.
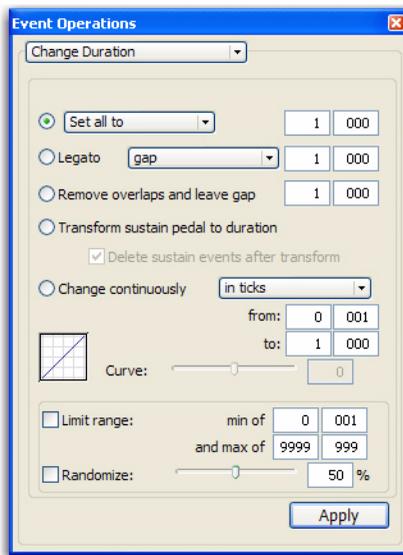


*Event Operations window, Change Duration*

*The settings in the Change Duration page are saved with each session. To store your favorite settings as the default for use in future sessions, save them as part of a session template (see "Creating Custom Session Templates" on page 105).*

*You can also change note duration non-destructively in real-time using MIDI Real-Time Properties. See "MIDI Real-Time Properties" on page 549.*

**Set/Add/Subtract/Scale Option**

**Set All To** Sets all durations to a length specified in quarter notes and ticks.

**Add** Adds to the durations by a specified number of quarter notes and ticks.

**Subtract** Subtracts from the durations by a specified number of quarter notes and ticks.

**Scale by** Shortens or lengthens durations based on a percentage value (1–400%).

**Legato**

Enable the legato option to add legato to the MIDI selection. Select Gap or Overlap from the Legato pop-up menu and enter the desired gap or overlap in beats and ticks.

**Remove Overlap**

The Remove Overlap option removes any note overlap for all notes of the same pitch. This command is different from Legato in that non-overlapping notes of the same or different pitches remain unchanged. To create a gap between previously overlapping notes, enter the desired gap in beats and ticks.

**Transform Sustain Pedal To Duration**

The Transform Sustain Pedal To Duration option extends the length of all notes that are sounding when the sustain pedal (controller 64) is down (64 to 127) to the point when the sustain pedal goes up (0 to 63). Enable the Delete Sustain Pedal Events option to convert sustain pedal events to note durations. Converting sustain pedal events to note duration can greatly simplify editing while maintaining the desired performance effect. For example, if a sustain pedal down event is deleted while editing, the subsequent MIDI performance looses its legato effect.

**Change Continuously Option**

The Change Continuously option lets you change the duration of notes continuously in ticks or by percentage. Adjust the Curve slider to modify the shape of the change.

**Change Continuously in Ticks** Allows note lengths to change smoothly from one duration to another over time. Duration values are specified in quarter notes and ticks.

**Change Continuously by Percentage** Allows note lengths to change smoothly from one percentage value to another over time.

The curve for this change can be adjusted (+/– 99) to affect how gradually the change occurs.

**Limit Range** When selected, restricts the Change Duration command to a minimum and maximum range (in quarter notes and ticks).

**Randomize** When selected, the Change Duration command is randomized by the specified percentage value. For example, using "Set all to" with a value of 480 ticks, along with a Randomize value of 50%, yields durations anywhere between 360 and 600 (+/– 25% of the duration value).

### Change Duration Examples

**To make notes more staccato:**

**1** Select the range of MIDI notes to be edited.

**2** Choose Event > Event Operations > Change Duration.

🔲 *Press Alt+P on Windows or Option+P on Mac to open the Change Duration window.*

**3** Select the option for Scale By with a percentage value of 50.

**4** Click Apply. The durations for the selected notes are reduced by 50%.

With this option you may have to experiment with the percentage value to achieve the desired effect.

**To make notes more legato:**

**1** Select the range of MIDI notes to be edited.

**2** Choose Event > Event Operations > Change Duration.

**3** Select the Legato option.

**4** From the Legato pop-up menu, select Overlap.

**5** Enter 0|000 for the amount of overlap.

**6** Click Apply.

The end points for the selected notes are extended to the start point of the next note, thereby eliminating the space between each note.

## Transpose

While the Grabber tools can be used to manually transpose individual MIDI notes, or small groups of notes, the Transpose command can be used for entire MIDI tracks and regions. One of the more common uses for Transpose is to change the key for your MIDI tracks. You can define an Edit Group for MIDI tracks that you want to transpose, making sure to exclude any drum tracks from the group so they aren't transposed. You can even transpose in key.

📑 *You can also transpose MIDI notes non-destructively in real-time using MIDI Real-Time Properties. See "MIDI Real-Time Properties" on page 549.*
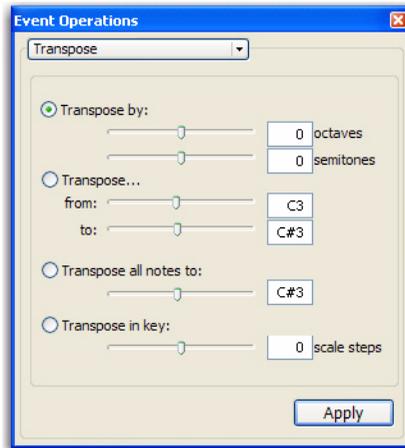


*Event Operations window, Transpose*

**Transpose By (Octaves)** Transposes selected notes by up to +/– 10 octaves.

**Transpose By (Semitones)** Transposes selected notes chromatically, up or down, by up to +/–127 semitones.

**Transpose (From and To)** Transposes selected notes by semitones, as expressed by the difference between the source and destination pitches. Transposing from C3 to F#3, for example, transposes the notes up by an augmented fourth (six semitones).

**Transpose All Notes To** Transposes all selected notes to the same pitch. Use the slider or the number entry box to enter the desired pitch to which to transpose all selected notes.

**Transpose In Key** Transposes selected notes in key up or down by scale steps (based on the Key Signature ruler).

**To transpose MIDI notes:**

**1** If you will be transposing a group of tracks, enable the Edit Group.

**2** Select the notes you want to transpose.

**3** Choose Event > Event Operations > Transpose.

🔲 *Press Alt+T (Windows) or Option+T (Mac) to open the Transpose window.*

**4** Select the option for Transpose (By, From and To, All Notes To, or In Key).

**5** Set the corresponding pitch fields.

With any pitch field selected, play a note on your MIDI controller to automatically enter it as the pitch value.

**6** Click Apply.

**To transpose all notes on a track down by an octave:**

**1** With the Selector tool, double-click in the track to select all of its notes.

**2** Choose Event > Event Operations > Transpose.

**3** Select the Transpose By option.

**4** Enter a value of –1 octave.

**5** Click Apply.

**To transpose selected notes in key:**

**1** Select the notes you want to transpose.

**2** Choose Event > Event Operations > Transpose.

**3** Select Transpose in Key.

**4** Adjust the slider (or type a number) for the number of scale steps (+ or –) by which you want to transpose the selection. For example, to transpose down a third, enter "–2."

**5** Click Apply.

# Select/Split Notes

The Select/Split Notes window provides a complete set of tools to select and split notes based on a wide variety of criteria. Additional tools are provided to specify whether selected data is copied to the clipboard or to new tracks, whether the data is split to multiple new tracks or a single destination, and more.
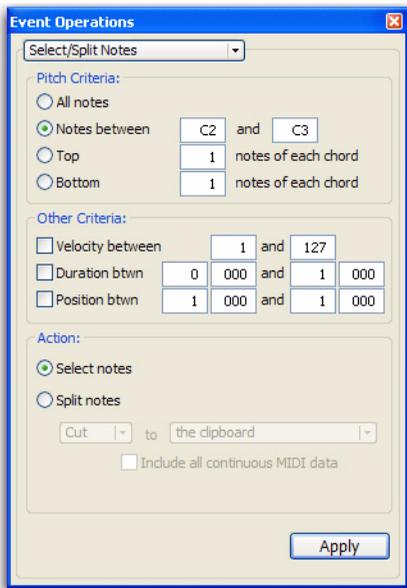


*Event Operations window, Select/Split Notes*

### Pitch Criteria

**All Notes** Selects all notes.

**Notes Between** Selects a range of notes between the specified upper and lower note. Values for the notes can be entered in pitch (C1–G8) or MIDI note numbers (0–127).

**Top** Selects the highest note or notes in each chord.

**Bottom** Selects the lowest note or notes in each chord.

### Other Criteria

**Velocity** Enable the Velocity option to specify a range of velocities for selecting or splitting notes. Enter the desired minimum and maximum velocities.

**Duration** Enable the Duration option to specify a range of durations (in beats and ticks) for selecting or splitting notes. Enter the desired minimum and maximum durations.

**Position** Enable the Position option to select or split all notes that fall into a range of relative beat and tick locations within each bar. The minimum value determines the start of the range, the maximum value sets the end of the range.

### Action

**Select Notes** Selects MIDI notes based on the specified criteria.

**Split Notes: The Clipboard** Copies the selected data to the clipboard only.

**Split Notes: A New Track** Copies all selected data to a single, new track. If the selection includes multiple tracks, that same number of tracks are created. The new tracks duplicate the original track type (Instrument or MIDI).

**Split Notes: A New Track per Pitch** Copies all selected data to multiple new tracks (one new track for each pitch). New tracks zoom to single-note display. If the selection includes multiple tracks, each track has its data split separately.

**Include MIDI Controller Data** Includes all continuous MIDI data, including pitchbend and aftertouch, on the entire track, without any restriction on time selection.

## Selecting and Splitting Notes

**To select and split notes:**

**1** Do one of the following:

- With the Grabber or Selector tool, select the range of MIDI notes that contains the notes.

– or –

- To affect all the MIDI notes on a track, click in the track with the Selector tool, so that it contains a blinking edit cursor.

**2** Choose Event > Event Operations > Select/Split Notes.

**3** Configure the Pitch Criteria as desired.

**4** Configure the Other Criteria (Velocity, Duration, and Position) as desired.

**5** Enable the Select or Split option as desired.

**6** From the Split Notes pop-up menu, select Copy or Cut.

**7** If splitting notes, select the Copy or Cut to destination.

**8** If splitting notes, enable the Include MIDI Controller Data option. Enabling this option includes all controller data associated with the split notes in newly created tracks. Leave this option unchecked to split only note data to new tracks.

**9** Click Apply.

Any Real-Time Properties associated with the track or regions are copied to new tracks created by Select/Split Notes.

## Selecting a Pitch Range of Notes

A common use for Select/Split Notes is to select a single note for the entire length of a region or track. This is especially useful if you want to select a note in a MIDI drum track (such as a hi-hat), and affect it over the selected time range with the Quantize, Groove Quantize, Transpose, or Change Duration command.

**To select only the hi-hats in a General MIDI drum track:**

**1** Do one of the following:

- With the Grabber or Selector tool, select the range of MIDI notes that contains the notes.

– or –

- To affect all the MIDI notes on a track, click in the track with the Selector tool, so that it contains a blinking edit cursor.

**2** Choose Event > Event Operations > Select/Split Notes.

**3** Select the Notes Between option with the note range set to F#1 and F#1 (if the MIDI Note Display preference is set to Standard Pitch).

For a General MIDI drum kit, the closed hi-hat is assigned to MIDI note number 42 (F#1 at Standard Pitch). If the hi-hat for your drum kit is assigned to a different note, make sure to specify it.

**4** Click Apply.

📄 *You can also select all notes of a specific pitch on a track using the mini-keyboard. For more information, see "Selecting MIDI Notes" on page 532.*

### Selecting Notes in a Chord

Another use for Select/Split Notes is to select only the upper or lower notes in a chord. Many times you may only want to affect the upper or lower notes in a chord—for example, to increase velocities or transpose pitches.

**To select only the bass notes in a chord:**

**1** Do one of the following:

- With the Grabber or Selector tool, select the range of MIDI notes that contains the notes.

  – or –

- To affect all the MIDI notes on a track, click in the track with the Selector tool, so that it contains a blinking edit cursor.

**2** Choose Event > Event Operations > Select/Split Notes.

**3** Select the Bottom option and leave the number of notes set to 1.

**4** Click Apply.

*In order for notes to be considered a chord, their start times must be within thirty-two ppq ticks of each other.*

## Input Quantize

When Input Quantize is enabled, all recorded MIDI notes are quantized automatically.
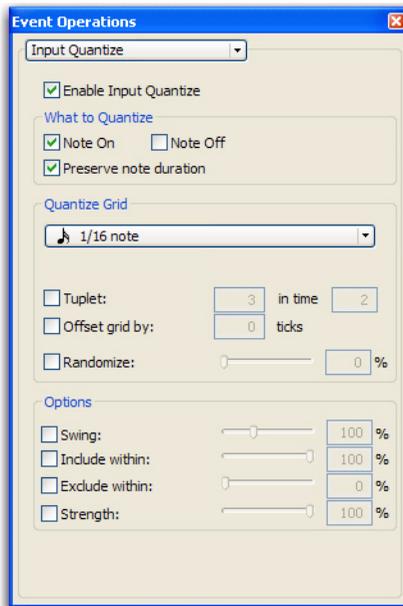


*Event Operations window, Input Quantize*

*Use Input Quantize for drum machine style loop recording (see "Loop Recording in MIDI Merge Mode" on page 372).*

**To enable Input Quantize:**

**1** Choose Event > Event Operations > Input Quantize.

**2** In the Input Quantize page, select Enable Input Quantize.

**3** Configure the other options in the Input Quantize page. (For more information on the Quantize options, see "Quantize" on page 558.)

**4** When finished, close the Event Operations window.

# Step Input

Step Input lets you use a MIDI controller to enter notes individually, one step at a time. This gives you precise control over note placement, duration, and velocity. With MIDI step input you can also create musical passages that might be difficult to play accurately, or at a fast tempo.
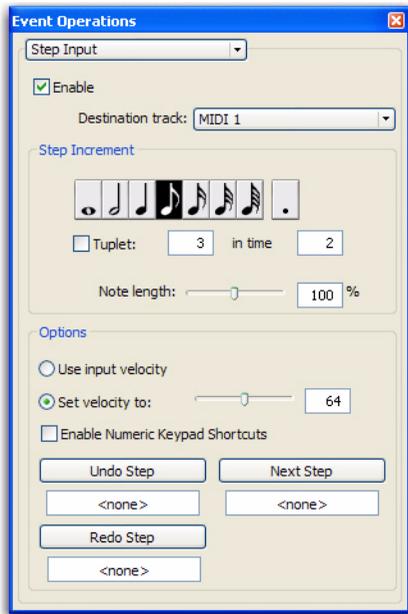


*Step Input window*

**To enter MIDI notes with Step Input (using an external MIDI device):**

**1** Make certain your external MIDI device is properly connected and working with Pro Tools.

**2** Choose Event > Event Operations > Step Input.

**3** Select the Enable option.

⚠ *When Step Input is enabled, each previously record-enabled MIDI or Instrument track is taken out of record enable, and if the Default Thru Instrument preference is defined, it is disabled.*

**4** Choose the MIDI or Instrument track for step entry from the Destination pop-up menu.

**5** Choose the note value you want to enter from the Step Increment section.

**6** Play a note or chord on your MIDI instrument. This enters the note and moves to the next step of the insertion point.

**To increase a note's length while using Step Input:**

**1** Play and hold a note on your MIDI instrument.

💡 *When a note is being held on the MIDI keyboard, Next Step changes to read "Increment."*

**2** Choose the note value that you would like to add and press the Increment button.

Release the note on your MIDI keyboard to move to the next step insertion point.

## Step Input Controls

The Step Input page has the following controls:

**Enable** When selected, adds MIDI events to the destination track when you play your external MIDI keyboard. Additionally, each previously record-enabled MIDI track is taken out of record enable.

If a Default Thru Instrument is defined in the MIDI Preferences page, it is disabled when Step Input is enabled, and is re-enabled when Step Input is no longer disabled.

**Destination** Lets you select the destination track for the Step Input from a pop-up list of all the MIDI tracks in your session.

## Step Increment

The options in the Step Increment section let you set the spacing and duration of MIDI events entered using the Step Input operation. You can select any size from whole notes to sixty-fourth notes (including dotted values).

**Tuplet** Lets you input irregular note groupings (such as triplets or quintuplets). The tuplet length is calculated from the note spacing selection and the Tuplet values. For example, an eighth note equals 480 ticks, so tuplet eighth notes with 3 in time of 2 would yield a note spacing of 320 ticks (480 ticks / 3 * 2).

**Note Length** Lets you select the note length as a percentage of the spacing value. For example, an eighth note equals 480 ticks, so an eighth note with an 80% duration would be 384 ticks long.
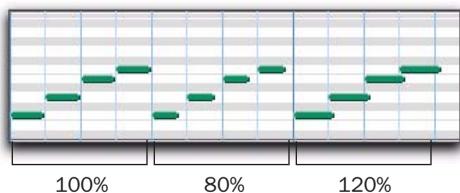


*Note length percentages*

## Options

**Use Input Velocity** When selected, MIDI notes are recorded using the velocity that you play on your MIDI keyboard.

**Set Velocity To** When selected, MIDI notes are recorded with the velocity that you specify in the Velocity field. This value can be set with the Velocity slider.

**Enable Numeric Keypad Shortcuts** When selected, Step Input options can be selected from the numeric keypad. See "Numeric Keypad Shortcuts" on page 583.

### Undo Step, Next Step, and Redo Step

Use the Undo Step and Next Step buttons to do the following:

- Move the step insertion point, by either removing the previous note or by advancing the insertion point by the Step Increment value.
- Lengthen and shorten notes that are being held on the MIDI controller, by adding or removing Step Increment values. The Step Increment value can be changed mid-note to create a note with a hybrid note length.

Use the Redo Step button to sequentially redo any previously undone steps.

**Undo Step** When the previous note has been released from the MIDI keyboard, and the insertion point has moved forward to the next note, Undo Step removes the entire last note.

When a note is being held on the MIDI keyboard, Undo Step changes to read "Decrement," and removes the last Step Increment length that was added to the held note.

**Next Step (or Increment)** When no note is being held on the MIDI keyboard, Next Step moves the insertion point by the Step Increment value, essentially inserting a musical rest.

When a note is being held on the MIDI keyboard, Next Step changes to read "Increment" and adds the Step Increment value to the held note, increasing its length by the Step Increment value.

While the note is being held, the Step Increment value can be changed, allowing you to create notes of any musical length.

**Redo Step** Reinserts the last note that was removed by the Undo Step operation.

### Triggering the Undo Step, Next Step, or Redo Step Buttons

The Undo Step, Next Step and Redo Step buttons can be set to be triggered by an external MIDI synth, drum pad, or other controller.

**To set Undo Step, Next Step and Redo Step MIDI triggers:**

**1** Place the Edit insertion on a track at the location where you want to enter the first MIDI note.

**2** Choose Event > Event Operations > Step Input.

**3** Locate the button you want to assign a MIDI event to, and click in the field below the button.
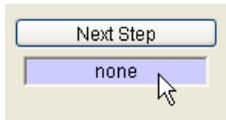


*Selecting the Next Step field*

**4** Play the MIDI event you want to use as a trigger.

💡 *If you use a continuous controller as a trigger (such as Pitch Bend), you should make certain to use an extreme controller value to avoid erroneous data input.*



*Next Step field triggered by pitch bend*

**5** Press Enter to confirm the MIDI trigger assignment.

## Numeric Keypad Shortcuts

When Enable Numeric Keypad Shortcuts is selected, you can apply many of the controls in the Step Input page, as well as several selection controls, using your computer's numeric keypad.

| Step Input Shortcuts | Key |
|---|---|
| Whole note | 1 |
| 1/2 note | 2 |
| 1/4 note | 4 |
| 1/8 note | 5 |
| 1/16 note | 6 |
| 1/32 note | 7 |
| 1/64 note | 8 |
| Dotted note | . (decimal key) |
| Toggle Tuplet on/off | 3 |
| Next step | Enter |
| Undo step | 0 |
| Nudge forward | + |
| Nudge back | – |
| Select Main Counter | = |
| Edit Selection indicators | / |

# Chapter 29: MIDI Event List

## The MIDI Event List

The MIDI Event List displays a detailed list of all events in a single MIDI or Instrument track. The events are displayed with text and numbers, allowing you to precisely edit their location, length, and event values.
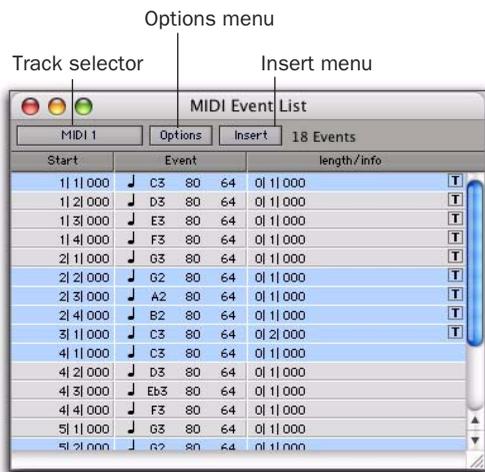


*MIDI Event List*

Events in the MIDI Event List can be copied and pasted, selected, or deleted. Any MIDI event (except Sysex data) can be inserted and edited in the list. Certain MIDI event types can be hidden with the View Filter.

*Unlike playlists in the Edit window, you can insert and display polyphonic aftertouch in the MIDI Event List.*

*Mute data for MIDI and Instrument tracks is not displayed in the MIDI Event List.*

## Opening the MIDI Event List

**To open the MIDI Event List, do one of the following:**

■ Choose Event > MIDI Event List.

■ Start-double-click (Windows) or Control-double-click (Mac) a MIDI or Instrument track name in the Mix or Edit window.

■ Press Alt+Equal (Windows) or Option+Equal (Mac).

*You can also use Alt+Equal (Windows) or Option+Equal (Mac) to toggle between the MIDI Event List and the Edit window.*

## Menus in the MIDI Event List

At the top of the MIDI Event List are three pop-up menus:

**Track Selector** Indicates the MIDI or Instrument track currently displayed, and can be used to choose a different MIDI or Instrument track to be displayed.

**Options Menu** Contains commands and options for the MIDI Event List (see "MIDI Event List Options" on page 592).

**Insert Menu** Contains a list of event types that can be inserted.

To the right of these pop-up menus, the number of displayed events is indicated.

## Columns in the MIDI Event List

Information for the events in the MIDI Event List is displayed in the following three columns:

**Start Column** Displays the start location, using the Main Time Scale, for each event. Locations can also be displayed in the Sub Time Scale when the Show Sub Counter option is selected in the Options pop-up menu.

The playback cursor appears as a blue arrow (red, when tracks are record-enabled) in the Start column.

When several events reside at the same location, the location is only indicated for the top event, with the others dimmed. The dimmed locations can be edited by double-clicking them.

**Event Column** Displays the event type, indicated by an icon, and associated event values.

**Length/Info Column** Displays the end point or length for notes, depending on which option is selected in the Options pop-up menu. Also displayed are the names for continuous controller events and program changes.

## View Filter for MIDI Event List

You can use the View Filter to specify which event types are displayed in the MIDI Event List. This can help you zero in on only the events you want to affect; it also protects MIDI events from being edited or deleted. Events not displayed in the MIDI Event List still play back.

The View Filter can be set to display "all" messages, "only" the specified messages, or "all except" the specified messages.

⚠ *When inserting an event type that has been filtered from the MIDI Event List, that event type will no longer be filtered.*
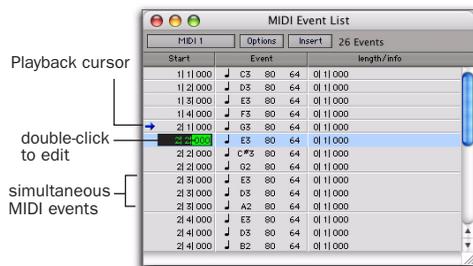


*MIDI Event List columns*

**Example: To filter the display of aftertouch and System Exclusive Messages in the MIDI Event List:**

**1** In the MIDI Event List, choose View Filter from the Options pop-up menu.

**2** In the MIDI Event List View Filter dialog, select the All Except option.



*MIDI Event List View Filter dialog*

**3** Select the options for Mono Aftertouch, Polyphonic Aftertouch, and System Exclusive. Leave all other messages deselected.

When using the All Except option, the selected events are not displayed. Conversely, when using the Only option, only the selected events are displayed.

**4** Click OK.

## Navigating in the MIDI Event List

You can use the Tab and Arrow keys to move through the MIDI Event List. You can also locate to the Edit start point, or any other specified location.

**To move through the MIDI Event List, do any of the following:**

• Double-click to edit a value.

• Press Tab or the Down Arrow to move to the next event (with or without the edit field selected).

• Press Control+Tab (Windows) or Option+Tab (Mac) or the Up Arrow to move to the previous event (with or without the edit field selected).

• With an edit field selected, press the Right Arrow to move to the next edit field to the right.

• With an edit field selected, press the Left Arrow to move to the next edit field to the left.

To keep the last event selected, press Shift while moving to the next or previous event.

**To go to the Edit start point:**

▪ In the MIDI Event List, choose Scroll To Edit Selection from the Options pop-up menu.

**To go to a specific location in the MIDI Event List:**

**1** In the MIDI Event List, choose Go To from the Options pop-up menu.

**2** In the Go To dialog, choose a format from the Time Scale pop-up menu.



*Go To dialog*

**3** If using Time Code (Pro Tools HD and Pro Tools LE with DV Toolkit 2 only), you can select the Use Subframes option.

**4** Enter the location you want to go to, then click OK.

The following items from the Options menu affect navigating in the MIDI Event List:

- When the Page Scroll During Playback option is selected, the MIDI Event List scrolls during playback.

- When Scroll During Edit Selection is selected, the MIDI Event List is scrolled automatically when the Edit selection changes in the Edit window.

## Inserting Events in the MIDI Event List



*Insert menu, MIDI Event List*

You can insert events in the MIDI Event List by choosing an event type from the Insert menu. Following are several examples of inserting events in the MIDI Event List.

**To insert a note in the MIDI Event List:**

**1** Do one of the following:

- Click the Insert button and choose Note from the pop-up menu.

– or –

- Press Control+N (Windows) or Command+N (Mac).

**2** Enter the location, pitch, attack (Note On) and release (Note Off) velocities, and length for the new note. To move between the Event Entry fields, use the Left and Right Arrow keys.
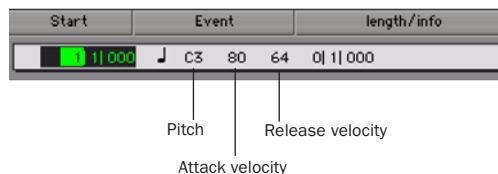


*Event Entry fields for note*

When a field is selected, enter a value with any of the following methods:

- Enter the value on the numeric keypad.

- Drag up or down to scroll to the value.

- Play the note on your MIDI controller keyboard, then press Enter (Windows) or Return (Mac) on the QWERTY keyboard to confirm the value.

*With the Start field selected, you can automatically enter the location of another event already in the track by clicking that event.*

**3** Do one of the following:

- To insert the note and remain in Event Entry mode, press Enter on the numeric keypad.

- To insert the note and exit Event Entry mode, press Enter (Windows) or Return (Mac) on the QWERTY keyboard.

- To exit Event Entry mode, without inserting the note event, press Escape on the QWERTY keyboard.

**To insert a controller event in the MIDI Event List:**

1 Do one of the following:

- Click the Insert button and choose Controller from the pop-up menu.

– or –

- Press Control+L (Windows) or Command+L (Mac).

2 Enter the location, controller "type" number, and controller value for the new event. The controller name is displayed in the Length/Info column, to the right of the controller value. To move between the Event Entry fields, use the Left and Right Arrow keys.
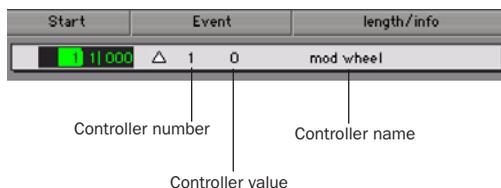


*Event Entry fields for controller event*

When a field is selected, enter a value with any of the following methods:

- Enter the value on the numeric keypad.
- Press the Up or Down Arrow to scroll to the value.
- While pressing Control (Windows) or Command (Mac), drag up or down to scroll to the value.
- Play the controller event on your MIDI controller keyboard, then press Enter (Windows) or Return (Mac) on the QWERTY keyboard to confirm the value.

☼ *With the Start field selected, you can automatically enter the location of another event already in the track by clicking that event.*

3 Do one of the following:

- To insert the controller event and remain in Event Entry mode, press Enter on the numeric keypad.
- To insert the controller event and exit Event Entry mode, press Return on the QWERTY keyboard.
- To exit Event Entry mode, without inserting the controller event, press Escape on the QWERTY keyboard.

**To insert a program change in the MIDI Event List:**

1 Do one of the following:

- Click the Insert button and choose Program Change from the pop-up menu.

– or –

- Press Control+P (Windows) or Command+P (Mac).

2 Enter the location for the new event.

3 Enter a Program Change number and Bank Select value (if necessary). The program change name is displayed in the Info column.
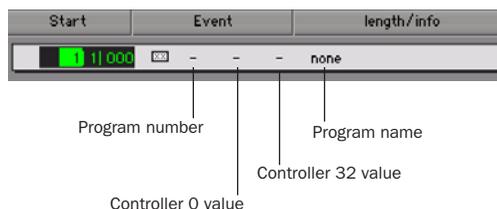


*Event Entry fields for program change*

You can click in the Info column to open the Program Change window (for details, see "Patch Select (Program and Bank Changes)" on page 541).

☼ *With the Start field selected, you can automatically enter the location of another event already in the track by clicking that event.*

**4** Do one of the following:

- To insert the program change and remain in Event Entry mode, press Enter on the numeric keypad.
- To insert the program change and exit Event Entry mode, press Return on the QWERTY keyboard.
- To exit Event Entry mode, without inserting the program change, press Escape on the QWERTY keyboard.

### Inserting Another Event

After inserting an event, you can easily insert another event of the same type. The event type to be inserted is indicated at the bottom of the Insert menu.

**Example: After inserting a note, to insert another, do one of the following:**

■ Click the Insert button and choose Another Note from the pop-up menu.

– or –

■ Press Control+M (Windows) or Command+M (Mac).

*When the option for Insert At Playback Location is enabled (see "MIDI Event List Options" on page 592), you can use the keyboard shortcuts for inserting "another" event to insert events on-the-fly.*

# Editing Events in the MIDI Event List

Events in the MIDI Event List can be edited, selected, deleted, and copied and pasted.

**To edit an event in the MIDI Event List:**

**1** Do one of the following:

- Double-click the event field you want to edit.

– or –

- To edit a selected event, press Control+Enter (Windows) or Command+Enter (Mac).

**2** Enter a new value with any of the following methods:

- Enter the new value on the numeric keypad.
- While pressing Alt (Windows) or Option (Mac), press the Up or Down Arrow to scroll to a new value.
- While pressing Control (Windows) or Command (Mac), drag up or down to scroll to a new value.
- Play the new note or controller value on your MIDI controller keyboard, then press Enter (Windows) or Return (Mac) on the QWERTY keyboard to confirm.

**3** Do one of the following:

- To enter the new event value and move to another field or event, use the Arrow keys.
- To enter the new value and remain in Edit Entry mode, press Enter on the numeric keypad.
- To enter the new value and exit Edit Entry mode, press Enter (Windows) or Return (Mac) on the QWERTY keypad.
- To exit Edit Entry mode without entering the new value, press Escape on the QWERTY keyboard.

## Selecting Events in the MIDI Event List

**To select a range of events in the MIDI Event List, do one of the following:**

▪ Click the event at the beginning of the selection and drag to the ending event.

– or –

▪ Shift-click the event at the beginning of the selection, then Shift-click the ending event.

**To select noncontiguous events in the MIDI Event List:**

▪ Control-click (Windows) or Command-click (Mac) each event.

**To deselect an event in the MIDI Event List:**

▪ Control-click (Windows) or Command-click (Mac) the selected event.

*Notes selected in the MIDI Event List can be modified by any of the commands in the Event Operations window (see Chapter 28, "Event Operations").*

## Deleting Events in the MIDI Event List

**To delete an event in the MIDI Event List:**

▪ Alt-click (Windows) or Option-click (Mac) the event you want to delete.

**To delete a selection of events in the MIDI Event List:**

**1** Select the events you want to delete, by either dragging in the Start column, or by Shift-clicking each event.

**2** To view only the events you want to delete, use the View Filter (see "View Filter for MIDI Event List" on page 586). Events not displayed cannot be deleted.

**3** Do one of the following:

• Choose Edit > Clear to delete all selected events.

– or –

• Press Backspace (Windows) or Delete (Mac) on the QWERTY keyboard.

## Copying and Pasting Events in the MIDI Event List

**To copy and paste events in the MIDI Event List:**

**1** Select the events you want to copy in the MIDI Event List.
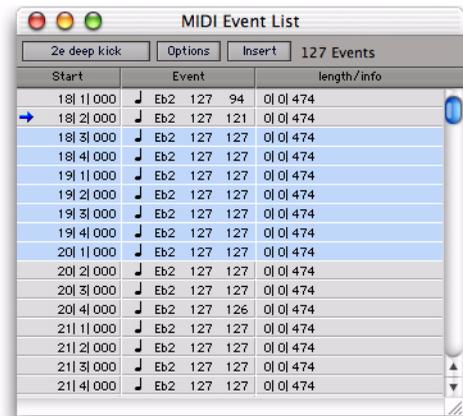


*Selecting in the MIDI Event List*

**2** Choose Edit > Copy.

**3** Do one of the following:

• To paste the material at an existing event's location, click the event in the MIDI Event List.

– or –

• To paste the material at any location, choose Go To from the Options menu in the MIDI Event List, enter the location where you want to paste, and click OK.

**4** Choose Edit > Paste. The events from the Clipboard are pasted, replacing any existing events already there.

💡 *To paste events without overwriting other events, use the Merge Paste Special command.*

# MIDI Event List Options
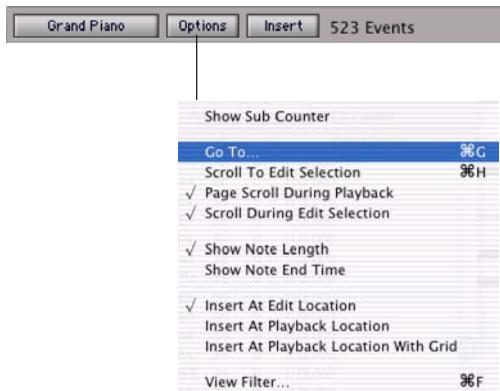


*MIDI Event List options*

The MIDI Event List provides the following options:

**Show Sub Counter** Displays event times in the Sub Time Scale.

**Go To** Opens the Go To dialog, where you can specify a location, based on any of the supported Time Scales, to which the Edit insertion point is moved.

**Scroll To Edit Selection** Scrolls the MIDI Event List to the Edit start point or Edit insertion point.

**Page Scroll During Playback** Scrolls the MIDI Event List during playback.

**Scroll During Edit Selection** Scrolls the MIDI Event List automatically when the Edit selection changes in the Edit window.

**Show Note Length** Displays note lengths, instead of note end times, in the Length/Info column of the MIDI Event List.

**Show Note End Time** Displays note end times, instead of note lengths, in the Length/Info column of the MIDI Event List.

**Insert At Edit Location** Defaults the location for inserted events defaults to the Edit start point or Edit insertion point.

**Insert At Playback Location** Lets you insert events in the MIDI Event List in real time while listening to the session playback.

**Insert At Playback Location With Grid** Snaps the location for events inserted in real time to the grid.

**View Filter** Opens the View Filter dialog, where you can specify which events are displayed in the MIDI Event List. Events that are not displayed are not affected by Cut, Copy, and Paste operations in the MIDI Event List. Events that are not displayed still play back. For more information, see "View Filter for MIDI Event List" on page 586.

# Part VI: Arranging

# Chapter 30: Time, Tempo, Meter, and Key

In Pro Tools, editing and arranging is typically done on tracks against a fixed *Timeline*.

Regions and events can be anchored to points in absolute time, or relative time, as measured on the session's Timeline. The Timeline includes two different types of rulers for measuring time: Timebase rulers and Conductor Rulers.

The Timebase rulers can measure time in two different ways: sample-based time (absolute time) and tick-based time (relative time). For example, the Minutes:Seconds ruler measures absolute time and the Bars:Beats ruler measures relative time.

The relative time of the Bars:Beats ruler is determined in part by tempo and meter. Tempo, Meter, and also Key Signature rulers reside in Conductor tracks. Tempo and meter events affect the timing of tick-based tracks, and also provide the tempo and meter map for the Bar:Beat grid and Click. You can edit tempo events in the Tempo ruler or Tempo Editor.

Key changes can affect MIDI notes when applying transposition. You can edit key and key changes in the Key Signature ruler.

📖 *Pro Tools also provides a Markers ruler for Memory Locations. For more information, see Chapter 31, "Memory Locations."*

## Timebase Rulers and Conductor Rulers
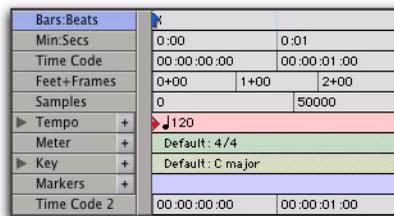


*All rulers displayed*

### Timebase Rulers

Any or all of the following Timebase rulers can be displayed at the top of the Edit window:

**Bars:Beats** Displays the Time Scale in bars and beats. Use this Time Scale if you are working with musical material that must align with bars and beats. The Bars:Beats Time Scale is relative and is affected by the session's tempo and meter map.

*To ensure your tracks align with the bars and beats in your session, record with a click (see "Recording with a Click (Optional)" on page 322). Material that is recorded without listening to the click can still be aligned to bar and beat boundaries in Pro Tools with the Identify Beat command (see "Identify Beat Command" on page 620), or with Beat Detective (see Chapter 34, "Beat Detective").*

**Minutes:Seconds** Displays the Time Scale in minutes and seconds. As you zoom in farther with the Zoomer tool, the Time Scale begins to display tenths, hundredths, and thousandths of a second. The Minutes:Seconds Time Scale is absolute.

**Time Code (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)** Displays the Time Scale in SMPTE frames. The Time Code Rate and Session Start time are set from the Session Setup window. The Time Code Time Scale is absolute based on the frame rate.

Pro Tools supports the following frame rates:

- 23.976 FPS
- 24 FPS
- 25 FPS
- 29.97 FPS
- 29.97 FPS Drop
- 30 FPS
- 30 FPS Drop

**Secondary Time Code Ruler (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)** A secondary time code ruler, labeled Time Code 2, lets you reference video frame rates in the Timeline that are different from the session Time Code rate. However, you *cannot* Spot to the Time Code 2 ruler and it *cannot* be set as the Main

Time Scale. The secondary time code ruler can be set to show any Pro Tools supported frame rate. The Time Code 2 ruler can also display the additional following frame rates:

- 50 FPS
- 59.94 FPS
- 59.94 FPS Drop
- 60 FPS
- 60 FPS Drop

**Feet+Frames (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)** Displays the Time Scale in feet and frames for referencing audio-for-film projects. The Feet+Frames time display is based on the 35 millimeter film format. The Feet+Frames Time Scale is absolute based on the frame rate.

**Samples** Displays the Time Scale in samples. This format is very useful for high-precision sample editing. The Samples Time Scale is absolute based on the sample rate.

In addition to providing a timing reference for track material, the Timebase rulers are also used to define *Edit selections* for track material, and *Timeline selections* for record and play ranges.

*With the Selector tool, drag in any Timebase ruler to select material across all tracks in the Edit window. To include the Conductor tracks in the selection, press Alt (Windows) or Option (Mac) while dragging.*

### Conductor Rulers

Any or all of the following Conductor rulers can be displayed:

- Tempo (and Tempo Editor)
- Meter
- Key Signature
- Markers

The Meter and Tempo rulers indicate changes in meter and tempo within the Session. The Key Signature ruler indicates changes of key. The Markers ruler displays markers to important track locations.

📄 *For more information on Memory Location markers and Meter, Tempo, and Key Signature rulers, see Chapter 31, "Memory Locations."*

**To display all rulers:**

▪ Select View > Rulers > All.

**To remove a ruler from the display, do one of the following:**

▪ Option-click the ruler's name (to the left of the ruler display).

– or –

▪ Choose View > Rulers, and select a ruler option.

**To display only the Main Time Scale in the Timebase ruler:**

▪ Select View > Rulers > None ("Main Time Scale" on page 597.)

**To add a specific ruler to the display, such as the Markers ruler, for instance:**

▪ Select View > Rulers > Marker.

**To change the display order for the rulers:**

▪ Click a ruler's name and drag up or down to the new location.

## Ruler View Selector

The Timebase and Conductor rulers can also be configured with the Ruler View selector.
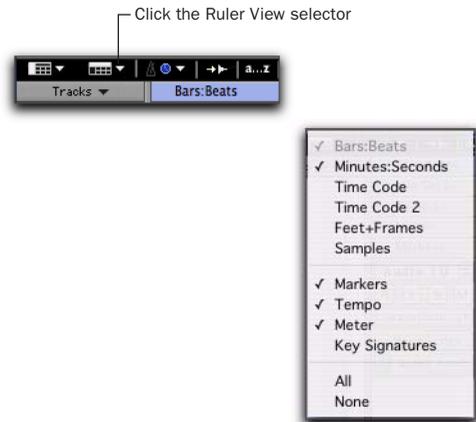


*Ruler View selector in the Edit Window.*

# Main Time Scale

While all Timebase rulers can be displayed simultaneously in the Edit window, there is only one that represents the *Main Time Scale*. This ruler is also called the Main Timebase ruler.

The Main Time Scale determines the time format used for:

- The Main Counter in the Transport window
- The Main Counter at the top of the Edit window
- Start, End, and Length values
- Pre- and post-roll amounts
- Grid and Nudge values

The Main Time Scale can be set to the following formats:

- Bars:Beats
- Minutes:Seconds
- Time Code (Pro Tools HD and Pro Tools LE with DV Toolkit 2 only)
- Feet+Frames (Pro Tools HD and Pro Tools LE with DV Toolkit 2 only)
- Samples

## Setting the Main Time Scale

**To set the Main Time Scale, do one of the following:**

■ Click a Main Counter selector (located at the top of the Edit window and also in the Transport window, when it is set to display Counters) and select a Time Scale.



*Main Counter selector (in the Edit window)*

■ If a Timebase ruler is displayed, click its name so it becomes highlighted.

*Setting the Main Time Scale to the timebase currently displayed in the Sub Counter switches the two Time Scales, setting the Sub Time Scale to the previous timebase of the Main Time Scale.*
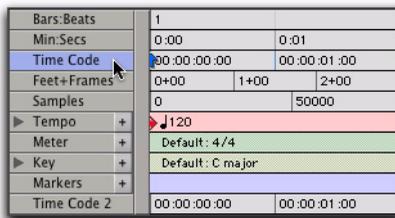


*Switching the Main Time Scale*

### Navigating with the Main Counters

The Main Counters (at the top of the Edit window and in the Transport window) provide a convenient way to navigate to a specific time location.

*The Main Counter indicator in the Transport window only displays when the Transport is set to display Counters.*

**To navigate with a Main Counter:**

**1** Click in a Main Counter.

**2** Type in a location.

**3** Press Enter (Windows or Mac) or Return (Mac) to automatically navigate to a new location.

## Setting the Sub Counter Time Scale

Below each Main Counter is a Sub Counter, which provides an additional timing reference.

*The Sub Counter indicator in the Transport window only displays when the Transport is set to display Counters and its view is maximized.*

■ Click a Sub Counter selector and select a Time Scale.



*Sub Counter selector (in the Edit window)*

# Tick-Based Timing

Pro Tools is a sample-based program with an internal MIDI resolution of 960,000 pulses per quarter note (ppq). However, when the Time Scale is set to Bars:Beats, the display resolution in Pro Tools is 960 ppq and the Timebase is tick-based.

⚠ *In the Bars:Beats Time Scale, Pro Tools is tick-based (960 ticks to a quarter note), which means that some amount of sample-rounding may occur when placing events at certain locations (see "Sample Rounding and Edit Operations" on page 601).*

When working in Bars:Beats, you will often want to specify tick values for a number of operations, including:

- Placing and spotting regions
- Setting lengths for regions or MIDI notes
- Locating and setting play and record ranges (including pre- and post-roll)
- Specifying settings in the Quantize and Change Duration pages of the Event Operations window
- Setting the Grid and Nudge values

💡 *When the Main Time Scale is set to Bars:Beats, and you are using tempo changes, set the Linearity Display Mode to Linear Tick Display (see "Changing the Linearity Display Mode" on page 613). This will keep the Bars:Beats ruler fixed (at the selected zoom level) and sample-based rulers such as Minutes:Seconds will scale to fit any tempo changes while bar lengths remain constant.*

The following table lists the number of ticks for each of the main note sizes:

| Note Value | Normal | Dotted | Triplet |
|------------|--------|--------|---------|
| 1/2 note   | 1920   | 2880   | 1280    |
| 1/4 note   | 960    | 1440   | 640     |
| 1/8 note   | 480    | 720    | 320     |
| 1/16 note  | 240    | 360    | 160     |
| 1/32 note  | 120    | 180    | 80      |
| 1/64 note  | 60     | 90     | 40      |

## Tick- and Sample-Based Timebases

Pro Tools lets you set any track timebase to either sample-based or tick-based.

Audio tracks in Pro Tools are sample-based by default. This means that audio regions and events are located at specific sample locations, and they do not move from that location if the tempo changes in the session—even though their bar and beat locations do change.

MIDI and Instrument tracks in Pro Tools are tick-based by default. This means that MIDI regions and events are located at a specific bar and beat locations, and they do not move from that location if the tempo changes in the session—even though its sample location does change.

### Sample-Based Audio and MIDI

With a sample-based audio track, all audio regions in the track have an absolute location on the absolute Timeline (for example, on the Samples or Minutes:Seconds Timebase ruler). Audio stays fixed to the sample time, regardless of any tempo or meter changes occur in a session.

On sample-based MIDI and Instrument tracks, all MIDI events in the track have an absolute location on the absolute Timeline (for example, on the Sample or Minutes:Seconds Timebase ruler). MIDI events stay fixed to the sample time, regardless of where tempo or meter changes occur in a session.

### Tick-Based Audio and MIDI

Tick-based audio is fixed to the relative time of the Bars:Beats Timebase ruler, and moves relative to the sample Timeline when tempo and meter changes occur. However, MIDI and Elastic Audio events, and tick-based audio regions (non–Elastic Audio) respond differently to tempo changes in respect to duration. MIDI note events and Elastic Audio regions change their duration when tempo is adjusted, while non–Elastic Audio audio regions do not. Tempo changes affect only the location of the beginning (or sync point) of each audio region in a tick-based audio track.

You can select whether a track is sample-based or tick-based when it is created, or change timebases later.

*To have all new tracks default to tick-based, enable the New Tracks Default to Tick Timebase option in the Editing Preferences.*

### Tick-Based Elastic Audio

Tick-based Elastic Audio tracks automatically apply Real-Time (or Rendered) Elastic Audio processing (TCE) when changing tempo. For more information, see "Tempo Changes and Tick-Based Elastic Audio Tracks" on page 606.

## Switching Timebases

All Pro Tools tracks can be switched between being sample-based or tick-based.

Track height affects how various track controls appear in the Edit window. The Timebase selector, which is used for switching a track's timebase, is only visible in Small or larger track heights.

**To switch the timebase of a track, do one of the following:**

■ If the track's height is set to Small or larger, click the Timebase selector for the track and select the desired timebase. The Timebase selector icon changes to reflect your choice.



Timebase selector (samples)     Timebase selector (ticks)

*Track Timebase selector on a track with a Medium height*



Timebase selector (samples)     Timebase selector (ticks)

*Track Timebase selector on a track with a Small height*

– or –

■ If the track's height is set to Mini, click the small arrow next to the Track View selector to for the Track Height pop-up menu, and select the desired timebase from the Track Timebase submenu.



*Track Height pop-up menu*

### Alternate Playlist Timebases

When you change a track's timebase, you can choose to apply the timebase change to that track only, or to the active Playlist and all alternate playlists for that track.

**To configure a timebase change to affect timebases of all playlists in a track:**

■ Click the Timebase selector and enable the "Selection Changes Alternate Playlists" option.
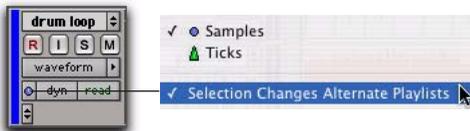


*Timebase selector and pop-up menu*

### Groups

When you change the timebase for an audio track that is part of an active group, all the tracks in the group will change to the same timebase.

### Audio Region Location

In tick-based audio tracks, the location of an audio region is determined by the region's start point, unless the region contains a sync point.

If the region contains a sync point, the sync point determines where the audio region is fixed to the grid.

### Marker Location

When creating markers and Selection Memory Locations, you can specify whether they have an Absolute (sample-based) or Bar:Beat (tick-based) reference. For more information, see "Bar|Beat and Absolute Reference" on page 638.

### Sample Rounding and Edit Operations

When audio material in Pro Tools is sample-based, some amount of sample-rounding may occur with some edits when the Main Time Scale is set to Bars:Beats. This is most evident when you need audio regions to fall cleanly on the beat (as when looping) and notice that the material is sometimes a tick or two off. With a few simple precautions, this can be avoided.

To ensure that selections are precise aligned to the grid for looping, copying, duplicating, or repeating, consider the following:

◆ If you use the Selector tool, enable Grid mode and select the appropriate grid value (such as sixteenth notes).

◆ For the greatest accuracy, type the selection Start and End points in the Event Edit area.

◆ Do not select the material with any of the Grabber tools (or by double-clicking with the Selector tool).

# Song Start Marker

The Song Start Marker defines the initial tempo for Bar|Beat-based material. New sessions open with a default tempo of 120 BPM.

When a new session is created, the Song Start Marker has no associated meter event. A meter event is added automatically at the Song Start if you add another meter event anywhere else on the Meter ruler.



*Song Start Marker*

The Song Start Marker can be moved, but not deleted.

📖 *The position of the Song Start Marker can also be changed in the Time Operations window, see "Move Song Start" on page 631.*

**To move the Song Start Marker by dragging:**

■ In the Tempo ruler, drag the Song Start Marker left or right.
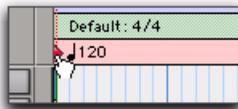


*Dragging the Song Start Marker*

If the Edit mode is set to Grid, the Song Start Marker moves in increments of the current Grid value.

⌨️ *To move the Song Start Marker only, without moving any tick-based data, press Start+Shift (Windows) or Control+Shift (Mac) while dragging. When dragging the Song Start Marker only, dragging is constrained to whole bar increments only.*

**To edit the initial tempo in the Song Start Marker:**

**1** In the Tempo ruler, double-click the Song Start Marker.

**2** In the Change Tempo dialog, enter a new BPM value.

**3** Click OK.

# Tempo

The Tempo ruler lets you edit Tempo events one at a time or according to tempo curves. You can edit tempo visually in the Tempo Editor, or make precise changes in tempo using the Tempo Operations window.

📖 *To set the default session tempo, see "Setting the Default Meter and Tempo (Optional)" on page 325.*

💡 *You can use Beat Detective to generate Bar|Beat markers (tempo map). For more information, see "Generating Bar|Beat Markers with Beat Detective" on page 693.*

💡 *When working with tempo changes and tick-based material, set the Linearity Display Mode to Linear Tick Display.*

## Tempo Events

Tempo events can be assigned to the Song Start Marker to replace the default tempo (of 120 BPM), and they can be inserted anywhere else within the session to change tempo.

⚠ *In Manual Tempo mode, the Tempo track is ignored and the session plays at the tempo defined in the Transport window, see "Using Manual Tempo Mode" on page 326.*

**To display the Tempo ruler:**

▪ Select View > Rulers > Tempo.

## Current Tempo

As tempo events are encountered during playback, the session's current tempo is displayed in the Transport window.


— Current Tempo indicator
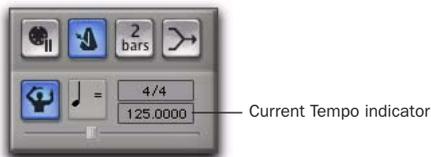
*Current Tempo displayed in Transport window*

## Inserting Tempo Events

**To insert a tempo event:**

**1** Click in the Tempo ruler where you want to insert the tempo event.

**2** Click the Add Tempo Change button at the left of the Tempo ruler.



*Add Tempo Change button*

**3** In the Tempo Change window, enter the Location and BPM value for the tempo change.
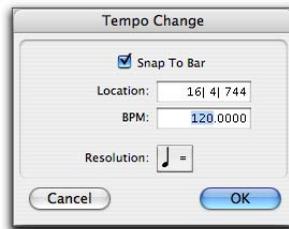


*Tempo Change dialog*

Select the Snap To Bar option to place the inserted tempo event cleanly on the first beat of the nearest measure.

**4** To base the BPM value on something other than the default quarter note, select a different note value.

**5** Click Ok. The new tempo event is inserted and appears in the Tempo ruler.



*Inserted tempo event*

Each tempo event has a small green triangle next to it that indicates its location. These triangles can be dragged to move the tempo event, and they can be double-clicked to edit the tempo event.

## Editing and Moving Tempo Events

Existing tempo events can be moved, edited, deleted, copied, and pasted.

**To move a tempo event by dragging:**

■ In the Tempo ruler, drag the triangle for the tempo event left or right.
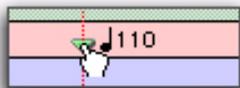


*Dragging a tempo event*

If the Edit mode is set to Grid, the dragged event snaps to the current Grid value.

**To edit a tempo event:**

**1** In the Tempo ruler, double-click the tempo event.

**2** In the Tempo Change window, enter a new Location or BPM value for the tempo event.

**3** Click OK.

**To delete a tempo event:**

■ While pressing Alt (Windows) or Option (Mac), move the cursor over the tempo event (where the cursor changes to a Grabber with a "–") and click to remove it.

**To copy and paste several tempo events:**

**1** With the Selector tool, click and drag in the Tempo ruler to select the range of bars that includes the tempo events.
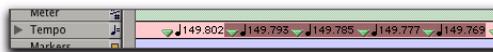


*Tempo events selected*

🔲 *Press Alt (Windows) or Option (Mac) while dragging to select across all Conductor tracks.*

**2** Choose Edit > Copy.

**3** Click in the Tempo ruler at the point where you want to paste the tempo events.

**4** Choose Edit > Paste. The contents of the Clipboard are pasted from the insertion point, replacing any existing tempo events.

**To extend an Edit selection in a track to the Tempo ruler:**

**1** With the Selector or Time Grabber tool, select a time range.

**2** Shift-click in the Tempo ruler.

**To select all tempo events:**

■ Double-click with the Selector tool in the Tempo ruler.

**To clear a range of selected tempo events:**

**1** If you want to constrain the selection to the current Grid value, set the Edit mode to Grid.

**2** Drag with the Selector tool in the Tempo ruler to select the tempo events you want to remove.

**3** Choose Edit > Clear to delete the selected tempo events.

## Tap Tempo

You can manually set the tempo for a Pro Tools session by tapping on your computer keyboard. You can also use a connected MIDI keyboard to tap tempo.

**To set the Manual Tempo by tapping on a computer keyboard:**

**1** To view the MIDI controls in the Transport window, select View > Transport > MIDI Controls.

**2** In the Transport window, click the Tempo Ruler Enable (Conductor) button so it becomes unhighlighted. Pro Tools switches to Manual Tempo mode. In this mode, any tempo events in the Tempo track are ignored.



Tempo Ruler Enable button
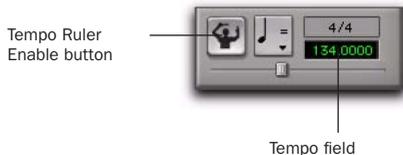
Tempo field

*Manual Tempo mode enabled*

**3** Click in the Tempo field so it becomes highlighted and tap the "T" key on your computer keyboard repeatedly at the new tempo.

� *You can apply the new tempo to the entire session by changing the default tempo of the Song Start Marker. See "Song Start Marker" on page 602.*

**To set the Manual Tempo by tapping on an external MIDI keyboard:**

**1** To view the MIDI controls in the Transport window, select View > Transport > MIDI Controls.

**2** Choose Setup > Preferences and click the MIDI tab.

**3** Select Use MIDI To Tap Tempo

**4** In the Transport window, click the Tempo Ruler Enable (Conductor) button so it becomes unhighlighted. Pro Tools switches to Manual Tempo mode. In this mode, any tempo events in the Tempo track are ignored.

**5** Click in the Tempo field so it becomes highlighted and tap in the tempo by playing a note repeatedly at the new tempo on your MIDI keyboard controller.

To compute the new tempo, Pro Tools averages the last eight (or fewer) taps to determine the correct tempo. The computed BPM value appears in the Transport's Tempo field.

## Tempo Changes and Automation Drift

When a track is sample-based, the track's automation playlist is unaffected by changes in tempo. This means that automation is always aligned with the audio on the track with sample accuracy.

When a track is tick-based, however, the automation breakpoints change to match the changes in tempo.

Since the length of each audio region in a track is unaffected by changes in tempo, existing automation data is out of sync with the audio after a tempo change is made to a tick-based audio track.
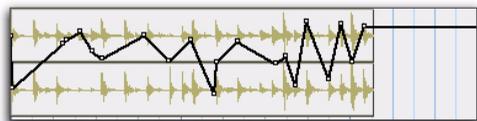


When tempo changes on a tick-based audio track...
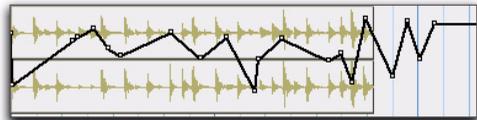


...automation gets out of sync with audio.

*Tempo changes applied to larger regions*

### Minimizing Automation Drift

In general, automation drift is more pronounced with larger audio regions. By creating many small audio regions, the effects of automation drift can be minimized, because the start

points of each subsequent region changes as the tempo changes. When tempo is decreased, automation expands. When tempo is increased, automation contracts.
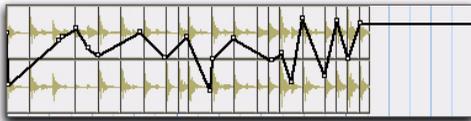


Using many smaller regions...
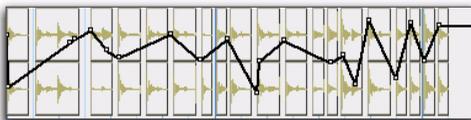


...keeps audio aligned with automation changes.

*Tempo changes applied to small regions*

💡 *To break an audio region into smaller regions, use Beat Detective. For more information, see Chapter 34, "Beat Detective."*

💡 *You can also separate regions at transients or based on the current grid resolution. For more information, see "Separate Region Commands" on page 466*

## Tempo Changes and Tick-Based Elastic Audio Tracks

Regions on tick-based, Elastic Audio–enabled tracks apply Time Compression and Expansion (TCE) based on tempo changes. For simple tempo changes, regions on tick-based Elastic Audio–enabled tracks automatically conform to match the new tempo. Tempo changes do not affect sample-based, Elastic Audio–enabled tracks. In Figure 10 below, the first two-bar region is at its native tempo of 120 bpm. The second two-bar region has been conformed to the tempo change of 100 bpm. Since the second re-

gion has been warped to remain two-bars long at the slower tempo, it displays the Region Warp indicator in the upper right-hand corner of the region.
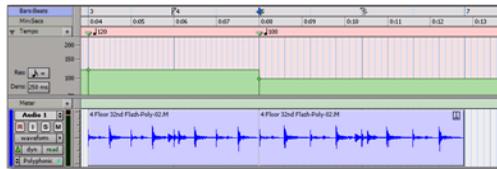


*Figure 10. Tempo conformed audio, linear tempo change*

For tempo curves, such as an accelerando or ritardando, Tempo Event Warp markers are automatically created corresponding to each tempo event, and the region conforms accordingly. Figure 11 below shows a region in Warp view. Notice how the audio conforms to the tempo curve.
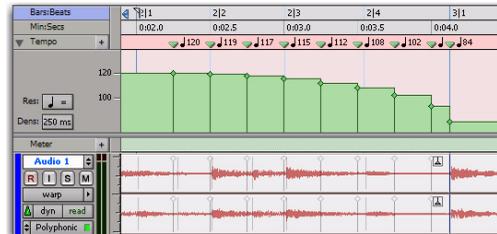


*Figure 11. Tempo conformed audio, tempo curve*

Tempo Event–generated Warp markers cannot be edited. They only show where the audio has been warped in order to conform to tempo changes.

💡 *If you change the track timebase from ticks to samples, any Tempo Event–generated Warp markers convert to regular, editable Warp markers.*

## Conform to Tempo

Pro Tools lets you conform regions on Elastic Audio–enabled tracks (both sample- and tick-based) to the session tempo. If necessary, the Conform to Tempo command analyzes the selected regions to determine its tempo and duration (in bars and beats), and then applies Elastic Audio processing to conform the region to match the session tempo.

### To conform a region to the session tempo:

**1** Select the region you want to conform to the session tempo.

**2** Do one of the following:

- Choose Region > Conform to Tempo.

– or –

- Right-click the region you wan to conform to tempo and select Conform to Tempo from the pop-up menu.

Pro Tools analyzes the region's entire file for Elastic Audio events and tempo. If a tempo is detected, and a duration in bars and beats is determined, the region conforms automatically to the session tempo. If a tempo and duration is not detected (such as with a region that is a single drum hit or with a long region with no clear tempo), the region is not conformed to the session tempo.

💡 *You can also use telescoping warp in Warp view to manually conform a long region to the session tempo. See "Telescoping Warp" on page 514.*

⚠ *Conform to Tempo can only be applied to regions and cannot be applied to region groups. To conform region groups to the tempo you must first ungroup the region group, then apply Conform to Tempo to the underlying regions, and then regroup those regions.*

## Alternate Playlists

Alternate playlists on Elastic Audio–enabled, tick-based tracks are only affected by tempo changes. Otherwise, alternate playlists are not affected by editing Warp or Event markers in the main playlist.

# Graphic Tempo Editor

The Tempo Editor, a resizeable window beneath the Tempo ruler in the Edit Window, lets you view and edit tempo information graphically.

## Tempo Editor

The Tempo Editor is an expansion of the Tempo ruler, opening in the rulers section of the Edit Window.

Tempo Editor expand/collapse triangle
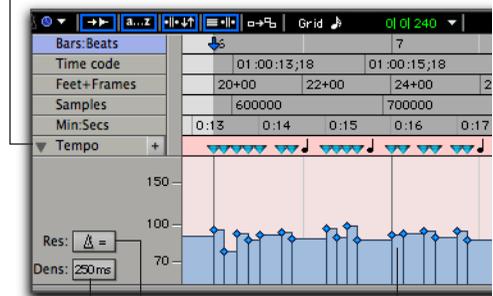


*Tempo Editor*

**To display the Tempo Editor, do one of the following:**

■ Select View > Rulers > Tempo, then View > Rulers > Tempo > Tempo Editor.

– or –

■ Click the Tempo Editor expand/collapse triangle.

## Editing Tempo Events in the Tempo Editor

Tempo events in the Tempo Editor can be edited with any of the following methods:

◆ Individual tempo events can be dragged with any of the Grabber tools to adjust their location or value.

◆ A group of selected tempos can be scaled up or down with the Trimmer tool.

◆ New tempo events can be drawn in with the Pencil tool to replace existing ones.

◆ Tempo events can be copied and pasted, nudged, and shifted.

## Drawing Tempo Events

Tempo events can be drawn in the Tempo Editor using the Pencil tool.
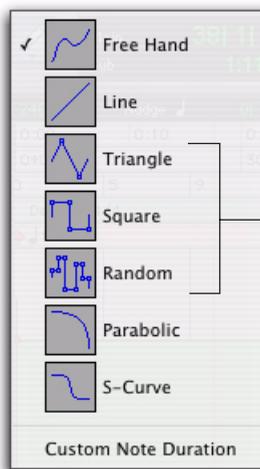


*Pencil tool shape pop-up menu*

**Free Hand** The Free Hand shape draws freely according to the movement of the mouse. The shape is reproduced as a series of steps according to the Tempo Edit Density setting. (For more information, see "Selecting Tempo Edit Density" on page 609.)

**Line** The Line shape draws in a straight line from click to release. Tempo values change in steps according to the Tempo Edit Density and Resolution. (For more information, see "Selecting Tempo Edit Density" on page 609.)

**Parabolic** The Parabolic shape draws the best possible curve to fit your freehand drawing. The shape is reproduced as a series of steps according to the Tempo Edit Density setting.

**S-Curve** The S-Curve shape draws a best possible fit of an S-Curve to your freehand drawing. The shape is reproduced as a series of steps according to the Tempo Edit Density setting.

⚠ *The Triangle, Square, and Random Pencil tool shapes do not apply to tempo events.*

### Selecting Tempo Resolution (BPM Rate)

The Tempo Editor lets you specify the beat note value for tempo events by changing the Tempo Resolution. The beat note value selected for the Tempo Resolution is usually based on the meter. For example, in 4/4 the beat is a quarter note and in 6/8 the beat is (usually) a dotted-quarter note.
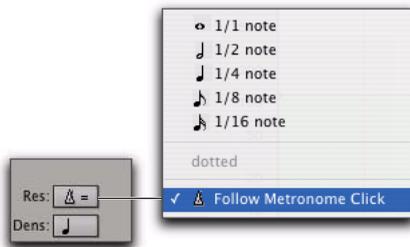


*Tempo Resolution selector and pop-up menu*

### To select the Tempo Resolution (BPM rate) for Pencil tool edits, do one of the following:

■ Click the Tempo Resolution selector and select the appropriate note value from the pop-up menu. The Tempo Resolution for tempo events created by drawing with the Pencil tool are set to the specified note value for the BPM rate.

– or –

■ Click the Tempo Resolution selector and select Follow Metronome Click. The Tempo Resolution for tempo events created by drawing with the Pencil tool automatically mirror the click values set by meter events in the Meter ruler.

A tempo curve can have different BPM values if there are meter click changes within the selected range.

💡 *Because it can be unnecessarily complicated to set meter events separately for each Tempo event, Digidesign recommends selecting Follow Metronome Click in most cases.*
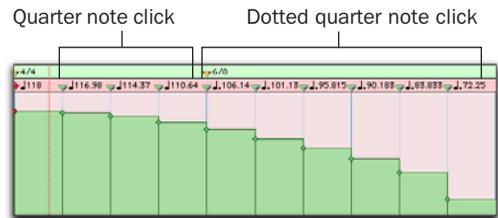


*Tempo curve with different click values*

### Selecting Tempo Edit Density

The Tempo Editor lets you specify the density of tempo events created in the Tempo ruler when you draw a tempo curve with the Pencil tool.
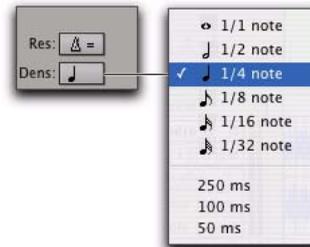


*Tempo Edit Density selector and pop-up menu*

**To select the Tempo Edit Density for Pencil tool edits:**

▪ Click the Tempo Edit Density selector and select a time value from the pop-up menu. Tempo events created by drawing with the Pencil tool are placed in the Tempo ruler at the specified density.

💡 *Pressing Start (Windows) or Control (Mac) before drawing a pencil line conforms already created tempo events to the drawn line rather than creating new tempo events.*

## Curve Adjustment Mode

Immediately after you draw new tempos using the Pencil tool, a tempo curve appears in blue, outlining the newly created tempo graph. Blue adjustment handles on the curve let you adjust the shape and size of the new tempo graph.

Tempo Curve Adjustment Handles
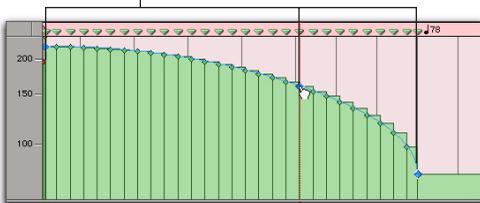


*Tempo curve adjustment*

💡 *All the new tempo events under the curve will change as you move the Tempo Curve Adjustment Handles. To adjust the curve shape without the track data adjusting immediately, press Start (Windows) or Control (Mac) while adjusting the curve. Tempo events will change to fit the new curve when you release the mouse button.*

The blue adjustment handles are only active until a new tool is selected or a new command is executed.

## Grabbing Tempo Events

The Grabber tools let you create new tempo settings by dragging tempo events in the Tempo Editor. To remove a tempo event, Alt-click (Windows) or Option-click (Mac) the tempo event with any of the Grabber tools.
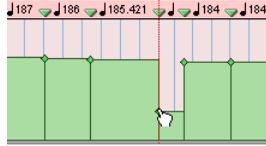


*Using a Grabber tool to change a tempo event*

Drag a tempo event to the left or right to adjust the location of the tempo change.

## Selecting Tempo Events

You can easily select a single tempo event, or an entire tempo curve within the Tempo Editor.

**To Select a tempo event in the Tempo Editor:**

Using the Selector tool or any Grabber tool, double-click on the horizontal tempo line.
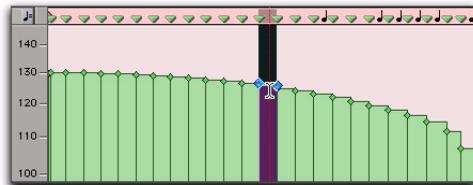


*Selecting a single tempo event*

**To Select a tempo curve in the Tempo Editor:**

■ Using the Selector tool or any Grabber tool, triple-click on a horizontal tempo line in the curve that you want to select.
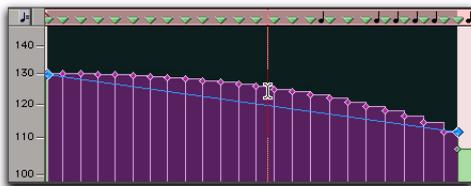


*Selecting a tempo curve*

### Extending Tempo Selections

You can extend Tempo selections to the next or the previous tempo event.

**To extend a tempo selection:**

**1** Select a portion of a region, or click anywhere in the region.

**2** Do one of the following:
   • Press Shift+Tab to extend the selection to the next tempo event.

   – or –
   • Press Shift+Control+Tab (Windows) or Shift+Option+Tab (Mac) to extend the selection to the previous tempo event.

## Using the Trimmer Tool

The Trimmer tool lets you scale all the tempo events of the session, or within a Timeline selection. The Trimmer tool also lets you stretch a region of tempo events to cover a longer or shorter area in the Timeline.

**To scale all the session's tempo events with the Trimmer tool:**

**1** Open the Tempo Editor.

**2** Select the Trimmer tool.

**3** Click above the tempo events and drag up or down. Dragging up increases the tempo values for each tempo event in BPM; dragging down decreases them.
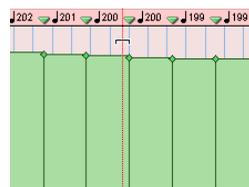


*Changing all tempo events with the Trimmer tool*

**To scale selected tempo events with the Trimmer tool:**

**1** Open the Tempo Editor.

**2** Using the Selector tool, select the area you want to edit.

**3** Select the Trimmer tool.

**4** Click within the selected area, and drag up or down. Dragging up increases the tempo values of the selection in BPM; dragging down decreases them.
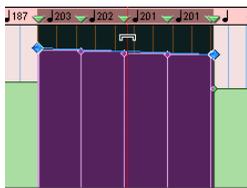


*Changing selected tempo events with the Trimmer tool*

### To adjust the rate of tempo change over absolute time with the Trimmer tool:

**1** Open the Tempo Editor.

**2** Using the Selector tool, select the area you want to edit.

**3** Select the Trimmer tool.

**4** Click either the start or end handle for the selected range, and drag up or down. The BPM values for tempo events scale accordingly and tempo events scale over a longer or shorter amount of absolute time.



*Adjusting the rate of tempo change with the Trimmer tool*

### To scale the duration of tempo changes with the Trimmer tool:

**1** Open the Tempo Editor.

**2** Using the Selector tool, select the area you want to edit.

**3** Select the Trimmer tool.

**4** Click at the start or end of the selection, and drag horizontally. Tempo events do not change in terms of actual BPM values, but they are scaled over a longer or shorter amount of absolute time.
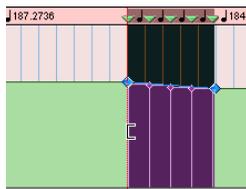


*Scaling the duration of selected tempo events with the Trimmer tool*

### Moving, Cutting, Pasting and Nudging in the Tempo Editor

### To move a selected group of tempo events in the Tempo Editor:

**1** Open the Tempo Editor.

**2** Using the Selector tool, select the area you want to move.

**3** Click on any selected tempo event with any Grabber tool, and drag horizontally to move the tempo events to a new location.

💡 *Press Alt (Windows) or Option (Mac) while dragging to move a copy of the tempo events.*

### To copy and Paste tempo events in the Tempo Editor:

**1** Open the Tempo Editor.

**2** Using the Selector tool, select the area you want to copy.

**3** Choose Edit > Copy.

**4** Click in the Tempo Editor at the point where you want to paste the tempo events.

**5** Choose Edit > Paste. Your copied selection is pasted from the insertion point, replacing any existing tempo events.

### To nudge a selection in the Tempo Editor:

**1** Open the Tempo Editor.

**2** Using the Selector tool, select the area you want to nudge.

**3** Do one of the following:

- On the numeric keypad, press Plus (+) to move the selected tempo events forward by the Nudge value.

– or –

- Press Minus (–) to move the selection back by the Nudge value.

# Changing the Linearity Display Mode

The Timeline can be viewed in either a Linear Tick (relative) scale or a Linear Sample (absolute) Time Scale. MIDI and Instrument tracks, audio tracks, and Tempo curves can appear and function very differently depending on the timebase display settings.



*Linearity Display Mode selector and pop-up menu*

The Linearity Display Mode pop-up menu determines whether the Tempo Editor displays tempo events in an absolute (samples) timebase or a relative (ticks) timebase.

**Linear Sample Display** The display of the Timeline is sample-based and the location of tick-based events (like Bars and Beats) shift after a tempo curve is drawn. That is, as you change tempo, the location of bars and beats move against the fixed sample-based Timeline (such as Minutes:Seconds). When working with sample-based material, such as when you are tracking or mixing, make sure that Linear Sample Display is selected. This is especially true if you intend to align the tempo and meter map to sample-based events.

**Linear Tick Display** The display of tempo events is tick-based and tempo event Bar|Beat locations remain constant after the tempo curve is drawn and all sample-based events move against bar beat locations in the Timeline. When working on any tick-based material, such as MIDI notes or Elastic Audio events, make sure that Linear Sample Display is selected. This is especially true if you will be making tempo changes, but want the bars and beats to remain fixed in the Timeline.

⚠ *Drawing tempo events using the Linear Sample Display causes Bar|Beat based material to move. This can make it difficult to work on tick-based material. Digidesign recommends that you use Linear Tick Display when drawing tempo changes.*

### To change the timebase display:

■ Click the Linearity Display Mode selector and select a timebase from pop-up menu.

### Tempo Edit Density and Linearity Display Mode

When the Tempo Edit Density setting (in the Tempo Editor) and the Linearity Display Mode setting are both set to either a Bars:Beats Time Scale or to an absolute Time Scale, Tempo edits appear evenly spaced. When the Tempo Edit Density setting and the Linearity Display Mode

setting are set so that one is set to an absolute Time Scale and the other is set to a Bars:Beats Time Scale, the number of Tempo edits appear to increase or decrease over time (against absolute time).

# Tempo Operations Window

The Tempo Operations window lets you define tempo events over a range of time (or measures). The time range is specified in the time format chosen for your Main Time Scale. In addition, the Tempo Operations window lets you:

- Fit a specific number of Bars:Beats into a precise time range.
- Create tempos that speed up or slow down, both linearly and over various curves.
- Scale and stretch existing tempos.

*The Tempo Operations window is not available in Manual Tempo mode.*

The Tempo Operations window has six pages, one for each type of tempo operation.

**Constant** Lets you create a constant tempo over a selected range of time.

**Linear** Lets you create tempos that change evenly over a selected range of time.

**Parabolic** Lets you create tempos that accelerate or decelerate following a tempo curve that changes the tempo more rapidly or less rapidly over the selection time.

**S-Curve** Lets you create tempos that accelerate or decelerate following a tempo curve with a definable breakpoint that determines mid-curve times and tempo values.

**Scale** Lets you scale tempos within the selection by a percentage amount.

**Stretch** Lets you select a region of tempo events and apply them to a larger or smaller selection area.

**To open a specific Tempo Operations window page:**

■ Choose Event > Tempo Operations, followed by one of the Tempo Operations page commands (such as Constant).

*If the Tempo Operations window is already open, you can select any of the pages from the pop-up menu at the top of the window.*

**To open the last active Tempo Operations window page:**

■ Choose Event > Tempo Operations > Tempo Operations Window.

*Press Alt+2 (Windows) or Option+2 (Mac) on the number keypad to open the Tempo Operations window and display the last active Tempo Operations page.*

**To define tempo events over a range of time:**

**1** Make a selection in the Timebase or in a track.

**2** Choose Event > Tempo Operations > Tempo Operations Window.

**3** Select a Tempo Operation page from the pop-up menu at the top of the Tempo Operation window.

**4** Change the settings for the page you have chosen, as necessary.

**5** Do one of the following:

- Click Apply.

– or –

- Press Enter (Windows) or Return (Mac) to automatically apply the values and close the window.

## Constant

The Constant page lets you create a constant tempo over a selected range of time.
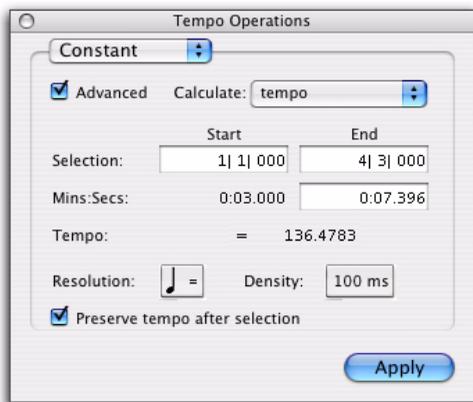


*Constant page (Advanced Option)*

**Advanced** When the Advanced checkbox is selected, the selection range changes to the Main Time Scale format, and additional and modified options become available.

**Calculate (Advanced Option)** Calculates either the tempo, or the selection end time.

**Selection Start and End** Specifies the start and end point for the tempo change in Bars|Beats. When an Edit selection is made, the Start and End fields will display the selection boundaries.

**End Time (Advanced Option)** Displays the selection end time. When the Main Time Scale is set to Bars:Beats, the end time is displayed in the Sub Time Scale. When the Main Time Scale is set to any absolute timebase, the end time is calculated and displayed in Bars|Beats. Changing the end time value causes the tempo to change.

**Tempo** Specifies the tempo, in beats per minute (BPM), to apply to the selected range.

**Resolution (Advanced Option)** Lets you select the BPM note value for your tempo setting.

*Selecting "Follow Metronome Click" will set the tempo BPM note value to mirror the click value set in the meter markers.*

**Density (Advanced Option)** Lets you specify the density of the tempo change events written to the Tempo ruler.

**Preserve Tempo after Selection** If selected, the previous tempo setting that was in effect at the selection end point is preserved after the selection. If unselected, the last tempo event created by the tempo operation continues to the end of the session, or until the next tempo event beyond the selected range.

## Linear

The Linear page lets you create tempos that change evenly over a selected range of time.
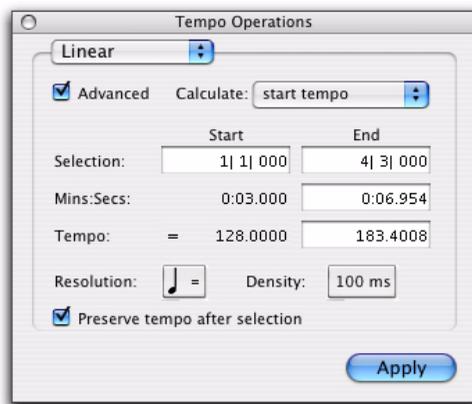


*Linear page (Advanced Option)*

**Advanced** When the Advanced checkbox is selected, the selection range changes to the Main Time Scale format, and additional and modified options become available.

**Calculate (Advanced Option)** Calculates either the selection end time, the start tempo, or the end tempo.

**Selection Start and End** Displays the start and end points for the tempo change in the currently selected Main timebase. When an Edit selection is made, the Start and End fields will display the selection boundaries. Changing start or end values changes the selection range.

**End Time (Advanced Option)** Displays the absolute time for the selection end. When the Main Time Scale is set to Bars:Beats, the end time is displayed in the Sub Time Scale. When the Main Time Scale is set to any absolute timebase, the end time is calculated and displayed in Bars|Beats. Changing the end time value causes the tempo to change.

**Tempo Start and End** Displays the tempo, in beats per minute (BPM), for the start and end points of the selected range. Changing the tempo causes the end time value to change.

**Resolution (Advanced Option)** Lets you select the BPM note value for your tempo setting.

☀️ *Selecting "Follow Metronome Click" will set the tempo BPM note value to mirror the click value set in the meter markers.*

**Density (Advanced Option)** Lets you specify the density of the tempo change events written to the Tempo ruler.

**Preserve Tempo after Selection** If selected, the previous tempo setting that was in effect at the selection end point is preserved after the selection. If unselected, the last tempo event created by the tempo operation continues to the end of the session, or until the next tempo event beyond the selected range.

## Parabolic

The Parabolic page lets you create tempos that accelerate or decelerate by following a tempo curve, which changes the tempo more rapidly or less rapidly over the selection time.
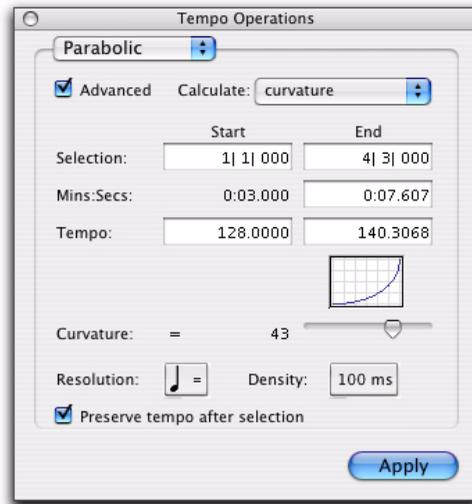


*Parabolic page (Advanced Option)*

**Advanced** When the Advanced checkbox is selected, the selection range changes to the Main Time Scale format, and additional and modified options become available.

**Calculate (Advanced Option)** Calculates the selection end time, the start tempo, the end tempo, or the curvature of the tempo change.

**Selection Start and End** Displays the start and end points for the tempo change in the currently selected Main timebase. When an Edit selection is made, the Start and End fields will display the selection boundaries. Changing start or end values changes the selection range.

**End Time (Advanced Option)** Displays the absolute time for the selection end. When the Main Time Scale is set to Bars:Beats, the end time is displayed in the Sub Time Scale. When the Main Time Scale is set to any absolute timebase, the end time is calculated and displayed in Bars|Beats. Changing the end time value causes the tempo to change.

**Tempo Start and End** Displays the tempo, in beats per minute (BPM), for the start and end points of the selected range. Changing the tempo causes the end time value to change.

**Curvature** Specifies and displays a numerical and graphic representation of the tempo curve. Negative numbers indicate a more rapid tempo change at the beginning of the time range, and positive numbers indicate a more rapid tempo change at the end of the time range. This value can be set with the Curvature slider.

**Resolution (Advanced Option)** Lets you select the BPM note value for your tempo setting.

💡 *Selecting "Follow Metronome Click" will set the tempo BPM note value to mirror the click value set in the meter markers.*

**Density (Advanced Option)** Lets you specify the density of the tempo change events written to the Tempo ruler.

**Preserve Tempo after Selection** If selected, the previous tempo setting that was in effect at the selection end point is preserved after the selection. If unselected, the last tempo event created by the tempo operation continues to the end of the session, or until the next tempo event beyond the selected range.

## S-Curve

The S-Curve page lets you create tempos that accelerate or decelerate by following a tempo curve with a definable breakpoint that determines mid-curve times and tempo values.
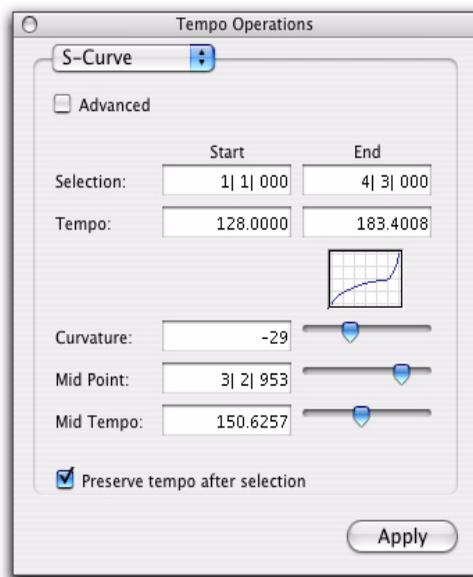


*S-Curve page (Advanced Option)*

**Advanced** When the Advanced checkbox is selected, the selection range changes to the Main Time Scale format, and additional and modified options become available.

**Calculate (Advanced Option)** Calculates either the selection end time, the start tempo, the end tempo or the curvature of the tempo change.

**Selection Start and End** Displays the start and end points for the tempo change in the currently selected Main timebase. When an Edit selection is made, the Start and End fields will display the selection boundaries. Changing start or end values changes the selection range.

**Start and End Time (Advanced Option)** Displays the absolute time for the selection end. When the Main Time Scale is set to Bars:Beats, the end time is displayed in the Sub Time Scale. When the Main Time Scale is set to any absolute time-base, the end time is calculated and displayed in Bars|Beats.

**Tempo Start and End** Displays the tempo, in beats per minute (BPM), for the start and end points of the selected range. Changing the tempo causes the end time value to change.

**Curvature** Specifies and displays a numerical and graphic representation of the tempo curve. Negative numbers indicate a more rapid tempo change at the start and end of the of the time range, with a low rate of change around the midpoint. Positive numbers indicate a low rate of change near the start and end of the selected range, with rapid tempo change around the midpoint. This value can be set with the Curvature slider.

**Mid Point** Specifies the Main Time Scale location for the curve mid point. This value can be set with the Mid Point slider.

**Mid Tempo** Specifies the tempo at the mid point. This value can be set with the Mid Tempo slider.

**Resolution (Advanced Option)** Lets you select the BPM note value for your tempo setting.

💡 *Select "Follow Metronome Click" will set the tempo BPM note value to mirror the click value set in the meter markers.*

**Density (Advanced Option)** Lets you specify the density of the tempo change events written to the Tempo ruler.

**Preserve Tempo after Selection** If selected, the previous tempo setting that was in effect at the selection end point is preserved after the selection. If unselected, the last tempo event created by the tempo operation continues to the end of the session, or until the next tempo event beyond the selected range.

## Scale

The Scale page lets you scale tempos within the selection by a percentage amount.
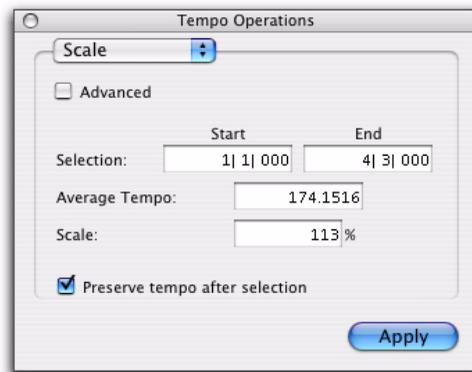


*Scale page*
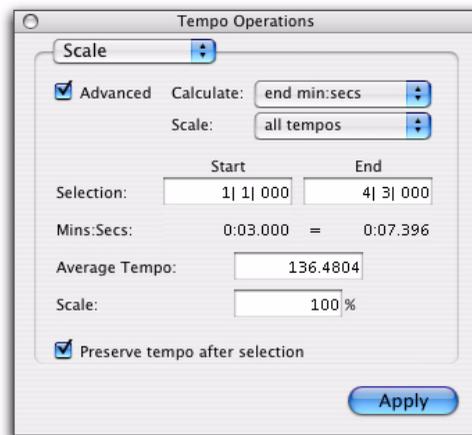


*Scale page (Advanced Option)*

**Advanced** When the Advanced checkbox is selected, the selection range changes to the Main Time Scale format, and additional and modified options become available.

**Calculate (Advanced Option)** In combination with settings chosen in the Scale pop-up menu, the Calculate pop-up menu lets you calculate the selection end time, the average tempo, the start tempo, or the end tempo.

**Scale (Advanced Option)** In combination with settings chosen in the Calculate pop-up menu, the Scale pop-up menu lets you scale all tempos, the start tempo, or the end tempo.

Scaling all tempos scales each tempo in the selected range equally. Scaling the start tempo scales the tempos unevenly, scaling the first tempo event the most, scaling each consecutive tempo event less until the end tempo which is not scaled. Scaling the end tempo scales the tempos unevenly, scaling the last tempo the most, scaling each previous tempo event less until the start tempo which is not scaled.

**Selection Start and End** Displays the start and end points for the tempo operation in the currently selected Main timebase. When an Edit selection is made, the Start and End fields will display the selection boundaries. Changing start or end values changes the selection range.

**Start and End Time** Displays the absolute time for the selection start and end points. When the Main Time Scale is set to Bars:Beats, times are displayed in the Sub Time Scale. When the Main Time Scale is set to any absolute timebase, times are calculated and displayed in Bars|Beats.

**Average Tempo** Displays the Average Tempo, in beats per minute (BPM), across the selected range. Changing the Average Tempo changes the Scale percentage.

**Scale** Displays the percentage by which the tempo is scaled, in beats per minute (BPM), across the selected range. Changing Scale changes Average Tempo.

**Preserve Tempo after Selection** If selected, the previous tempo setting that was in effect at the selection end point is preserved after the selection. If unselected, the last tempo event created by the tempo operation continues to the end of the session, or until the next tempo event beyond the selected range.

## Stretch

The Stretch page lets you select a region of tempo events and apply them to a larger or smaller selection area.
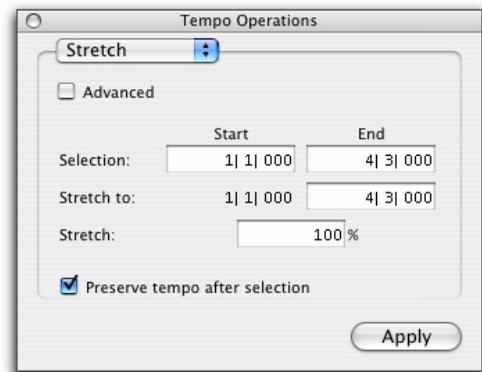


*Stretch page*

**Advanced** When the Advanced checkbox is selected, the selection range changes to the Main Time Scale format, and additional and modified options become available.

**Selection Start and End** Specifies the range of tempo events that you want to modify. When an Edit selection is made, the Start and End fields will display the selection boundaries.

**Stretch To End** Specifies a new end point for the region to which you want to apply the selected tempo events. Changing the end point causes the Stretch percentage to change.

**Stretch To Start (Advanced Option)** Specifies a new start point for the region to which you want to apply the selected tempo events. Changing the end point causes the Stretch percentage to change.

**Stretch** Specifies the percentage of time for the the selected tempo events to cover.

**Preserve Tempo after Selection** If selected, the previous tempo setting that was in effect at the selection end point is preserved after the selection. If unselected, the last tempo event created by the tempo operation continues to the end of the session, or until the next tempo event beyond the selected range.

# Identify Beat Command

The Identify Beat command lets you establish a tempo/meter map for audio that was recorded without a click, or for imported audio with unknown tempos.

The Identify Beat command analyzes a selection range (usually with a distinct number of beats or measures) and calculates its tempo based on the specified meter. In doing this, Bar|Beat Markers for the calculated tempo are inserted and appear in the Tempo ruler at the beginning and end of the selection; in addition, meter events are inserted into the Meter ruler.

📃 *Use Beat Detective to generate Bar|Beat Markers within a selection that includes rhythmic changes on beats or sub-beats. For more information, see Chapter 34, "Beat Detective."*

# Bar|Beat Markers

Bar|Beat Markers look similar to tempo events, but instead have small blue triangles to indicate their location.
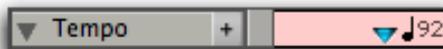


*Bar|Beat Marker*

## Choosing Bar|Beat Markers or Tempo Events

Because tempo events are tick-based, and Bar|Beat Markers are sample-based, they cannot be mixed. If a session contains tempo events and you attempt to insert Bar|Beat Markers, existing tempo events are converted to Bar|Beat Markers (and vice versa).

Tempo events can also be manually converted to Bar|Beat Markers and vice versa. When converting between Tempo events and Bar|Beat Markers, some amount of sample rounding may occur.

**To use either tempo events or Bar|Beat Markers:**

**1** Press Control (Windows) or Command (Mac) and click the Add Tempo Change button.

**2** Select either Tempo Events or Bar|Beat Markers from the pop-up menu.



*Tempo ruler pop-up menu*

## Identifying Beats

**Identifying the beat of a one-bar drum loop and creating Bar|Beat Markers for it:**

**1** Place a one-bar drum loop at the beginning of an audio track.

**2** Select View > Rulers > Samples. This ensures that the selected audio material will be sample-accurate.

**3** Select the audio region with the Time Grabber tool and choose Event > Identify Beat.

**4** In the Bar|Beat Markers dialog, specify the start and end locations for the inserted Bar|Beat Markers. Since this example deals with a one-bar loop, enter 1|1|000 and 2|1|000.
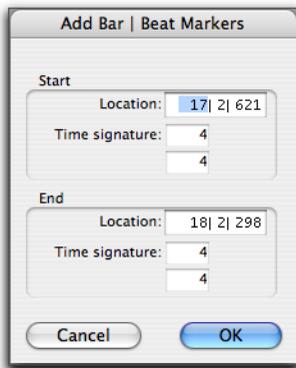


*Identify Beat dialog*

**5** If necessary, specify a time signature for the start and end range.

**6** Click OK to automatically calculate the new tempo and insert the necessary Bar|Beat Markers and meter events. Any existing tempo and meter events residing within the selection are deleted.
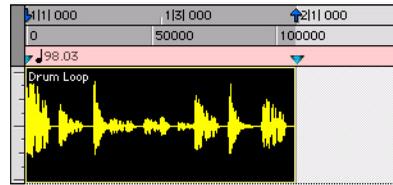


*Bar|Beat Markers inserted*

Once the tempo has been determined for the audio, you can duplicate the original audio region with the Repeat command.

When working with a selection, the Identify Beat command only calculates a single tempo for the selected range. If the tempo varies from measure to measure, or beat to beat, you'll need to use the Identify Beat command for each tempo variance (making sure to accurately define a precise selection range or beat location for the tempo change).

To accurately define tempos for a range of audio with the Identify Beat command, make certain that the initial selection represents an accurate length of beats or measures. You may want to first loop the selection on playback to see if it plays cleanly without skipping (see "Loop Playback Mode" on page 314). To avoid drift, and remain sample-accurate, select the audio material with the Time Scale set to Samples rather than Bars|Beats.

☼ *When identifying beats, select as large an area as possible. For example, if you have a four-bar-long audio file you want to identify, select the entire four bars instead of just one bar, in order to minimize rounding errors (see "Sample Rounding and Edit Operations" on page 601).*

## Dragging Bar|Beat Markers

Bar|Beat Markers can be dragged to new locations so they can align with audio regions that have been moved, or so that they can align to a slightly different point within an audio region. This results in neighboring MIDI data being adjusted to align with the new tempo map.
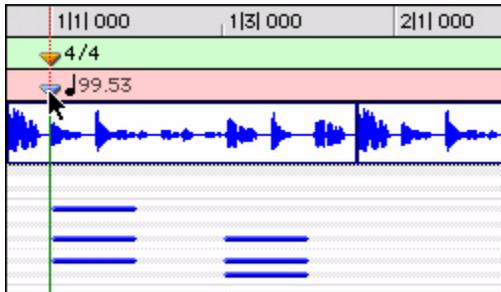


*Dragging a Bar|Beat Marker*

Because Bar|Beat Markers are sample-based and tempo events are tick-based, they behave differently when you drag them in the Tempo ruler.

### When dragging a tempo event:

• The tempo event is placed at a new bar and beat location. The sample and SMPTE locations for the event are updated as well.

• The BPM value for the dragged tempo event remains constant, as do any other tempo events in the session.

• Neighboring MIDI events and audio regions on tick-based tracks, along with the ruler, shrink or expand as necessary to adjust for the new tempo location.

### When dragging a Bar|Beat Marker:

• Its BPM value is recalculated along with the Bar|Beat Marker to its immediate left. Bar|Beat Markers to the right of the dragged marker remain unchanged.

• Its bar and beat location is dragged *with* the Bar|Beat Marker. If the Bar|Beat Marker was originally placed at 3|1|000, it remains there (unless it is edited).

• Its sample and SMPTE locations change, as calculated for by the new tempo for the Bar|Beat Marker.

• Neighboring MIDI events, along with the Bars:Beats ruler, shrink or expand as necessary to adjust for the new tempo.

## Editing Bar|Beat Markers

A Bar|Beat Marker can be edited to redefine its bar and beat location, which also redefines the start or end point of the range being analyzed for tempo. This is different from dragging a Bar|Beat Marker.



*Edit Bar|Beat dialog*

### To edit a Bar|Beat Marker:

**1** In the Tempo ruler, double-click the Bar|Beat Marker.

**2** In the Edit Bar|Beat dialog, enter a new Location for the Bar|Beat Marker.

**3** Enter a new Time Signature if desired.

**4** Click OK.

**To delete a Bar|Beat Marker:**

While pressing Alt (Windows) or Option (Mac), move the cursor over the Bar|Beat Marker (where the cursor changes to the Grabber with a "–") and click to remove it.

## Inserting Bar|Beat Markers One at a Time

### Sample-Based Material with Varying Tempos

You can insert Bar|Beat Markers one at a time by setting an Edit insertion point (instead of making a selection) before using the Identify Beat command. The ability to identify each beat, one at a time, is especially useful when working with sample-based material with varying tempos.

For instance, if you have a measure that accelerates slightly, you could insert a Bar|Beat Marker on each beat (see Figure 12) so the tempo is accurately reflected.
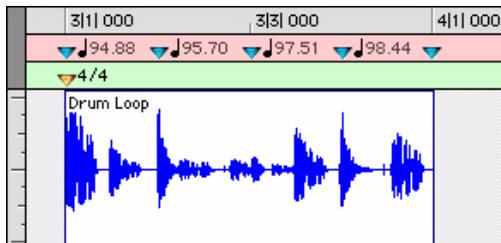


*Figure 12. Bar|Beat Markers on each beat*

After the Bar|Beat Markers are inserted, further adjustments in the tempo map are possible by dragging each of the Markers, as necessary, to align with the associated beat within the audio.

# Meter Events

You can change meter in the Meter ruler, or make precise meter changes in the Time Operations window.

Meter events can be inserted at the beginning of a session to replace the default meter (of 4/4), and they can be inserted anywhere within the session for additional meter changes.

**To display the Meter ruler:**

■ Select View > Rulers > Meter.

## Current Meter

As meter events are encountered during playback, the session's current meter is displayed in the Transport window.



*Current meter displayed in Transport window*

## Inserting Meter Events

### To insert a meter event:

**1** Do one of the following:

- Choose Event > Time Operations > Change Meter.
- Click the Add Meter Change button at the right of the Meter ruler.



*Add Meter Change button*

- While pressing the Start key (Windows) or Control (Mac), move the cursor into the Meter ruler (where the cursor changes to the Grabber with a "+") and click at the location where you want to insert the event.
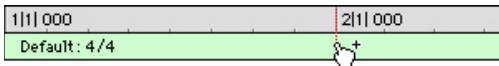


*Manually inserting a meter event*

- Double click the meter display in the Transport window.



*Current Meter display in the Transport window*

**2** In the Meter Change window, do the following:

- Enter the Location and Meter for the meter change.
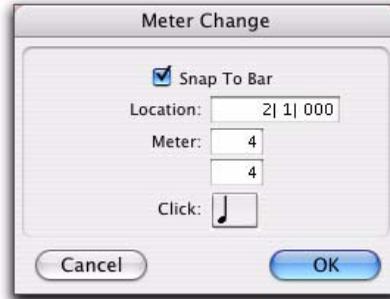


*Meter Change window*

– and –

- If you want the inserted meter event to fall cleanly on the first beat of the nearest measure, select the Snap To Bar option.

**3** Select a note value for the number of clicks to sound in each measure. For a dotted-note click value, select the dot (.) option.

☼ *For some meters, it may be desirable to use a dotted value for the click. For instance, if using a meter of 6/8, a dotted quarter note click (yielding two clicks per measure) is generally more suitable than a straight eighth note click (six clicks per measure).*

**4** Click Apply to insert the new meter event. The new meter event is inserted and appears in the Meter ruler.
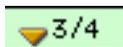


*Inserted meter event*

Each meter event has a small yellow triangle next to it that indicates its location. These triangles can be selected for copying and pasting, and they can be double-clicked to edit the meter event.

## Editing Meter Events

Existing meter events can be edited, deleted, copied, and pasted.

**To edit a meter event:**

**1** In the Meter ruler, double-click the meter event.

**2** In the Meter Change dialog, enter a new Location or Meter for the event.

**3** Click OK.

**To delete a meter event:**

▪ While pressing Alt (Windows) or Option (Mac), move the cursor over the meter event (where the cursor changes to the Grabber with a "–") and click to remove it.

**To copy and paste several meter events:**

**1** If you want to constrain the selection to the current Grid value, set the Edit mode to Grid.

**2** Drag in the Meter ruler to select the range that includes the meter events.
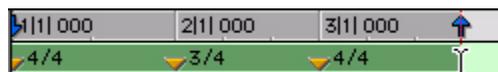


*Meter events selected*

If the beginning of the selection includes a meter event, press Control (Windows) or Command (Mac) so the Selector tool appears.

💡 *Press Alt (Windows) or Option (Mac) while dragging to select across all Conductor tracks.*

**3** Choose Edit > Copy.

**4** Click in the Meter ruler at the point where you want to paste the meter events.

**5** Choose Edit > Paste. The contents of the Clipboard are pasted from the insertion point, replacing any existing meter events.

**To extend an Edit selection in a track to the Meter ruler:**

**1** Using the Selector tool or any Time Grabber tool, select a track range.

**2** Shift-click in the Meter ruler.

Shift-click again in the Meter ruler to remove it from the selection.

**To select all meter events:**

▪ Double-click with the Selector tool in the Meter ruler.

**To clear a range of selected meter events:**

**1** If you want to constrain the selection to the current Grid value, set the Edit mode to Grid.

**2** Drag in the Meter ruler to select the meter events you want to remove.

**3** Choose Edit > Clear to delete the selected meter events.

## Partial Measures

As necessary, Pro Tools will create a partial measure to accommodate the inserted meter event. When a meter event is preceded by a partial measure, the meter event is displayed in italics in the Meter ruler.
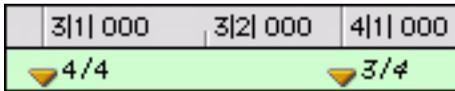


*Partial measure of 4/4*

Partial measures can also occur when pasting meter events to locations other than the first beat of a measure.

*To insert meter events while avoiding partial bars, use the Change Meter command in the Time Operations window. See "Change Meter" on page 627.*

## Time Operations

The Time Operations window lets you:

- Change Meter
- Insert Time
- Cut Time
- Move Song Start

**To open a specific Time Operations window:**

■ Choose Event > Time Operations, followed by one of the Time Operations commands (such as Change Meter).

*If the Time Operations window is already open, you can select any Time Operation from the pop-up menu at the top of the window.*

**To open the last active Time Operations window:**

■ Choose Event > Time Operations > Time Operations Window.

*Press Alt+1 (Windows) or Option+1 (Mac) on the number keypad to open the Time Operations window and display the last active Time Operations window.*

# Change Meter

Change Meter lets you specify complex meter changes for Bar|Beat-based material. You can enter meter changes at a particular bar, make a meter change over a selected area of time, or add meter changes sequentially one bar at a time.
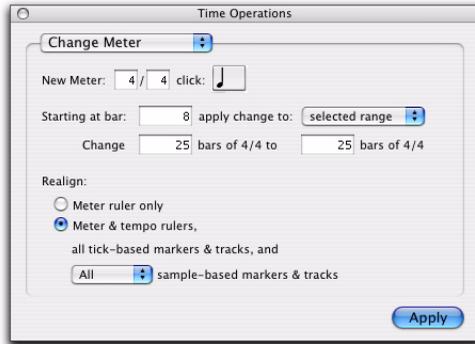


*Change Meter window*

Options for the Change Meter command include:

**New Meter** Lets you specify a new time signature. The first field lets you enter the number of beats (up to 99) in a measure, and the second field lets you enter the note length that counts as one beat.

**Click** Lets you specify the note value that will trigger the metronome click. For example, if an eighth note is chosen, a click is played for every eighth note, regardless of tempo.

**Starting at Bar** Sets the bar where the meter change is added. Meter changes made in the Change Meter page can only be made at the beginning of a bar.

**Apply Change To** Lets you apply the meter change to the selected range, to the end of the session, or until the next bar.

**Change** The Change fields let you specify the number of bars of the new meter that you want to have replace the selected range.

Pro Tools automatically calculates the nearest whole bar number, or you can specify a number of bars to be affected. Time is inserted or deleted, in whole bar increments, at the end of the selection, as necessary on all affected tracks when you override the calculated range.

## Realign

The Realign controls let you choose which items to realign after a meter change has been made. You can choose to realign meter events, or choose to realign meter and tempo events, tick-based markers and tracks, and also all or none of the sample-based markers and tracks.

**Meter Ruler Only** Applies the meter change and realigns only the Meter ruler. All other rulers and tracks are unaffected.

**Meter and Tempo Rulers, All Tick-Based Markers and Tracks, and Sample-Based Markers and Tracks** Applies the meter change and realigns the Meter and Tempo rulers, and all tick-based markers and tracks. Using the pop-up menu, you can also choose to realign all or none of the sample-based markers and tracks. Time is inserted or deleted as needed at the end of the selection to preserve the alignment of material following the selection.

## Change Meter Examples

**To change the meter over a range of bars:**

**1** Do one of the following:

- Drag with the Selector tool to select a range of bars to change.

– or –

- To have the meter change apply until the next meter event, click where you want the meter change to begin with the Selector tool. The meter change will be made at the beginning of the nearest bar.

**2** Choose Event > Time Operations > Change Meter.

**3** Specify a new meter and click setting. Pro Tools will automatically set the selection options to fit the new meter to the selected range as closely as possible, adding or subtracting beats a necessary.

**4** Select To Selected Range in the Apply Change pop-up menu.

**5** Select which rulers and tracks you want to realign after meter changes have been made.

**6** Click Apply.

**To add a series of meter changes, one measure at a time:**

**1** Do one of the following:

- With the Selector tool, click where you want the meter change to begin. The meter change will be made at the beginning the nearest bar.

– or –

- Enter the first measure number in the Starting At Bar field.

**2** Choose Event > Time Operations > Change Meter.

**3** Specify a new meter and click setting.

**4** Select "Until the Next Bar" from the Apply Change To pop-up menu.

**5** Click Apply to enter the new meter and to move the insertion point to the end of the new measure.

**6** Specify a new meter and click setting for the next measure.

**7** Repeat steps 5–6 for every additional meter change you want to insert.

## Insert Time

Insert Time lets you insert an amount of blank time (silence) into Conductor rulers, MIDI tracks, and audio tracks.
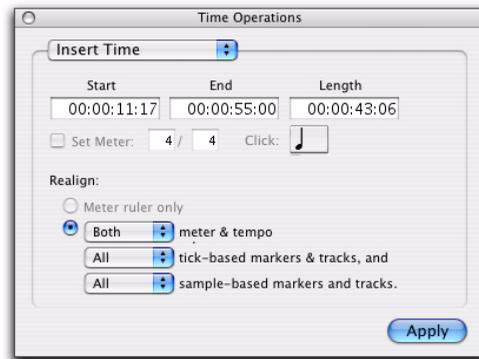


*Insert Time window*

Options for the Insert Time command include:

**Start, End, and Length** Sets the start and end points for the selection, and the selection length.

**Set Meter** If your Main Time Scale is Bars:Beats, Set Meter lets you specify a new meter for the inserted time. The selection is quantized to the nearest bars, and the previous meter is inserted after the selection. If your Main Time Scale is sample-based, Set Meter is not available.

## Realign

The Realign controls let you choose which items shift (occur later) when time is inserted, as follows:

- If your Main Time Scale is set to Bars:Beats, you can choose to realign meter events *only*, or choose to realign a combination of Meter and Tempo rulers, all tick-based markers and tracks, and your choice of sample-based tracks.

- If your Main Time Scale is set to an absolute timebase (such as Min:Secs), you can choose to independently realign conductor events, tick-based markers and tracks, and your choice of sample-based tracks.

**Meter Ruler Only** If your Main Time Scale is Bars:Beats, you have the option to insert time into the Meter ruler only. Meter events after the start point of the selection are shifted past end point by the length of time selection.

If your Main Time Scale is sample-based, Realign Meter Ruler Only is not available.

**Meter and Tempo Rulers** Lets you insert time into the Meter and Tempo rulers. Meter and Tempo events after the start point of the selection are shifted past the end point by the length of time inserted.

**Tick-Based Markers and Tracks** Lets you shift Bar|Beat-based markers, and insert time into tick-based tracks. Marker events and tick-based tracks after the start point of the selection are shifted past the end point by the length of time inserted.

If the Timeline selection includes any audio regions on tick-based tracks, the audio regions are separated at the Start point, and the new region containing the previous selection is shifted to the end point.

**Sample-Based Markers and Tracks** Lets you shift absolute time-based markers, and insert time into sample-based tracks. Marker events and sample-based tracks after the start point of the selection are shifted past the end point by the length of time inserted.

If the selection includes any audio regions on sample-based tracks, the selected portions of the audio regions are separated at the Start point, and the new region containing the previous selection is shifted to the end point.

## Insert Time Example

**To insert four empty measures of 4/4 time into a session:**

**1** Set the Main Time Scale to Bars:Beats.

**2** Choose Event > Time Operations > Insert Time.

**3** Enter the measure where you want to insert the measures in the Start field.

**4** Enter four measures in the Length field.

**5** Select the Realign option to Meter and Tempo Rulers, All Tick-Based Markers & Tracks, and All Sample-Based Markers and Tracks.

**6** Click Apply.

## Cut Time

Cut Time lets you cut a specified amount of time (both Timebase and track data) from Conductor rulers, MIDI tracks, and audio tracks.
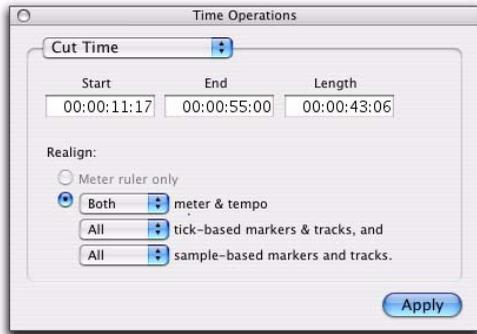


*Cut Time window*

Options for the Cut Time command include:

**Start, End, and Length** Sets the start and end points for the selection, and the selection length.

### Realign

The Realign controls let you choose which items shift when time is cut, as follows:

- If your Main Time Scale is set to Bars:Beats, you can choose to realign meter events *only*, or choose to realign a combination of Meter and Tempo rulers together, all tick-based markers and tracks, and your choice of sample-based tracks.

- If your Main Time Scale is set to an absolute timebase (such as Min:Secs), you can choose to independently realign conductor events, tick-based markers and tracks, and your choice of sample-based tracks.

**Meter Ruler Only** If your Main Time Scale is Bars:Beats, you have the option to remove time from the Meter ruler only. Meter events within the selection are removed, and meter events that occur after the end point of the selection are shifted to the selection start point.

If your Main Time Scale is sample-based, Realign Meter Ruler Only is not available.

**Meter and Tempo Rulers** Lets you cut time from the Meter and Tempo rulers. Meter and tempo events within the selection are removed, and the meter and tempo events that occur after the end point of the selection are shifted to the selection start point.

**Tick-Based Markers and Tracks** Lets you shift Bar|Beat-based markers, and delete time from tick-based tracks. Marker events and tick-based tracks within the selection are removed, and the marker events and tick-based tracks that occur after the end point of the selection are shifted forward.

If the time selection includes any tick-based audio regions, the selected area of the audio region is deleted, and the region following the selection is shifted forward.

**Sample-Based Markers and Tracks** Lets you shift absolute time-based markers, and cut time from sample-based tracks. Marker events and sample-based tracks within the selection are removed, and the marker events and sample-based tracks that occur after the end point of the selection are shifted forward.

If the time selection includes any sample-based audio regions, the selected area of the audio region is deleted, and the region following the selection is shifted forward.

### Cut Time Example

**To cut thirty seconds of time from a session:**

**1** Set the Main Time Scale to Minutes:Seconds.

**2** Choose Event > Time Operations > Cut Time.

**3** With the Selector tool, click at the beginning of the area that you want to cut.

**4** Enter thirty seconds (0:30.000) in the Length field.

**5** Select the options to Realign both Meter and Tempo rulers, all tick-based tracks, and all sample-based markers and tracks.

**6** Click Apply.

## Move Song Start

Move Song Start lets you redefine the location of the Song Start Marker.



*Move Song Start window*

Options for the Move Song Start command include:

**Timebase** Lets you precisely redefine the position of the Song Start Marker measured by any supported timebase.

**Move Start To** Sets the location for the Song Start Marker in the chosen timebase.

**Renumber Song Start To** When enabled, this lets you set the Song Start Marker to any bar number.

### Move

The Move controls let you choose which items shift when the Song Start is moved, as follows:

**Song Start Only** Moves the Song Start Marker only.

**Meter and Tempo Rulers, Tick-Based Markers and Tracks, and Sample-Based Markers and Tracks** Moves the Song Start Marker, Meter, and Tempo rulers, tick-based tracks, and your choice of sample-based tracks.

### Move Song Start Example

**To move the Song Start Marker to 15 seconds on the Timeline:**

**1** Choose Event > Time Operations > Move Song Start.

**2** Select Minutes:Seconds from the Timebase pop-up menu.

**3** In the Move Song Start To field, enter "0:15:000" to move the song start forward by 15 seconds.

**4** If you want to renumber the bars so that the Song Start Marker sits at a different bar, select the Renumber Song Start option, and enter the bar number in the Renumber 1st Bar to field.

**5** Select whether you want to move all sample-based markers and tracks or none of them.

**6** Click Apply.

# Renumbering Bars

You can use the Renumber Bars command to re-number all bars in the session, effectively changing the bar locations for all regions, meter and tempo events while leaving their position intact. In doing so, however, the SMPTE and sample locations of the session data are not changed.

### To renumber bars:

**1** Choose Event > Renumber Bars.

**2** Specify the bar you want to renumber, along with the new bar number, then click Renumber.



*Renumber Bars dialog*

# Key Signatures

The Key Signature ruler lets you add key signa-tures to Pro Tools sessions. Key signatures can be imported and exported with MIDI data. This is especially useful when exporting MIDI se-quences for use in notation programs like Sibel-ius. The default key signature is C major.

*For information on exporting MIDI to Sibe-lius, see "Send to Sibelius" on page 281.*

# Key Signature Ruler

The Key Signature ruler lets you add, edit, and delete key signatures. You can use key signatures to indicate key and key changes in your Pro Tools session. Key signatures can also be used for certain diatonic functions, such as transposing in key or constraining pitches to the specified key.
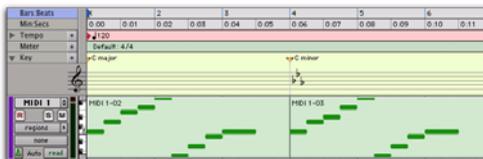


*Key Signature ruler*

### To view the Key Signature ruler, do one of the following:

■ Select View > Rulers > Key Signature.

– or –

■ From the View selector in the Edit window, se-lect Key Signatures.

You can also show or hide the Key Signature Staff for the Key Signatures ruler.

### To view the staff for the Key Signature ruler:

**1** Show the Key Signature ruler.

**2** Do one of the following:

• Select View > Rulers > Key Signature Staff.

– or –

• Click the Show/Hide triangle on the Key Signature ruler.

## Changing Key Signatures

You can add, edit, or delete key signatures.

### To add a key signature:

**1** Place the cursor in the Timeline where you want to add a key signature.

**2** Do one of the following:
- Choose Event > Add Key Change.

– or –

- Click the Plus (+) button in the Key Signature ruler.

**3** In the Key Change dialog, select the mode (major or minor), the key, its location and range, and how you want it to affect pitched tracks.

**4** Click OK.

### To edit a key signature:

**1** Double-click the Key Signature marker in the Key Signature ruler.

**2** In the Key Change dialog, make the desired changes.

**3** Click OK.

### To delete a key signature, do one of the following:

■ Alt-click (Windows) or Option-click (Mac) the Key Signature marker in the Key Signature ruler.

– or –

■ Make a selection in the Key Signature ruler that includes the key signature you want to delete and choose Edit > Clear or press Delete.

## Key Change Dialog

The Key Change dialog lets you specify the mode (major or minor), the key (from seven flats to seven sharps), the range affected (for example, from Bar 1 to the next key change), and whether or not MIDI notes on pitched tracks are transposed or constrained to key (see "Pitched Tracks" on page 634). The Key Change dialog opens whenever you add or edit a Key Signature marker.
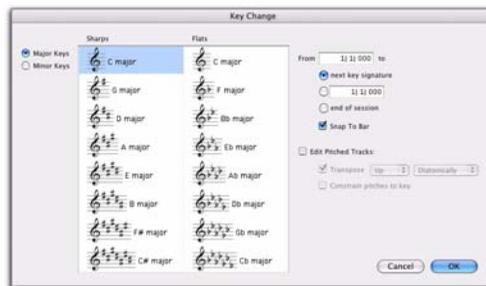


*Key Change dialog*

**Major Keys** Displays the major keys from seven flats to seven sharps.

**Minor Keys** Displays the minor keys from seven flats to seven sharps. Pro Tools only applies the natural minor mode.

**Sharps** Lets you select any of the sharp keys to seven sharps and C major (or A minor).

**Flats** Lets you select any of the flat keys to seven flats and C major (or A minor).

**From** Lets you specify where to place the Key Signature marker in Bars|Beats.

**To** Lets you specify to where you want the key change to take effect: to the next Key Signature marker, to a selection, or to the end of the session.

**Snap to Bar** Snaps the Key Signature marker to the barline.

**Edit Pitched Tracks** Enabling the Edit Pitched Tracks option lets you transpose existing MIDI notes on Pitched tracks up or down, either diatonically or chromatically based on the key change, or constrain pitches to the new key. For more information on Pitched tracks, see "Pitched Tracks" on page 634.

**Transpose** When the Edit Pitched Tracks option is enabled, lets you transpose existing MIDI notes on Pitched tracks up or down, diatonically or chromatically. For example, if the session is in C major and you are adding a key change to D minor, select Edit Pitched Tracks, Transpose, Up, and Diatonically to transpose notes on Pitched tracks up a whole step and then lower the third, sixth, and seventh scale degrees by a half step. The sequence C, D, E is transposed to D, E, F (natural, rather than sharp as happens when transposing chromatically).

When transposing diatonically, chromatic notes are maintained when changing key. For example, when changing key from C major to E major, the note B-flat is transposed to D-natural. This lets you maintain "blue-notes" when changing keys and applying diatonic transposition.

**Constrain Pitches To Key** When the Edit Pitched Tracks option is enabled, lets you constrain pitches to the notes of the new key. This means that any diatonic pitches of the old key on Pitched tracks that are not in the new key are individually transposed to the nearest diatonic pitch of the new key. For example, when changing from C major to D major, the sequence C, D, E, F, G changes to C-sharp, D, E, F-sharp, G.

Constraining pitches to key also constrains any chromatic pitches to the new diatonic scale. For example, when changing from C major to D major, the sequence C, D, D-sharp, E changes to C-sharp, D, D, E.

## Pitched Tracks

Pitched tracks are MIDI or Instrument tracks that can be affected by transpositions due to key changes (including constrain to key). MIDI and Instrument tracks are "pitched" by default. However, if you have MIDI or Instrument tracks assigned to drum machines or samplers, you do not want those tracks to be affected by key changes because of key mappings. You can deselect the Pitched option for specific MIDI and Instrument tracks so that they will not be affected by key changes.

**To select or deselect Pitched tracks:**

■ Click the track's Playlist selector and select or deselect the Pitched option.



*Pitched enabled in Playlist selector*

# Importing Key Signatures

When importing MIDI (or session data with MIDI), you can select whether or not to import any key signatures stored in MIDI files.

## Import MIDI

The Import MIDI dialog includes the Import Key Signature from MIDI File option. When selected, key signatures (if present) are imported into Pro Tools with any other MIDI data.



*Import MIDI dialog*

## Import Session Data

The Import Session Data dialog includes the Import Key Signature Map option. When selected, key signatures (if present) are imported into Pro Tools with the imported session data.
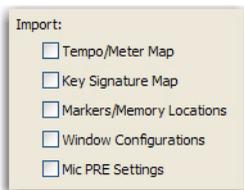


*Import Session Data*

# Chapter 31: Memory Locations

## Memory Locations and Markers

Memory locations provide a powerful way to navigate your session while editing and arranging. These can be markers to specific points in the Timeline, Edit selections, or even a set of track display settings that can be recalled.

Each session can save up to 999 Memory Locations that can be used to recall:

- Markers to important locations in the session
- Edit selections across one or more tracks
- Record and play ranges, along with pre- and post-roll times
- Track settings that include Show/Hide status, Track Heights, and zoom values
- Edit and Mix Groups enables
- Window Configurations

Memory Locations are viewed and sorted in the Memory Locations window, where they can be recalled by clicking the Memory Location.

## Properties of Memory Locations

When creating a new Memory Location (see "Creating Memory Locations" on page 639) you are prompted to define its *Time Properties* and *General Properties*.



*Memory Locations window*

### Time Properties

Under Time Properties, a Memory Location can be set to Marker, Selection, or None. This determines the type of Memory Location that is created. Each of these three Memory Location types can also save any combination of General Properties.

**Marker** Recalls a Timeline location whose reference can be either Bar|Beat (tick-based) or Absolute (sample-based). When recalling a *Marker Memory Location*, the playback cursor moves to the Marker's location and the start and end times in the Transport window are also updated. If the Timeline and Edit Selections are linked, the edit cursor also moves to the Marker location.

Markers appear in the Markers ruler with a thin yellow line extending down through all tracks in the Edit window (to assist in arranging and aligning track material). You can click a Marker in the Markers ruler to recall its location along with its stored General Properties.



*Markers in the Markers ruler*

**Selection** Recalls an Edit selection or edit cursor location whose reference can be either Bar|Beat (tick-based) or Absolute (sample-based). A *Selection Memory Location* lets you store Edit selections, for one or more tracks, that you return to often within a session. If the Timeline and Edit Selections are linked, a Selection Memory Location can recall record and play ranges.

💡 *Only contiguous selections can be saved with Memory Locations. Noncontiguous selections, made with the Object Grabber tool, will be recalled as if the selections were made with the Time Grabber tool.*

**None** Recalls no Time Properties and is therefore referred to as a *General Properties Memory Location*.

**Bar|Beat and Absolute Reference**

The Reference pop-up determines whether the Marker or Selection Memory Location is Bar|Beat or Absolute. When set to Bar|Beat, the Memory Location is tick-based and its bar and beat location remains constant if the tempo is changed—though its relation to the absolute sample location changes accordingly.

When set to Absolute, the Memory Location is sample-based and its bar and beat location shifts if the tempo is changed—though its sample location remains constant, along with its relation to audio material.



*Bar|Beat Marker (left) and Absolute Marker (right)*

In the Markers ruler, Markers that are Bar|Beat appear as yellow chevrons, and Markers that are Absolute appear as yellow diamonds.

## General Properties

All three types of Memory Locations (Marker, Selection, and None) can store and recall any combination of the following General Properties:

**Number** Change the number to overwrite an existing Memory Location, or to reorder Memory Locations in the Memory Locations window.

**Zoom Settings** Recalls the horizontal, audio, and MIDI zoom values for audio, MIDI, and Instrument tracks.

**Pre- and Post-Roll Times** Recalls pre- and post-roll times (but not whether they are enabled). This property can be stored with a Selection Memory Location to recall record and play ranges along with pre- and post-roll.

**Track Show/Hide** Recalls which tracks are hidden. Use this property to display groups of tracks for editing and mixing.

**Track Heights** Recalls all Track Heights. Use this option along with Zoom Settings to recall edit environments that are suited for particular tasks, such as editing down to the sample level or trimming MIDI notes.

**Group Enables** Recalls which Edit and Mix Groups are enabled. This option is helpful in recalling groups for particular edit and mixing operations, such as muting all drum tracks or fading a stereo pair.

**Window Configuration** Recalls a specific Window Configuration. This option is helpful in recalling specific Window Configurations to facilitate editing or mixing tasks. For more information on Window Configurations, see "Window Configurations" on page 123.

### Comments

All three types of Memory Locations (Marker, Selection, and None) can store and recall comments. You can enter a maximum of 255 characters to describe the Memory Location. You can also edit comments previously entered.

📖 *See "Creating Memory Locations" on page 639 and "Editing Memory Locations" on page 642 for more information.*

## Creating Memory Locations

Memory Locations can be created in different ways, based on the type of Memory Location.

When creating Memory Locations, the next available number is assigned to it (1–999). This number is used in recalling the Memory Location from the numeric keypad.

**To create a Marker Memory Location:**

**1** Configure any session settings you will save with the Marker Memory Location, such as zoom settings, pre- and post-roll times, Show/Hide status for tracks, Track Heights, and Edit and Mix Group enables.

**2** Make sure to select Options > Link Timeline and Edit Selection.

**3** If the Markers ruler is not displayed, select View > Rulers > Markers.

**4** Do one of the following:
- Click with the Selector tool in any track or ruler at the location where you want to place the Marker. To place a Marker at the beginning of a region, select the region with the Time Grabber tool. Click the Add Marker/Memory Location button (or press Enter on the numeric keypad).



*Marker/Memory Location button*

– or –
- While pressing the Start key (Windows) or Control (Mac), move the cursor into the Markers ruler (where the cursor changes to the Grabber with a "+") and click at the location where you want to place the Marker.



*Manually inserting a Marker*

**5** In the New Memory Location dialog, select the Marker option and specify the Reference as either Bar|Beat or Absolute.

**6** Enter a name for the new Marker and select any General Properties you want to save with the Marker.

**7** Click OK. The Marker is created and appears in the Markers ruler, and in the Memory Locations window.

### To create a Selection Memory Location:

**1** Configure any session settings you will save with the Selection Memory Location, such as zoom settings, pre- and post-roll times, Show/Hide status for tracks, Track Heights, and Edit and Mix Group enables.

**2** Select a range of material in one or more tracks.

**3** Do one of the following:

- Press Enter on the numeric keypad.

– or –

- From the pop-up menu in the Memory Locations window (click the Name button), choose Add Memory Location.

**4** In the New Memory Location dialog, select the Selection option and specify the Reference as either Bar|Beat or Absolute.

**5** Enter a name for the new Memory Location and select any General Properties you want to save with it.

**6** Click OK. The Selection Memory Location is created and appears in the Memory Locations window.

### To create a General Properties Memory Location:

**1** Configure any session settings you will save with the Selection Memory Location, such as zoom settings, pre- and post-roll times, Show/Hide status for tracks, Track Heights, and Edit and Mix Group enables.

**2** Press Enter on the numeric keypad.

**3** In the Memory Location dialog, select the None option.

**4** Enter a name for the new Memory Location and select any General Properties you want to save with it.

**5** Click OK. The General Properties Memory Location is created and appears in the Memory Locations window.

� *In the New Memory Location dialog, you can Alt-click (Windows) or Option-click (Mac) any General Property to enable or disable all properties. You can also Control-click (Windows) or Command-click (Mac) any property to toggle its state and the state of all other General Properties.*

## Creating Memory Locations On-the-Fly

When the Auto-Name Memory Locations When Playing option is enabled in the Editing Preferences page, Memory Locations can be created during playback, without raising the New Memory Location dialog. This option can also be selected from the pop-up menu in the Memory Locations window.

This capability is useful if you want to mark certain locations while listening during a record pass, or if you want to mark frame locations while viewing a video scene.

### To create a Marker during playback:

**1** From the pop-up menu in the Memory Locations window, select Default To Marker. This ensures that new Memory Locations default to being Markers.

**2** From the pop-up menu in the Memory Locations window, select Auto-Name Memory Locations.

**3** For inserted Markers to have a Bar|Beat reference, make sure to set the Main Time Scale to Bars:Beats.

**4** Click Play in the Transport window.

**5** When the location is reached, press Enter on the numeric keypad. A Marker is automatically created and appears in the Markers ruler.

Auto-created Markers are named with increasing numbers, as in "Marker 1," "Marker 2," and "Marker 3."

When the option for Default To Marker is deselected, new Memory Locations default to whatever type was last created. Therefore, if a Selection Memory Location was created last, it will be the type that is created on-the-fly. In this case, the name for the created Memory Location is based on the start of the Edit selection using the time format for the Main Time Scale (such as "2|2|305" or "0:02.658").

⚠ *When Use Separate Play and Stop Keys option is enabled in the Operation Preferences page, it overrides using the Enter key to add Memory Location markers. When this option is enabled, press Period (.) and then Enter on the numeric keypad to add a Memory Location marker. The new marker is created when you press Enter.*

## Recalling Memory Locations

Memory Locations can be recalled from the Memory Locations window and from the numeric keypad. Additionally, Memory Location Markers can be recalled by clicking them in the Markers ruler.

**To recall a Memory Location:**

**1** If the Memory Locations window is not already open, choose Window > Memory Locations to display it.

**2** If recalling a Selection Memory Location that will define a record or play range, make sure to select Options > Link Timeline and Edit Selection.

**3** Do one of the following:

- In the Memory Locations window, click the Memory Location to recall it.
- With the Numeric Keypad mode set to Classic, press the Memory Location number followed by Period (.).
- With the Numeric Keypad mode set to Transport or Shuttle, press Period (.), the Memory Location number, and Period (.) again.

💡 *When recalling a Memory Location from the numeric keypad, the Memory Locations window does not need to be open.*

**To recall a Marker from the Markers ruler:**

**1** If the Markers ruler is not displayed, select View > Rulers > Markers.

**2** Click the Marker. The playback cursor locates to the Marker and any General Properties stored with the Marker are recalled.

💡 *Even if the Markers ruler is not displayed, Markers can be recalled from the Memory Locations window, or from the numeric keypad.*

# Editing Memory Locations

Memory Locations can be renamed, edited, deleted, and copied and pasted.

**To rename a Memory Location:**

**1** Do one of the following:

- In the Memory Locations window, double-click the Memory Location to open the Edit Memory Location dialog.
- In the Marker ruler, double-click the Marker to open the Edit Memory Location dialog and relocate the insertion point at the marker location.
- In the Marker ruler, Start-click (Windows) or Control-click (Mac) the Marker to open the Edit Memory Location dialog without locating the insertion point at the marker location.

**2** Enter the new name for the Memory Location, and click OK.

**To redefine the General Properties stored with a Memory Location:**

**1** Make changes to the session's zoom settings, pre- and post-roll times, Show/Hide status of tracks, Track Heights, or Group Enables.

**2** Do one of the following:

- In the Memory Locations window, double-click the Memory Location to open the Edit Memory Location dialog.
- In the Marker ruler, double-click the Marker to open the Edit Memory Location dialog and relocate the insertion point at the marker location.
- In the Marker ruler, Start-click (Windows) or Control-click (Mac) the Marker to open the Edit Memory Location dialog without locating the insertion point at the marker location.

**3** In the Memory Location dialog, select the General Properties you want to save with the Memory Location.

**4** Enter a new name for the Memory Location, if desired, and click OK.

**To change a Memory Location from one type to another:**

**1** Do one of the following:

- In the Memory Locations window, double-click the Memory Location to open the Edit Memory Location dialog.
- In the Marker ruler, double-click the Marker to open the Edit Memory Location dialog and relocate the insertion point at the marker location.
- In the Marker ruler, Start-click (Windows) or Control-click (Mac) the Marker to open the Edit Memory Location dialog without locating the insertion point at the marker location.

**2** In the Memory Location dialog, select either Marker, Selection, or None as the Memory Location type.

**3** Enter a new name for the Memory Location, if desired, and click OK.

**To change the Selection stored with a Memory Location:**

**1** If the Memory Locations window is not already open, choose Window > Memory Locations to display it.

**2** Select a range of material in one or more tracks.

**3** In the Memory Locations window, Right-click (Windows) or Control-click (Mac) the Memory Location that you want to redefine.

**4** Enter a new name for the Memory Location, if desired, and click OK.

**To move a Marker by dragging:**

▪ In the Markers ruler, click and drag the Marker left or right.
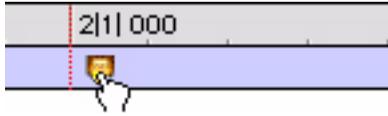


*Dragging a Marker*

If the Edit mode is set to Grid, the dragged event snaps to the current Grid value. If using Spot mode, the Spot dialog opens.

**To align a Marker to a different location:**

**1** Make sure to select Options > Link Timeline and Edit Selection.

**2** Do one of the following:
- In any of the Timebase rulers, click with the Selector tool at the new location.

– or –
- Click in the playlist for any track. To align the Marker to the start of a region, select the region with the Time Grabber tool.

**3** In the Memory Locations window or the Markers ruler, Start-click (Windows) or Control-click (Mac) the Marker Memory Location that you want to redefine.

**4** Enter a new name for the Marker, if desired, and click OK.

## Deleting Memory Locations

**To delete a Memory Location, do one of the following:**

▪ In the Memory Locations window, select the Memory Location and choose Delete Memory Location from the pop-up menu.

– or –

▪ In the Memory Locations window, Alt-click (Windows) or Option-click (Mac) the Memory Location.

**To delete all Memory Locations, do one of the following:**

▪ In the Memory Locations Window, choose Delete All from the pop-up menu.

– or –

▪ Alt-Shift-click (Windows) or Option-Shift-click (Mac) any Memory Location in the Memory Locations window.

**To delete a Marker from the Markers ruler:**

▪ While pressing Alt (Windows) or Option (Mac), move the cursor over the Marker (where the cursor changes to the Grabber with a "–") and click to remove it.

### Copying Marker Memory Locations

**To copy and paste a range of Markers:**

**1** If you want to constrain the selection to the current Grid value, set the Edit mode to Grid.

**2** Drag in the Tempo ruler to select the range of measures that includes the Markers.

If the beginning of the selection includes a Marker, press Control (Windows) or Command (Mac) so the Selector tool appears.

💡 *Press Alt (Windows) or Option (Mac) while dragging to select across all Conductor tracks.*

**3** Choose Edit > Copy.

**4** Click in the Markers ruler at the point where you want to paste the tempo events.

**5** Choose Edit > Paste. The contents of the Clipboard are pasted from the insertion point, replacing any existing Markers.

**To extend an Edit selection in a track to the Markers ruler:**

**1** Using the Selector or Time Grabber tool, select a track range.

**2** Shift-click in the Markers ruler.

Shift-click again in the Tempo ruler to remove it from the selection.

**To select all Markers in the Markers ruler:**

▪ Double-click with the Selector tool in the Tempo ruler.

## Memory Locations Window

In the Memory Locations windows, Memory Locations are listed with assigned number, name, and View Filter icons. Locations can be recalled or edited from this window.
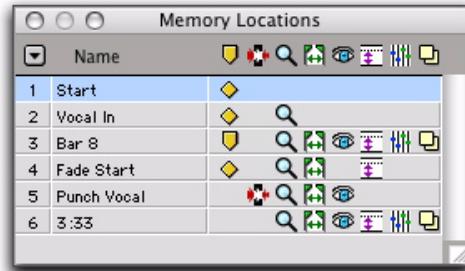


*Memory Locations window with View Filter icons*

**To recall a Memory Location from the Memory Location window:**

▪ Click the Memory Location.

⌨ *With the Numeric Keypad mode set to Classic, press the Memory Location number followed by Period (.). With the Numeric Keypad mode set to Transport or Shuttle, press Period (.), the Memory Location number, and Period (.) again.*

## Memory Locations Commands and Options

You can select viewing and sorting options, along with commands for creating and removing Memory Locations, from the pop-up menu in the Memory Locations window.
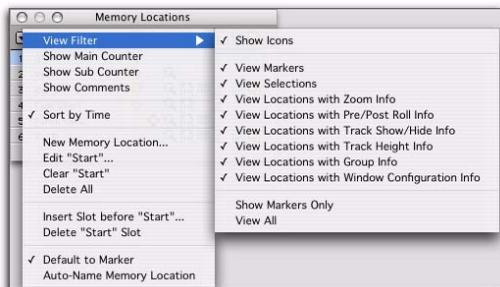


*Memory Locations window pop-up menu*

**View Filter Submenu** Provides commands to show or hide specific memory location properties:

- Show Icons
- View Markers
- View Selections
- View Locations with Zoom Info
- View Locations with Pre/Post Roll Info
- View Locations with Track Show/Hide Info
- View Locations with Track Height Info
- View Locations with Group Info
- View Locations with Window Configuration Info
- Show Markers Only
- All

**Show Main Counter** When selected, a column appears in the Memory Locations window that displays the locations based on the Main Timescale for Markers, and the start times for Selection Memory Locations. General Property Memory Locations display nothing in this column.
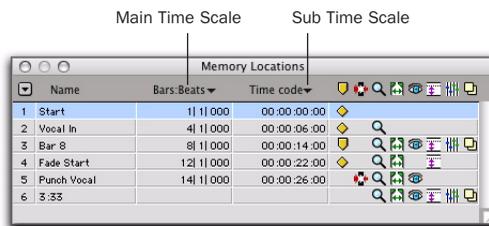


*Main/Sub Counters in the Memory Locations window*

You can click at the top of the Main Time Scale column for a pop-up menu that lets you change the Main Time Scale.

**Show Sub Counter** When selected, a column appears in the Memory Locations window that displays the locations based on the Sub Timescale for Markers, and the start times for Selection Memory Locations. General Property Memory Locations display nothing in this column.

You can click at the top of the Sub Timescale column for a pop-up menu that lets you change the Sub Timescale.

**Show Comments** When selected, a column appears in the Memory Locations window that displays the comments for each of the Markers.
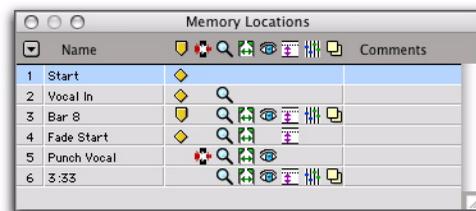


*Comments in the Memory Locations window*

**Sort by Time** When selected, Markers are sorted by their order in the Timeline, followed by Selection and General Properties Memory Locations, which are listed in the order in which they were created.

When Sort by Time is deselected, all Memory Locations are listed in the order of their assigned numbers.

**New Memory Location** Choose this command to create a new Memory Location.

**Edit <Name>** Opens the Edit Memory Location dialog for the selected Memory Location. You can also double-click a Memory Location in the Memory Locations window to edit it.

**Clear <Name>** Clears the selected Memory Location, but does not remove its slot. Subsequent Memory Locations are not renumbered.

*Alt-click (Windows) or Option-click (Mac) a Memory Location in the Memory Locations window to clear it.*

**Delete All** Deletes all Memory Locations. The next Memory Location you add starts at slot number 1.

**Insert Slot Before <Name>** Adds a new, empty Memory Location slot above the selected Memory Location, and renumbers all subsequent Memory Locations.

**Delete <Name> Slot** Deletes the selected Memory Location, and renumbers all subsequent Memory Locations.

**Default To Marker** When selected, new Memory Locations default to Markers, though in the New Memory Location dialog you can still define the new Memory Location as one of the other types.

**Auto-Name Memory Location** When selected, Memory Locations are created automatically without encountering the New Memory Location dialog. If the Default To Marker option is selected, a Marker Memory Location is auto-created. Otherwise, the Memory Location type is determined by whatever type (Marker, Selection, or None) was created last.

### View Filter Icons

When Show Icons is selected in the Memory Locations pop-up menu, the Memory Locations window provides an icon-based "View Filter" that lets you show or hide Memory Locations based on the properties they contain. To show or hide Memory Locations containing a specific property, click the appropriate icon.
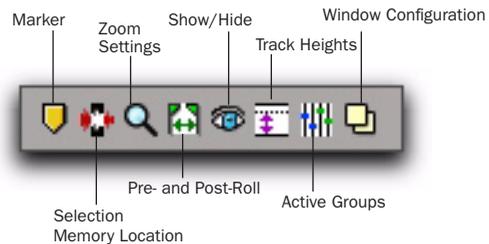


*Memory Locations View Filter icons*

If an icon is disabled (grayed out), all Memory Locations associated with that property are hidden. However, if a Memory Location contains other properties for an icon that is enabled, it is still displayed. When a view icon is enabled, it appears in color. When it is disabled, it appears gray.

In addition, the View Filter provides a handy reference for which properties are stored in each Memory Location (indicated by a row of icons for each Memory Location).

# Chapter 32: Arranging Regions

## Placing Regions in Tracks

Once you have created a region, it appears in the Region List. From the Region List you can drag it to a track to add to an existing arrangement of regions, or you can create a new track and start adding regions from scratch. The exact placement of regions in a track depends on whether the Edit mode is set to Shuffle, Slip, Spot, or Grid (see "Edit Modes" on page 421).

📖 *For information on locating regions in the Region List by typing the first few letters of their name, see "Keyboard Selection of Regions" on page 194.*

**To place a region in a track:**

**1** In the Region List, select the region or regions you want to place.

**2** Drag the selected regions from the Region List to a location in a track.

If dragging multiple regions, the regions are placed on adjacent tracks left to right or on multiple tracks from top to bottom depending on the selected Region List Timeline Drop Order (see "Timeline Drop Order" on page 647). If dragging a stereo region, it must be placed in a stereo track or in two mono tracks.

Regions are placed according to the current Edit mode:

- In Shuffle mode, existing track regions are slid as necessary to make room for the new region.

- In Spot mode, you are prompted by the Spot dialog to enter a location for the dragged region (see "Spotting Regions" on page 654).

- In Grid mode, the dragged region snaps to the nearest Grid boundary.

💡 *You can temporarily disable Grid mode while dragging a region by holding down the Control key (Windows) or Command key (Mac) after clicking with the mouse.*

- In Slip mode, the regions are placed exactly where they are dropped in the destination track.

### Timeline Drop Order

The Timeline Drop Order option in the Region List pop-up menu sets whether tracks dragged from the Region List are dropped sequentially in a single track or spread across multiple tracks, as follows:

**Top to Bottom** When enabled, regions spread across *multiple* destination (drop) tracks or on new tracks (when dragging to the area below the last track or to the Track List).

**Left to Right** When enabled, regions are placed sequentially in a *single* destination (drop) track or on a new track (when dragging to the area below the last track or on to the Track List).

**To set the Region List Drop Order:**

■ Choose Region List > Timeline Drop Order, and then Top to Bottom or Left to Right.

**To drag and drop multiple items from the Region List to multiple new tracks:**

**1** From the Region List pop-up menu, choose Timeline Drop Order > Top to Bottom.

**2** Search and sort the Region List if desired to configure the order in which items will be placed.

**3** Select multiple items in the Region List and do one of the following:

- To create new tracks and place items to a specific location, drop items at the desired location along the area below the last track.

– or –

- To create new tracks and have items placed at the start of the session, drop the items on the Track List.



*New tracks after dropping multiple Region List items, with Timeline Drop Order set to Top to Bottom mode*

**To place multiple items across multiple existing tracks:**

**1** From the Region List pop-up menu, choose Timeline Drop Order > Top to Bottom.

**2** Select multiple items in the Region List and drop them in the playlist of a compatible track at the desired location. When the cursor is over a compatible destination, the region outlines appear at the location.

**To drag and drop multiple items from the Region List to a single track:**

**1** From the Region List pop-up menu, choose Timeline Drop Order > Left to Right.

**2** Search and sort the Region List if desired to configure the order in which items will be placed.

**3** Select multiple items in the Region List and do one of the following:

- To create a new track and spot the first item to a specific location, drop at the desired location in the area below the last track shown in the Edit window.
- To create a new track and have the first item placed at the start of the session, drop the items on the Track List.
- To place items in an existing track, drop the items in the Edit playlist for the desired track.



*A new track created by dropping multiple Region List items with Timeline Drop Order set to Left to Right mode*

If the selected items include mixed types of regions (such as audio and MIDI, or region groups and MIDI) the appropriate track types will be created and each corresponding item will be placed in them. Similarly, if the selected items include multiple formats (mono, stereo, or other) new tracks of each format will be created and those regions placed in them.

## Placing Regions at the Edit Insertion Point

You can drag a region from the same track, from another track, or from the Region List, and align its start, end, or sync point to the Edit insertion point. This technique is useful in post production since it lets you set an Edit selection point during playback or while stopped and then quickly place sound effects at the edit insertion point.

*With Pro Tools HD, when the Scrolling option is set to Center Playhead, regions snap to the playhead, instead of the Edit insertion point.*

**To place the start of a region at the Edit insertion point:**

**1** With the Selector tool, click in the track at the time location where you want to place the start of the region.

**2** Do one of the following:
- While pressing the Start key (Windows) or Control (Mac), drag the region from the Region List, or from another track, to the destination track.

– or –
- If the region is already in the track, Start-click (Windows) or Control-click (Mac) the region with the Time Grabber tool.

**To place the end of a region at the Edit insertion point:**

**1** With the Selector tool, click in the track at the time location where you want to place the end of the region.

**2** Do one of the following:
- While pressing Control+Start (Windows) or Command+Control (Mac), drag the region from the Region List, or from another track, to the destination track.

– or –
- If the region is already in the track, Control-Start-click (Windows) or Command-Control-click (Mac) the region with the Time Grabber tool.

**To place the sync point of a region at the Edit insertion point:**

**1** With the Selector tool, click in the track at the time location where you want to place the sync point of the region.

**2** Do one of the following:
- While pressing Start+Shift (Windows) or Control+Shift (Mac), drag the region from the Region List, or from another track, to the destination track.

– or –
- If the region is already in the track, Shift-Start-click (Windows) or Shift-Control-click (Mac) the region with the Time Grabber tool.

# Aligning Region Start Points

The start, end, and sync point of one region can be aligned to the start of a different region on another track.

*With Pro Tools HD, when the Scrolling option is set to Center Playhead, region start, end, and sync points align to the playhead.*

**To align the start points of regions on different tracks:**

**1** With the Time Grabber tool, select the region you want to align to by clicking it.

**2** If the Scrolling option is set to Center Playhead (Pro Tools HD only), move the playhead to the start of the selected region. For details, see "Moving the Playhead" on page 313.

**3** Do one of the following:
- Start-drag (Windows) or Control-drag (Mac) a region from the Region List to another track.

– or –
- If the region is already in the track, Start-click (Windows) or Control-click (Mac) the region you want to move with the Time Grabber tool.

The start point of the second region is aligned to the start of the first region.

**To align the end point of a region to the start of another region (on a different track):**

**1** With the Time Grabber tool, select the region you want to align to by clicking it.

**2** If the Scrolling option is set to Center Playhead (Pro Tools HD only), move the playhead to the start of the selected region (see "Moving the Playhead" on page 313).

**3** Do one of the following:
- Control-Start-drag (Windows) or Command-Control-drag (Mac) a region from the Region List to another track.

– or –
- If the region is already in the track, Control-Start-click (Windows) or Command-Control-click (Mac) the region you want to move with the Time Grabber tool.

The end point of the second region is aligned to the start of the first region.

**To align the sync point of a region to the start of another region (on a different track):**

**1** With the Time Grabber tool, select the region you want to align.

**2** If the Scrolling option is set to Center Playhead (Pro Tools HD only), move the playhead to the start of the selected region (see "Moving the Playhead" on page 313).

**3** Do one of the following:
- Start-Shift-drag (Windows) or Control-Shift-drag (Mac) a region from the Region List to another track.

– or –
- If the region is already in the track, Start-Shift-click (Windows) or Control-Shift-click (Mac) the region you want to move with the Time Grabber tool.

The sync point of the second region is aligned to the start of the first region.

## Sliding Regions

A region or group of selected regions (on the same track or on multiple tracks) can be slid with the Time Grabber tool to new locations or to other tracks. This feature is useful in post production applications where the timing of audio events such as sound effects and dialog need to be spotted to music, film, or video.

Sliding regions is affected by whether the current Edit mode is set to Shuffle, Slip, Spot, or Grid (see "Edit Modes" on page 421).

☼ *You can slide a copy of a region to another location or track by pressing Alt (Windows) or Option (Mac) while dragging.*

☼ *To retain a region's time location when dragging to another track, press the Start key (Windows) or Control (Mac) while dragging.*

## Shuffling Regions

In Shuffle mode, you can move regions freely within a track or onto another track, but their movement is constrained by other regions. That is, if you place several regions in a track, their start and end points automatically snap to each other. You can then "shuffle" their order, but you cannot separate them from each other and you cannot make them overlap as in Slip mode. In Shuffle mode, adding another region to the beginning of a track moves all subsequent regions to the right by the length of the region added.

**To shuffle regions:**

**1** Set the Edit mode to Shuffle by clicking its button in the upper left of the Edit window.

**2** Drag a mono region from the Region List to an empty track. The region snaps to the beginning of the track.

**3** Drag a second region from the Region List to the same track, somewhere in the middle. The start point for the second region snaps to the end of the first region.

**4** With the Time Grabber tool, drag the second region to the beginning of the track.

Pro Tools "shuffles" the position of the two regions. The second region now occurs first, yet the two still cling together.

**5** Experiment more with Shuffle mode by dragging additional regions to the track and rearranging them.

Locked regions (see "Locking Regions" on page 664), and all regions occurring after the locked region, are not displaced when other neighboring regions are moved in Shuffle mode. If there is not enough room to place or duplicate a region in front of a locked region, the insertion area is disabled.

If you place a region while in Slip mode and switch to Shuffle mode, Pro Tools preserves the relative timing and position of the slipped region, and any space between it and other regions.

☼ *With certain workflows, it is important to exclude Shuffle mode in order to ensure that regions stay time-aligned while editing. Shuffle Lock prevents you from inadvertently entering Shuffle mode by disabling all key commands and control surface switches for Shuffle mode. For more information, see "Shuffle Lock" on page 421.*

## Shuffling Multiple Tracks and Multichannel Regions

Selections across multiple tracks or on multi-channel tracks can be shuffled. Unlike shuffling regions on a single track, any partially selected regions are cut and moved along with the dragged region. This lets you retain only the material that corresponds to the dragged region.



Shuffling this region cuts this channel
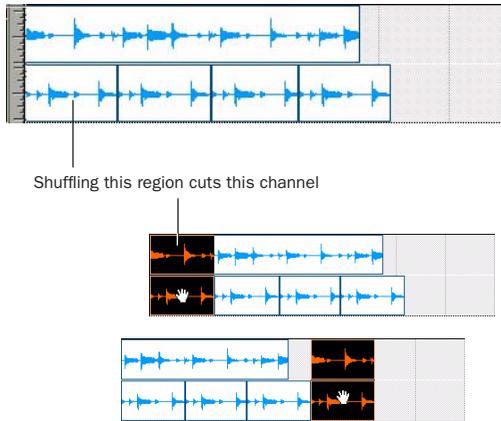


*Shuffling multichannel regions*

## Moving Regions with the Grabber Tools

Use the Grabber tools to move one or more regions, or the Edit selection, to another location. The Grabber tools cut the selection and paste it to the new location.

💡 *Hold down Alt (Windows) or Option (Mac) when clicking and dragging the selection with a Grabber tool to copy the selection rather than cut it.*

**To move one or more regions, or the Edit selection, with one of the Grabber tools:**

**1** Make a selection.

**2** With of the Grabber tools (Time, Separation, or Object), click and drag the selection to the new location.

### Time Grabber and Object Grabber

If you are moving audio data, the Time Grabber and Object Grabber tools overlay only the audio data on the destination track.
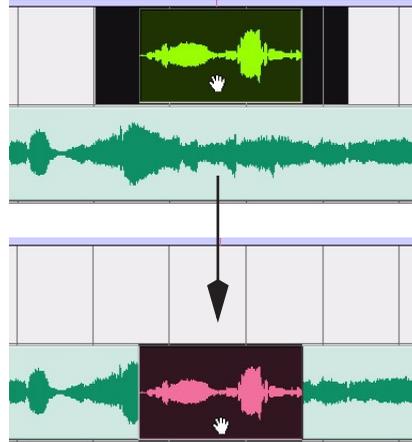


*Moving a selection with the Time Grabber*

### Separation Grabber

The Separation Grabber replaces the entire selected range on the destination track Timeline.
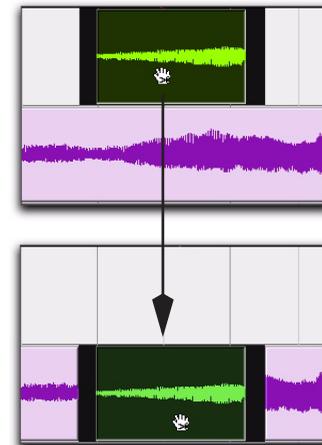


*Moving a selection with the Separation Grabber*

## Snapping to the Preceding or Next Region on a Track

A region—or an Edit selection including one or more regions on the same track or on multiple tracks—can snap to the end of the preceding region or to the beginning of the following region using the Snap to Next or Snap to Previous commands. This is useful for "butt splicing" adjacent regions on a track.

**To snap to the preceding region on a track:**

**1** Do one of the following:

- With the Time Grabber, select a region.

– or –

- With the Selector, select an area in a track that contains whole regions. The regions do not need to be adjacent.

**2** Do one of the following:

- Choose Edit > Snap To > Previous.

– or –

- Right-click the region or Edit selection and choose Snap to Previous in the pop-up menu.

The selected region snaps to the preceding region on the track so that the two regions are "butt-spliced."

**To snap to the next region on a track:**

**1** Do one of the following:

- With the Time Grabber, select a region.

– or –

- With the Selector, select an area in a track that contains whole regions. The regions do not need to be adjacent.

**2** Do one of the following:

- Choose Edit > Snap To > Next.

– or –

- Right-click the region or Edit selection and choose Snap to Next in the pop-up menu.

The selected region snaps to the following region on the track so that the two regions are "butt-spliced."
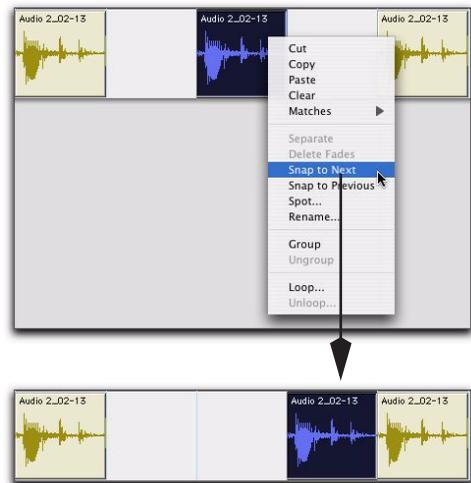


*Snapping a region to the next region in a track*

💡 *You can also use the Snap To commands with an Edit selection that includes multiple regions on one or more tracks.*

## Slipping Regions

In Slip mode, regions can be moved with the Time Grabber tool freely within a track, or onto other tracks. In this mode, it is possible to place a region so that there is space between it and other regions in a track. When the track is played back, this space is silent. It is also possible to move a region so that it overlaps or completely covers another region.

**To slip regions:**

**1** Enable Slip mode (see "Edit Modes" on page 421).

**2** Drag a region from the Region List to an empty track.

**3** Drag a second region from the Region List to the same track, somewhere in the middle. The second region is placed wherever you release it. It doesn't snap to the first region as in Shuffle mode.

**4** Drag the regions to different locations within the track to get a feel for moving them in Slip mode. Try placing the second region so that it slightly overlaps the first region. Play back the results.

## Spotting Regions

Spot mode is useful for sessions in which you want to spot regions to precise locations based on any of the Time Scales. This is useful when performing post production tasks. In Spot mode you can spot a region by specifying a SMPTE frame (Pro Tools HD and Pro Tools LE with DV Toolkit 2 only) or bar and beat location, by capturing an incoming time code address, or by using the region's time stamps.

📄 *For even quicker spotting, if you are using VITC, use the Auto-Spot Regions command to spot a region to the current SMPTE frame location with the Time Grabber tool. For more information, see "Auto-Spotting Regions" on page 903.*

**To spot a region:**

**1** Set the Edit mode to Spot by clicking its button in the upper left of the Edit window.

**2** Do one of the following:

- Drag a region from the Region List, or drag audio files or sessions from a DigiBase browser, to an existing track.

– or –

- Click a region already in a track with the Time Grabber tool.

**3** In the Spot dialog, select a time format from the Time Scale pop-up menu.

Each of the fields in the Spot dialog are displayed in the chosen Time Scale.
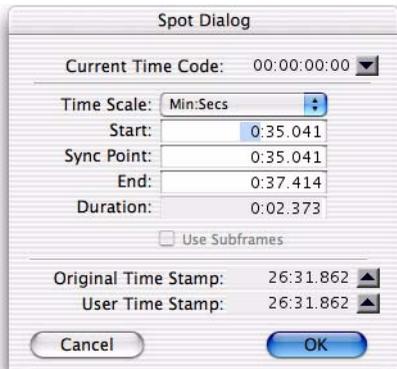
*Spot dialog*

**4** With Pro Tools HD or Pro Tools LE with DV Toolkit 2, if the Time Scale is set to Time Code, select the Use Subframes option to display subframes in the fields for improved accuracy.

**5** Do one of the following:

- Click in the field for Start, Sync Point, or End and type in a new location. Changing one of these locate points automatically updates the other locate points.

- Click one of the up arrows next to Original Time Stamp or User Time Stamp to enter the associated values into the currently selected field.

- If you are using an external SMPTE time code source, click the down arrow next to the Current Time Code display—or press Equal (=) on the numeric keypad—to capture an incoming time code address.

**6** Click OK. The region is moved to the new location specified for its start, end, or sync point.

If a region does not have a sync point defined, the Sync Point field in the Spot dialog functions the same as the Start field.

📖 *For more information on using SMPTE with Pro Tools, see Chapter 42, "Working with Synchronization."*

### Right-Click Commands for Spotting Regions

You can use Right-click commands with a key combination to spot regions in a track.

💡 *In lower versions of Pro Tools, Right-clicking in a region with the Grabber tool would spot the region to a selection.*

#### To spot a region to a selection:

**1** Click or drag with the Selector tool to locate the cursor or make a selection in the track where you want to spot the region.

**2** Control-Right-click (Windows) or Command-Right-click (Mac) the region and choose any of the following from the pop-up menu:

- Move Region Start to Selection Start
- Move Region Sync to Selection Start
- Move Region End to Selection Start

### Region Time Stamps

When a region is created, it is time stamped relative to the SMPTE start time specified for the session. This Original Time Stamp is permanently stored with the region and cannot be changed. If a region is ever moved, it can easily be placed at its original position from the Spot dialog.

When the Original Time Stamp for a region is initially set, this same location is also used to define the region's User Time Stamp.

Unlike the Original Time Stamp, the User Time Stamp can be redefined with the Time Stamp command in the Region List pop-up menu (see "Time Stamping" on page 903).

#### Time Stamps in DigiBase

Columns are provided in DigiBase browsers for both the Original and User Time Stamps.

### Time Stamps and Matches

Regions with identical User Time Stamps appear together in the Matches submenu in the Right-click pop-up menu when auditioning takes (see "Selecting an Alternate Take on a Track" on page 352).

## Sliding Regions in Grid Mode

Grid mode provides several useful capabilities for sliding and moving regions in track playlists. This mode is especially useful for lining up regions at precise intervals, as when working with a session that is bar- and beat-based. Grid boundaries, depending on the Main Time Scale, can be based on frames, bar and beat values, minutes or seconds, or a number of samples.

Grid mode also provides two operational modes, Absolute and Relative. These modes control how the Grid is applied (see "Absolute and Relative Grid Mode" on page 657).

| SHIFT | *To temporarily suspend Grid mode and switch to Slip mode while dragging a region, hold down the Control key (Windows) or Command key (Mac).* |

### Setting Up the Grid

When the Draw Grid in Edit Window option is enabled in the Display Preferences page, vertical Grid lines appear in the Edit window.

Grid lines in the Edit window can also be enabled and disabled by clicking the Timebase ruler name after it becomes highlighted.

## Defining the Grid Value

In addition to affecting the placement of regions, the Grid value also constrains Timeline and Edit selections, and determines how the Region > Quantize to Grid command works.

**To set the Grid value:**

**1** Do one of the following:

- From the View > Main Counter menu, select the Time Scale for the Grid value.

– or –

- To keep the Main Time Scale and use a different time format for the Grid, deselect Follow Main Timebase in the Grid value pop-up menu in the Edit window.

**2** Do one of the following:

- From the Grid value pop-up menu in the Edit window, select the time value for defining the Grid boundaries.
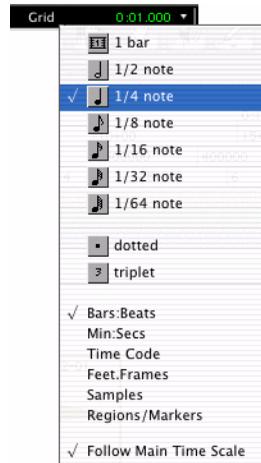


*Grid value pop-up menu showing Bars:Beats*

– or –

- To define a Grid based on the session's Markers, selections, and region boundaries, select Regions/Markers from the Grid value pop-up menu.

### Absolute and Relative Grid Mode

Grid mode can be applied in Absolute or Relative mode.

◆ In Absolute Grid mode, moving any region snaps the region start to Grid boundaries. If a region's start point falls between beats, and the Grid is set to 1/4 notes, dragging the region will *snap* its start time to the nearest 1/4 note (the current absolute Grid value).

◆ In Relative Grid mode, regions can be moved by Grid (or Nudge) *units*. If a region's start point falls between beats and the Grid is set to 1/4 notes, dragging the region will be constrained to 1/4 notes, preserving the region's relative position to the nearest beat.

**To select Absolute or Relative Grid mode:**

■ Click the Grid mode selector and choose Absolute or Relative.

⬚ *To temporarily suspend Grid mode and switch to Slip mode while dragging a region, hold down the Control key (Windows) or Command key (Mac).*

**To place or move a region while in Grid mode:**

**1** Configure the Grid value (see "Defining the Grid Value" on page 656).

**2** Do one of the following:
- Drag a region from the Region List to an existing track.

– or –

- With the Time Grabber tool, drag a region already in a track to a new location.

The region's start point snaps to the closest Grid boundary. If the region has a sync point defined, the sync point snaps to the Grid boundary.

# Replacing Audio Regions

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

Use the Replace Region function to replace multiple instances of an audio region in a playlist with another region. This is useful in post production if you use a sound effect, room noise, or atmosphere region many times in a session, and later decide to replace one or all of the original regions with a different region.

This is also useful in music production if you want to replace a certain loop or sample (for example, a drum beat) with a new one. You can use this compositionally, if you know the tempo of a section or session, to create a scratch piece with "rough" regions of the correct length, and later replace them with "final" regions of the same length.

## Replace Region Dialog



*Replace Region dialog*

The following options are available in the Replace Region dialog:

**Replace: Original Region Only** Replaces only the selected region with the replacement region dragged from the Region List.

**Replace: All Instances of the Original Region** Replaces all instances of the selected region that fit the On criteria with the replacement region from the Region List.

- On This Track: replaces regions that fit the Match criteria and are on the same track as the original region.
- On All Tracks: replaces regions that fit the Match criteria for all tracks in the session.
- On Within the Selection: replaces regions that fit the Match criteria within the current selection.

**Replace: All Regions That Match Original Region's** Replaces all regions that fit the Match criteria and the On criteria with the replacement region from the Region List.

- Start Position: replaces all regions that have the same original *start* time as the selected region. This includes regions that may have been auto-created when trimming end points.
- End Position: replaces all regions that have the same original *end* time as the selected region. This includes regions that may have been auto-created when trimming start points.
- Name: replaces all regions that come from the same audio file and have been renamed to the same name
- On This Track: replaces regions that fit the Match criteria and are on the same track as the original region.
- On All Tracks: replaces regions that fit the Match criteria for all tracks in the session.
- On Within the Selection: replaces regions that fit the Match criteria within the current selection.

Region matching uses all specified Match criteria. For example, if you select Start Position and End Position, all regions from the same original audio file as your selection with the same original start and end times will be replaced.

**Fit Region Using The: Original Region Length** If the replacement region is smaller than the original region, the region is placed in the playlist and any remaining audio from the original region is removed.

If the replacement region is larger than the selection, it is placed in the playlist and trimmed to fit within the length of the original region.

**Fit Region Using The: Original Selection Length** When the playlist selection extends beyond the original region, the replacement region (if larger than the original region) is trimmed to fit within the selection.

**Fit Region Using The: Replacement Region Length** The replacement region is placed in its entirety, regardless of the length of the original region or selection.

**To replace regions by dragging and dropping:**

**1** Select a region in a track's playlist that you want to replace. The selection can extend beyond the region's end point, to include material from the replacement region that is longer than the original region.

**2** Control-Shift-drag (Windows) or Command-Shift-drag (Mac) the replacement region from the Region List to the selected region. The Replace Region dialog opens.

*shift* *Control-Shift-drag (Windows) or Command-Shift-drag (Mac) any region from the Region List to any unselected region on a track to open the Replace Region dialog without first making a selection.*

**3** Configure the Replace Region dialog (see "Replace Region Dialog" on page 658).

**4** Click OK.

## Replacing Regions from the Region List

The Replace Regions command is also available in the Region List pop-up menu. To use this command, make sure there is a region selected in a track and a different (replacement) region selected in the Region List.

**To replace regions using the Region List pop-up menu:**

**1** Select a region in a track to be replaced.

**2** Do one of the following:

- Right-click the desired replacement region in the Region List and choose Replace Regions from the pop-up menu.

- Select the desired replacement region in the Region List and choose Replace Regions from the Region List pop-up menu. (If the Region List Selection Follows Edit Selection preference is enabled, Control-click (Windows) or Command-click (Mac) the selected region to deselect it, then Control-click (Windows) or Command-click (Mac) the desired replacement region to select it, and then choose Replace Regions from the Region List pop-up menu.)

**3** Configure the Replace Region dialog (see "Replace Region Dialog" on page 658).

**4** Click OK.

## Replace Region and Multichannel Tracks

The Replace Region command supports dragging multichannel regions from the Region List to multichannel tracks, provided they are the same channel format. For example, you can replace a selected stereo region in a stereo audio track with another stereo region from the Region List. However, you cannot replace it with two mono audio regions. Additionally, you cannot replace regions in multiple mono tracks with multichannel regions.

# Audio Regions from Field Recorders

Pro Tools provides region replacement tools specifically for field recording workflows. For audio imported from a field recorder, you can replace regions on tracks with alternate channels and you can expand multiple channels to new tracks.

## Replacing a Region with an Alternate Channel

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

Pro Tools provides region replacement tools specifically for field recording workflows. You can replace a mono region (or selected portion of a mono region) with a matching segment of an alternate channel that was recorded simultaneously. Any fades performed on the original region are automatically recalculated against the replacement region, and any pre-existing automation on that track is unchanged.

📄 *For detailed information on working with multichannel recordings made with field recorders, see the Field Recorder Workflow Guide.*

**To replace a region with a matching alternate channel:**

**1** In the Timeline, make a selection that includes or overlaps the region or portion of the region you want to replace.

**2** Do one of the following:

- With any Edit tool, Right-click (Windows or Mac) or Control-click (Mac) the selection you want to replace, then select Matches from the pop-up menu.

– or –

- With the Selector tool, Control-click (Windows) or Command-click (Mac) the selection you want to replace.

The Matches submenu displays matching alternate channels under the Channels header. (This submenu also displays any available alternate takes under the Alternates header.)

**3** From the Matches submenu, select the name of the alternate region that you want to use to replace the original region.
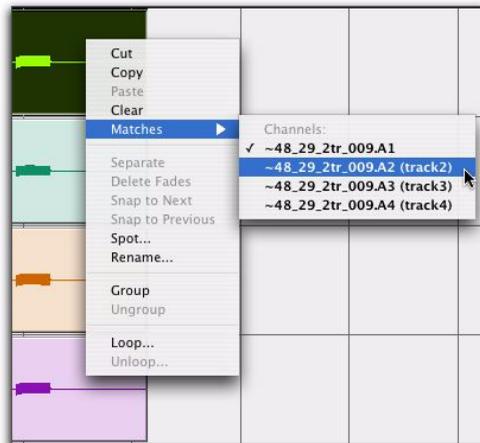


*Selecting an alternate channel from a channel group to replace a region*

**4** Repeat this procedure for every region you want to replace on each track.

## Conditions for Alternate Channel Availability

An alternate channel is available to replace the original channel (represented by the region or portion of a region selected on the Timeline) if all of the following are true:

- Both channels are part of a multichannel part of a recording made simultaneously on one or more field recorders.
- Certain metadata matches between the original channel and the alternate channel.
- The metadata embedded during shooting and recording has been preserved prior to import into Pro Tools.

With multichannel recordings from one or more field recorders, both channels must overlap at least once between their start time code and end time code positions, and must also meet one of the following conditions:

- Matching Scene and Take
- Matching Shoot Date (applies only if Scene and Take contain any information for both channels)
- Matching Tape name
- Matching Sound Roll name
- Alternate channel Sound Roll name matches current channel Tape name
- Alternate channel Tape name matches current channel Sound Roll name

## Expanding Alternate Channels to New Tracks

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

When working with a mono region that is part of a multichannel recording, you can expand that region (or a selected portion of it) to new tracks that reflect its matching alternate channels while preserving any edits or fades.

For example, you can use this feature to easily create different versions of an edited dialogue track corresponding to multiple channel inputs (microphones) that were recorded simultaneously.

📄 *Matching alternate channels are mono channels that were recorded simultaneously with the original region (such as multichannel recordings made by one or more field recorders). For detailed criteria that alternate matching channels must meet, see the Field Recorder Workflow Guide.*

**To expand alternate channels to new tracks:**

1 In the Timeline, do one of the following:
- To expand only a portion of the regions on the track, make a selection that includes or overlaps any number of regions on a track, and Right-click (Windows or Mac) or Control-click (Mac) the selection.

– or –
- To expand all of the regions on the track, Right-click (Windows or Mac) or Control-click (Mac) the track name.

**2** Choose the Expand to New Tracks pop-up menu, and select one of the following methods by which to expand alternate channels for the selection to new tracks:

- By Channel Name
- By Channel Number
- By Channel Name and Number



*Expanding a selection to new tracks*

📄 *For detailed information on how each of these options expand to new tracks, see the Field Recorder Workflow Guide.*

If alternate channels are available, Pro Tools expands them to new tracks (including the channel represented in the original track) according to the chosen parameters.



*Result of expanding a selection to new tracks*

# Sync Points

The placement of regions in Grid and Spot mode can be based on the definition of a region sync point. Sync points are used when a specific point within a region must be aligned to the Grid or to a particular SMPTE or bar/beat location. This capability is important in placing music and sound effects for film and video work.

For example, suppose you had an audio region for a door slam that included the creak of the door closing, the actual slam, and the reverb of the slam. Using a sync point for the slam lets you spot the slam to a specific time in the session.

**To define a region sync point:**

**1** Enable Slip mode (see "Edit Modes" on page 421).

**2** Do one of the following:

- With the Selector tool, click at the point in the region where you want the sync point.

– or –

- Press the Down Arrow key while playing back.

**3** Choose Region > Identify Sync Point. A small down arrow appears at the bottom of the region, with a vertical, light gray line indicating the location of the sync point.
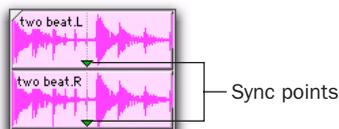


*Sync Points*

**To change the location of a sync point:**

■ With the Selector tool, click at a point in a region and choose Region > Identify Sync Point. The new location is identified as the sync point for the region.

*You can also move the location of a sync point by clicking and dragging it. See "Dragging Sync Points" on page 663.*

## Removing Sync Points

**To remove a sync point, do one of the following:**

■ Select the entire region and choose Region > Remove Sync Point.

– or –

■ Choose the Time Grabber tool, then Alt-click (Windows) or Option-click (Mac) the sync point to delete it.

## Displaying Sync Points

Sync points in audio regions may displayed or hidden.

**To disable the display of sync points in audio regions:**

■ Deselect View > Region > Sync Point.

**To enable the display of sync points in audio regions:**

■ Choose View > Region > Sync Point.

## Dragging Sync Points

You can click and drag a sync point to another position in the audio region.

**To set the sync point by dragging:**

**1** If you want the sync point to snap to the current Grid value, enable Grid mode (see "Edit Modes" on page 421).

**2** Select the Time Grabber tool.

**3** Click and drag the sync point to a new location.

## Scrubbing Sync Points

While viewing an audio waveform can be a good way to set a sync point, a waveform display may not always reveal the desired spot in the audio material. By scrubbing while moving the sync point over an audio waveform, you can listen for the exact location to place the sync point.
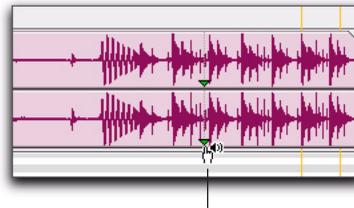


Sync Point Scrub cursor

*Scrubbing a Sync Point*

**To scrub while dragging the sync point:**

**1** If you want the sync point to snap to the current Grid value when you finish scrubbing, set the Edit mode to Grid (see "Edit Modes" on page 421).

**2** Select the Scrubber tool.

**3** Click and drag the sync point to a new location. The sync point scrubs the audio as you move it.

# Shift Command

Use the Shift command to move track material forward or back in time by a specified amount. The Shift command can operate on selections, regions, MIDI notes, MIDI controller data, and automation breakpoints.

**To shift a selection or region:**

**1** With the Selector or Time Grabber tool, select the track material you want to shift. The selected material can reside on multiple tracks.

**2** Choose Edit > Shift. In the Shift dialog, select whether the data will be moved Earlier or Later.

**3** Click in one of the Timebase fields to specify the amount by which the material will be shifted. Entering a value in one Timebase field automatically updates the others.
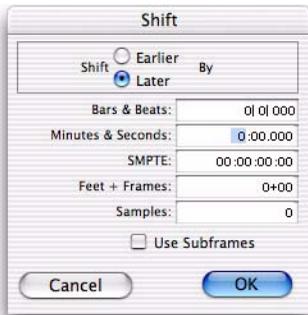


*Shift dialog*

**4** If you want to shift material with greater precision, select the Use Subframes option.

**5** Click OK. The material is shifted earlier or later by the specified amount.

If a portion of a region was selected, new regions are created from the selection and from any material outside of the selection.

The Shift command works the same regardless of the Edit mode. For example, adjacent regions are overlapped in Shuffle mode, the Spot dialog does not appear when in Spot mode, and shifted material does not snap to the Grid when in Grid mode.

# Locking Regions

If you have a region or group of regions that you want to permanently associate with a particular location in a track (a beat, SMPTE frame, or sample location), you can lock it in place so it cannot be moved accidentally. Locked regions cannot be moved or deleted.

**To lock (or unlock) a region:**

**1** With the Time Grabber, select the region or regions to lock (or unlock). The regions can reside on multiple tracks.

**2** Choose Region > Lock (or Region > Unlock).



*Locked audio region*

When locked, a small lock appears in the region and it cannot be moved or deleted. If you attempt to perform edits that would move a locked region, Pro Tools alerts you.

In Shuffle mode, locked regions, and all regions occurring after the locked region, are not displaced when other neighboring regions are moved.

On tick-based Elastic Audio–enabled tracks, locked regions conform to tempo changes, but not other Elastic Audio processing (such as Quantize or manual warping) can be applied.

## Muting/Unmuting Regions

Choosing the Mute/Unmute Region command mutes playback of a selected region. Choosing the command a second time unmutes the region. Regions that are muted become dimmed to indicate their status.



*Muted audio region (middle)*

**To mute or unmute a region or regions:**

**1** With the Time Grabber, select the region or regions you want to mute or unmute. The regions can even reside on multiple tracks.

**2** Choose Region > Mute/Unmute. When muted, regions are dimmed.

## Stripping Silence from Regions

The Strip Silence commands analyze audio selections—across multiple tracks—and removes (or extracts) any areas of silence, dividing the selection into smaller regions and removing the silent areas.

You can use Strip Silence commands to strip (remove) silence from a region, or instead, extract the audio and keep the silence. Getting rid of silent areas is useful when preparing to compact audio (see "Compacting an Audio File" on page 476). Strip Silence automatically separates the selection into separate regions, which is useful if you want to quantize audio to musical values, or locate sound effects to SMPTE locations.

## The Strip Silence Window

The Strip Silence window contains the following controls that let you set the parameters by which *silence* is defined when using the Strip Silence command. Adjusting these controls causes rectangles to temporarily appear in the selection (see Figure 13 on page 666), indicating areas of silence that will be affected by the Strip, Extract, or Separate commands.



*Strip Silence window*

**Strip Threshold** Sets the amplitude threshold (from –48 dB to 0 dB) for Strip Silence. Audio falling below this threshold is considered silence and removed. Audio above the threshold is retained and defined as new regions.

**Minimum Strip Duration** Sets the minimum duration (from 0 to 10,000 ms) that the material below the threshold must last to be considered silence. Use this control to avoid countless small regions that may occur within a selection.

**Region Start Pad** Specifies a time value to be added to the beginning of each new region created with Strip Silence. This is useful for preserving musical material that falls below the threshold, such as the breath before a vocal phrase, or the finger slide before a guitar chord.

**Region End Pad** Specifies a time value to be appended to the end of each new region created with Strip Silence, thereby preserving the nuances in the decay of the material.

**Strip** Clears the detected silence, but leaves the regions containing audio on the track.

**Extract** Clears the audio and leaves the silent portions of the track (in other words, an "inverse" strip silence feature that is ideal for generating room tone or ambience to use elsewhere).

**Rename** Opens the Rename Selected Regions dialog (see "Auto-Naming for Strip Silence" on page 666).

**Separate** Separates regions based on the boundaries detected by Strip Silence.

### Auto-Naming for Strip Silence

The Rename button in the Strip Silence window opens the Rename Selected Regions dialog, which determines how regions are named with the Strip Silence command. The dialog remembers your previous settings, which can be cleared by clicking the Clear button.
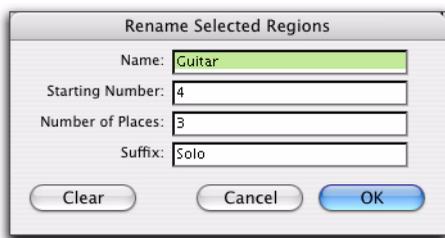


*Rename Selected Regions dialog*

**Name** Specifies the base name for regions created with Strip Silence.

**Number** Specifies the number at which sequential auto-numbering starts.

**Zeros** Specifies the number of zeroes that occur before the appended auto numbers.

**Suffix** Specifies text appended to the end of the name, after the auto numbering.

For example, if you set these naming options to:

- Name = SFX
- Auto Number Start = 23
- Leading Zeros = 1
- Suffix = .Reel1

The names generated for regions created by Strip Silence would be:

- SFX023.Reel1
- SFX024.Reel1
- SFX025.Reel1
- SFX026.Reel1
- SFX027.Reel1
- SFX028.Reel1

## Using Strip Silence

**To strip silence from an audio selection:**

**1** Select one or more audio regions.

**2** Choose Edit > Strip Silence.

**3** To set the naming scheme for regions created with Strip Silence, click Rename to open the Renaming dialog. For details, see "Auto-Naming for Strip Silence" on page 666.

**4** In the Strip Silence window, adjust the sliders for Strip Threshold and Minimum Strip Duration until the Strip Silence rectangles appear in the selection.
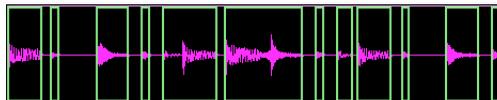


*Figure 13.  Strip Silence rectangles*

For finer resolution on these sliders, press Control (Windows) or Command (Mac) while adjusting them.

**5** To retain material before and after the new regions, adjust the sliders for Region Start Pad and Region End Pad.
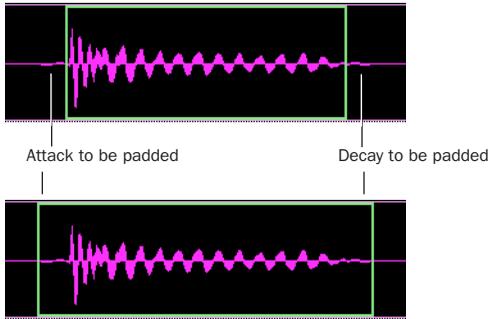


*Strip Silence, padding region start and end points*

**6** Once the Strip Silence rectangles encompass the audio that you want to keep, press the Strip button.

The material defined as silence is removed from the selection and new regions are created, which also appear in the Region List.

The Strip Silence command is nondestructive and does not remove audio data from parent audio files. In addition to the Undo command, you can use the Heal Separation command to restore stripped material.

💡 *Strip Silence works with stereo and multichannel tracks, and keeps their audio regions phase-coherent.*

**To extract audio from an audio selection using Strip Silence:**

**1** Make an Edit selection.

**2** Choose Edit > Strip Silence.

**3** To set the naming scheme for regions created with Strip Silence, click Rename to open the Renaming dialog (see "Auto-Naming for Strip Silence" on page 666).

**4** In the Strip Silence window, adjust the sliders for Strip Threshold and Minimum Strip Duration until the Strip Silence rectangles appear in the selection.

**5** Click the Extract button.

All audio above the designated threshold is deleted and the "silent" portions of the track are left.

**To separate regions using Strip Silence:**

**1** Make an Edit or Timeline selection.

**2** Choose Edit > Strip Silence.

**3** To set the naming scheme for regions created with Strip Silence, click Rename to open the Renaming dialog (see "Auto-Naming for Strip Silence" on page 666).

**4** In the Strip Silence window, adjust the sliders for Strip Threshold and Minimum Strip Duration until the Strip Silence rectangles appear in the selection.

**5** Click the Separate button.

New regions are created based on the boundaries detected by Strip Silence.

# Inserting Silence

The Insert Silence command is a simple and convenient way to insert silence on audio, MIDI, and Instrument tracks. This command lets you make a selection on a track (or tracks) and insert precisely that amount of silence.

In Shuffle mode, all data on the track is shuffled later in the track by an amount equal to the selection.

In Grid mode, the Insert Silence command works just like the Clear command.

**Shuffle Mode** When inserting silence on multiple tracks in Shuffle mode, the following conditions apply:

◆ If any track is displayed as audio or MIDI data, the selected duration of silence is inserted into the audio or MIDI data and all underlying automation data on all selected tracks. All subsequent regions are shuffled by the amount of silence inserted. On MIDI tracks, only notes that are selected from the beginning are affected, so if you have selected the tail of a note and you Insert Silence, the note will remain unchanged.

◆ If all selected tracks are displayed as automation data, the selected range is cleared of automation data only of the type visible on each track. Regions are *not* shuffled. Instead, a blank gap appears equal to the length of the selection.

◆ If all selected tracks are displayed as automation data, press the Start key (Windows) or Control (Mac) while choosing the Insert Silence command to inserts silence on all automation playlists for all selected tracks. Regions are *not* shuffled.

**Slip Mode** When inserting silence on multiple tracks in Slip mode, the following conditions apply:

◆ If any track is displayed as audio or MIDI data, the selected range is cleared of audio or MIDI data and all underlying automation data on all selected tracks.

◆ If all selected tracks are displayed as automation data, silence is inserted only into the automation type visible on each track.

◆ If all selected tracks are displayed as automation data, press the Start key (Windows) or Control (Mac) while choosing the Insert Silence command to insert silence on all automation playlists for all selected tracks.

**To insert silence into a track:**

**1** Make a selection in a track or tracks. The length of the selection determines the duration of the silence inserted.

**2** Choose Edit > Insert Silence.

For Shuffle mode, Pro Tools inserts the selected amount of silence. In the process, it splits the regions at the beginning of the insertion point, and moves the new regions later in the track by an amount equal to the length of the selection.

# Duplicating Regions

The Duplicate command copies a selection and places it immediately after the end of the selection. Though this is similar to using Copy and Paste, Duplicate is more convenient and faster, particularly when working with data on multiple tracks.

To make more than one copy of a selection, use the Repeat command (see "Repeating Regions" on page 669). You can also loop regions (see "Region Looping" on page 671).

As with the Copy and Paste commands, certain rules apply when duplicating material on multiple tracks (see "Editing Across Multiple Tracks" on page 420).

**To duplicate a selection or region:**

**1** If working with material that is bar- and beat-based, such as loops, set the Main Time Scale to Bars:Beats.

**2** If you want to constrain the selection to the current Grid value, set the Edit mode to Grid.

**3** Make an Edit selection.

**4** Choose Edit > Duplicate. The material is placed immediately after the selection's end point.

In Shuffle mode, the duplicated data is placed directly after the end of the selection. Regions occurring after it slide to accommodate the duplicated material. In Slip mode, the duplicated material overlaps any adjacent data.

When using Duplicate (or Repeat) with MIDI notes that were selected with the Time Grabber tool, material is always duplicated one measure later, and is merged with existing track material (instead of replacing it).

## Duplicating Audio

When using Duplicate (or Repeat) for audio that must fall cleanly on the beat (such as rhythmic loops), it is important that you select the audio material with the Selector tool, or by typing in the start and end points in the Event Edit area. If you select an audio region with the Time Grabber tool (or by double-clicking it with the Selector tool), the material may drift by several ticks because of sample-rounding.

If, on the other hand, you want to Duplicate (or Repeat) audio that is not bar- and beat-based, set the Time Scale to any format except Bars:Beats. This ensures that the duplicated audio material has the correct number of samples and is accurately placed.

# Repeating Regions

The Repeat command is similar to Duplicate, but lets you specify the number of times the selected material is duplicated.

As with the Copy and Paste commands, certain rules apply when repeating material on multiple tracks (see "Editing Across Multiple Tracks" on page 420).

You can repeatedly paste copied data until it completely fills a selection (see "Repeat To Fill Selection" on page 419).

You can also loop regions (see "Region Looping" on page 671).

**To repeat a selection or region:**

**1** If working with material that is bar- and beat-based, such as loops, set the Main Time Scale to Bars:Beats.

**2** If you want to constrain the selection to the current Grid value, set the Edit mode to Grid.

**3** Make an Edit selection.

**4** Choose Edit > Repeat. In the Repeat dialog, enter the number of times you want the material to repeat, then click OK.



*Repeat dialog*

The material is placed immediately after the selection's end point, and duplicated the specified number of times.

In Shuffle mode, the repeated data is placed directly after the end of the selection. Regions occurring after it slide to accommodate the repeated material. In Slip mode, the repeated material overlaps any subsequent data.

# Chapter 33: Region Loops and Groups

## Region Looping

Pro Tools lets you loop audio regions, MIDI regions, and region groups. Looping regions is an easy and powerful way to repeat a single region on a track or regions across tracks for composing and arranging. Looping regions provides more flexibility than the Repeat and Duplicate commands.

Looped regions repeat the source region as many times as specified in the Region Looping dialog, or enough to fill the specified Loop Length (such as 30 seconds or until the next region on the track). The *source region* is the original region selected for looping. *Loop iterations* are all looped regions following the source region. In cases where a specific number of repetitions has not been indicated, the last loop iteration is truncated to fill to the end of the selection or specified Loop Length.

Once looped, the looped region can be edited much like a region group. For example, selecting and moving a looped region selects and moves the source region and all its loop iterations together.

Looped regions (all iterations) display a Loop icon in the lower, right corner or each loop iteration.
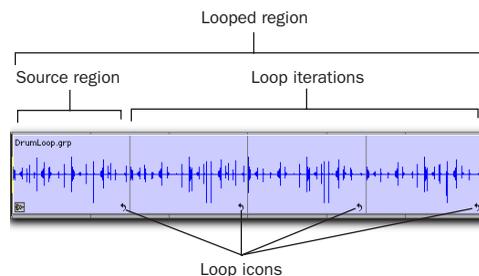


*Looped region*

⚠️ *Looping a region does not loop any automation associated with the source region. Use the Copy Special and Paste Special Repeat To Fill Selection commands to copy automation for the source loop to all loop iterations (see "Automation and Looped Regions" on page 675).*

## Creating Looped Regions

You can create looped regions using the Loop command or using the Loop Trimmer tool.

📖 *For information on using the Loop Trimmer tool, see "Loop Trimmer Tool" on page 436.*

**To loop a region:**

**1** Select an audio or MIDI region, or region group.

💡 *You can also select regions across tracks for looping.*

⚠️ *Selecting and looping more than one region on a track only loops the first region in the selection.*

**2** Do one of the following:

- Choose Region > Loop.

– or –

- Right-click the region you want to loop and select Loop from the pop-up menu.
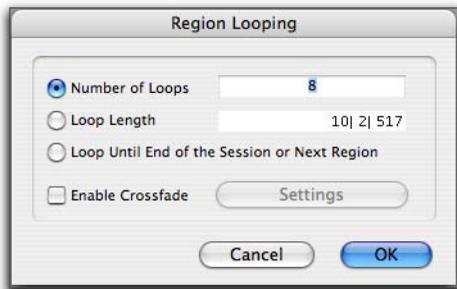


*Region Looping dialog*

**3** In the Region Looping dialog, do one of the following:

- Select the Number of Loops option and enter the number of times to loop the region.

- Select the Loop Length option and enter the duration according to the main timebase. If the duration is not an exact multiple of the source loop's duration, the last loop iteration will be truncated.

- Select the Loop Until End of Session or Next Region option. The looped region will be repeated until the end of the session, or until the next region on the track. If necessary, the last loop iteration will be truncated to fit.

**4** If desired, select the Enable Crossfade option. This will create a crossfade at the loop point. To edit the loop crossfade, do the following:

- Click the Settings button.

- Configure the Loop Crossfades.

- Click OK.
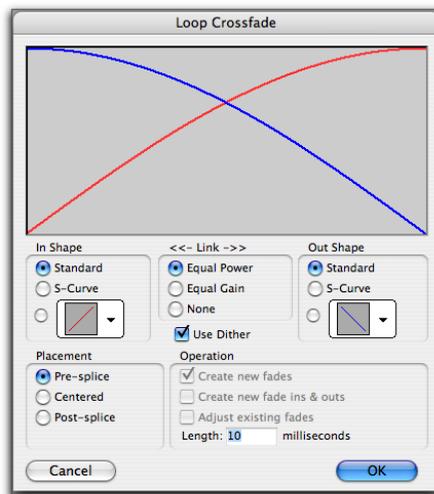


*Loop Crossfade dialog*

📖 *For information on working with crossfades, see Chapter 25, "Fades and Crossfades."*

**5** In the Region Looping dialog, click OK.

**To rename the looped region name only (or the region name and disk file name):**

**1** Double-click the loop icon with the Grabber.

**2** Type in a new name.

**3** Choose to name region name only, or rename region name and disk file name.

**4** Click OK.

**To unloop a looped region:**

**1** Select the looped region.

**2** Do one of the following:

- Choose Region > Unloop.

– or –

- Right-click the region you want to unloop and select Unloop from the pop-up menu.
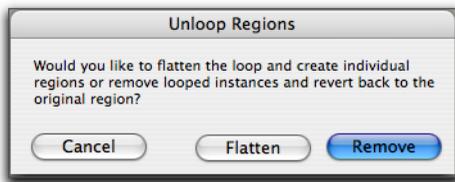


*Unloop Regions dialog*

**3** In the Unloop Regions dialog, do one of the following:

- Click Remove to unloop and remove all loop iterations except the first full loop iteration (source region).

– or –

- Click Flatten to unloop and create individual regions from each loop iteration.

*Region Ungroup functions on loops the same as using the Unloop command and choosing Flatten.*

**To unloop and ungroup a selection down to its individual regions:**

**1** Select a looped region that contains one or more region groups.

**2** Choose Region > Ungroup All.

**Unlooping and Flattening Looped Regions with Separate Regions Menu Commands**

The Separate Regions commands (At Selection, On Grid, and At Transients) will automatically unloop and flatten looped regions before separating.

# Editing Looped Regions

Looped regions can be edited as a group (all loop iterations together) or as individual regions (each loop iteration). For example, selecting a looped region with the Grabber tool selects the entire loop (the source region and all its loop iterations), but clicking the Loop icon of one of the loop iterations selects only that one iteration.

Moving a looped region moves the source region and all its loop iterations together as a group. Loop iterations cannot be moved independently of their source region. If you move or paste another shorter region over a looped region the loop is continued after the new region. The parts of a separated looped region can be adjusted independently.

⚠ *Manually warping any part of a looped region in Warp view separates only that iteration from the looped region.*

**To select a looped region as a group (all loop iterations), do one of the following:**

■ With the Grabber tool or Smart Tool, single-click the looped region.

– or –

■ With the Selector tool, double-click the looped region.

The source region and all its loop iterations are selected.

**To select an individual source region or loop iteration, do one of the following:**

■ With the Grabber tool or Smart Tool, single-click the Loop icon of the source region or loop iteration.

– or –

■ With the Selector tool, single click the Looped Region icon and drag to the left until the region is selected.

**Tabbing to Transients and Region Boundaries**

Tab to Transients tabs to transients and region boundaries in a looped region. Normal Tab (Tab to Transients disabled) tabs to the start and end boundaries of the entire looped region. For more information, see "Tabbing to Transients" on page 457.

## Trimming Looped Regions

Trimming looped regions can be done using the Trimmer tool, the Loop Trimmer tool, or one of the Trim Region commands. The Loop Trimmer tool trims the entire looped region. The Trimmer tool trims only the individual loop iteration while increasing or decreasing the number of loop iterations to fill the total length of the looped region.

📖 *For information on trimming looped regions using the Loop Trimmer tool, see "Loop Trimmer Tool" on page 436.*

If the source region is extended to the left by using the Trimmer tool to change the total length of the looped region, the source region is moved earlier in the Timeline and loop iterations fill in up to the point where the last original loop iteration ended. If the trim to the left is part of the source region's length, the source region is not moved and a partial loop iteration is created to the left of the source region. This is a powerful feature that lets you make quick changes to your arrangement by using partial loops as upbeats, or by extending looped sound effects or ambience earlier in a film score.

**To trim a looped region to the selection:**

**1** Use the Selector tool to make an Edit selection including some or all of the looped region.

**2** Choose Edit > Trim Region and one of the Trim Region commands (To Selection, To Fill Selection, Start to Fill Selection, End to Fill Selection).

## Automation and Looped Regions

Looping an audio region does not loop any automation associated with the source region. This lets you apply automation across an entire looped region. For example, you may want to have a long fade across part or all of a looped region that is independent of any one loop iteration.

You can also repeat automation on each loop iteration. For looped audio regions, use the Copy Special and Paste Special Repeat to Fill Selection commands to copy and paste any or all automation data from the source region to some or all of its loop iterations.

**To copy and paste automation from the source region to loop iterations:**

**1** Select the source region.

**2** Choose Edit > Copy Special and one of the Copy Special commands (All Automation, Pan Automation, or Plug-in Automation), depending on what automation you want to copy.



*Selected Pan automation for Special Copy*

**3** Select the entire looped region.

**4** Choose Edit > Paste Special > Repeat to Fill Selection.
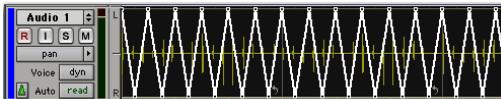


*Pan automation Special Paste to Fill Selection*

## Region Groups

A region group is a collection of any combination of audio and MIDI regions that looks and acts like a single region. Region groups are essentially containers holding one or more regions. Region groups can be created on single or on multiple adjacent audio, MIDI, and Instrument tracks. Region groups let you "nest" multiple regions into "macro" regions for groove and tempo manipulation, editing, and arranging.

Region groups can be placed on tracks alongside standard regions, and edited using many of the same Pro Tools editing techniques. Certain edits to a region group will apply to all regions contained by the region group, such as Cut or Delete. Other edits only apply to the boundaries of the region group and do not affect the underlining regions, such as Trim.

Each region group is saved with the session as a Region Group file (.rgrp). Region Group files can be exported from and imported into different Pro Tools sessions.

Region groups are especially useful for:

• Grouping tick-based audio regions that have been separated into many small regions, such as with individual hits of a drum pattern. Many such small regions can easily be created with Beat Detective or the Separate Region At Transients command, or imported as REX or ACID files.

• Grouping parts and sections of your session to facilitate composition and arranging. For example, grouping the regions of a brass section during the chorus to copy it to the next chorus.

⚠️ *Region groups are completely independent of Mix and Edit Groups.*

## Creating Region Groups

### To create a region group:

**1** Select one or more regions on one or more tracks. (For more information on multitrack region groups, see "Multitrack Region Groups" on page 677).
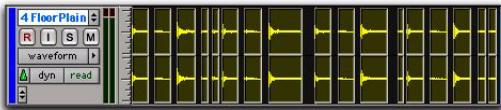


*Selecting regions to be grouped on a single audio track*

The size of the selection determines the size of the region group. The selection can start and end on any region boundary, empty space, or even in the middle of a region. Selections starting or ending within a region will separate the region at the selection boundary when you create a region group. Region groups created from object-based selections include all selected and unselected regions between the first and last selected region on the track.

**2** Do one of the following:

- Choose Region > Group.

– or –

- Right-click the Edit selection and choose Group from the pop-up menu.

The region group appears as one region with the region groups icon in the lower left corner. Region groups also appear in the Region List.



Region Group icon

*A region group on an audio track and in the Region List*

### Region Group Timebase Format

Region groups are created in the same timebase format (samples or ticks) as the tracks on which they are created. Multitrack region groups can include both sample-based and tick-based tracks.



Audio Region Group icon

*A region group on an audio track*



MIDI Region Group icon

*A region group on a MIDI track*

☼ *Region groups can be created from empty selections. This can be useful when working in Shuffle mode to preserve the gaps between regions.*

⚠ *The Group and Ungroup Region menu commands apply to any Edit selection regardless of the current Track View.*

### Ungrouping Regions

#### To ungroup a region group:

**1** Select a region group.

**2** Do one of the following:

- Choose Region > Ungroup.

– or –

- Right-click the Edit selection and choose Ungroup from the pop-up menu.

The region group disappears, revealing all underlying regions and any nested region groups. When there are multiple nested region groups, the Ungroup command will ungroup the frontmost top-layer region group only, preserving any underlying region groups.

### To ungroup a region group (and include all of its nested region groups):

**1** Select a region group.

**2** Choose Region > Ungroup All.

## Regrouping Regions

The Regroup menu command undoes the last Ungroup command and regroups all the individual regions as a region group. This lets you ungroup a grouped region, edit its underlying regions in any way desired, and regroup it to continue working on higher-level composition and arranging.

### To regroup a region group:

**1** Select any region from the ungrouped region group.

**2** Choose Region > Regroup.

If you used the Ungroup All command, the Regroup command recreates all previous nested region groups.

**3** If you regrouped an ungrouped region group that was used more than once in the session, do one of the following when the Change All dialog opens.

- Choose Modify to apply your changes to all other instances of the same region group.

– or –

- Choose Copy to create a copy and apply your changes only to the copied region group.

## Multitrack Region Groups

Multitrack region groups (region groups created across multiple tracks) are useful for grouping parts (such as multi-miked drum tracks), and for composing and arranging. Multitrack region groups can be created across any combination of audio, MIDI, and Instrument tracks, and can include either or both tick-based or sample-based tracks.

Multitrack region groups work much like single-track region groups. Multitrack region groups appear as a single object across adjacent tracks.

### To create a multitrack region group:

**1** Select regions across multiple adjacent tracks.
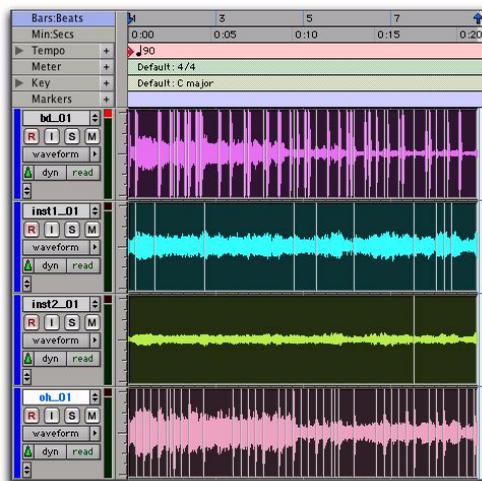


*Selecting regions to be grouped across multiple tracks*

**2** Choose Region > Group.



Region Group icon

*Multitrack region group*
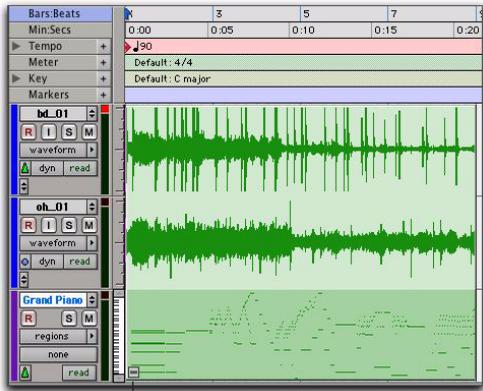


Mixed Region Group icon

*Mixed multitrack region group (sample- and tick-based audio, and tick-based MIDI)*

⚠ *Multitrack region groups create nested region groups of multiple regions by track before grouping them across tracks.*

💡 *The Regroup command supports multitrack region groups.*

## Separated Multitrack Region Groups

You can insert, move, hide, or delete tracks in multitrack region groups, but it may break the region group. A separated region group displays a break in the Region Group icon. Separated region groups will continue to function as a single region group, but the separated icon indicates that the region group displayed is somehow incomplete or separated across nonadjacent tracks.



Separated Region Group icon

*Region group separated by deleting a track*

A region group is separated when you do any of the following:

• Insert a track within a multitrack region group.

• Move a track that is part of a multitrack region group so that it is no longer adjacent with the other tracks of the region group.

• Hide a track that is part of a multitrack region group.

• Delete a track that is part of a multitrack region group.

• Change the tempo of a mixed sample-based and tick-based region group.

- Record into a region group.

- Change playlists on a track that is part of a multitrack region group.

- Apply manual warping in Warp view.

There may be situations where you want separated region groups. For example, if you use the same accompaniment on verses one and two of a song, you can group the parts of verse one and copy them as a region group for verse two, but still have a continuous vocal track in the middle of those region groups.

💡 *If you want to delete a track and keep the region group intact, first ungroup the region group, then delete the desired track, and then Regroup the region group. The region group will be recreated intact, but without the deleted track.*

## Region Groups on Tick-Based Tracks

When changing tempos, region groups on tick-based tracks adjust their length by adjusting the position of all enclosed regions accordingly. This is useful for arranging rhythmic material and for playing back region groups imported from REX and ACID files.
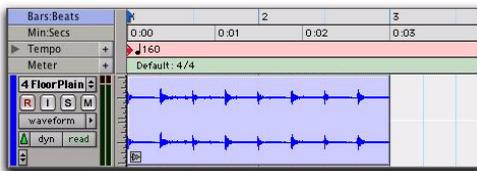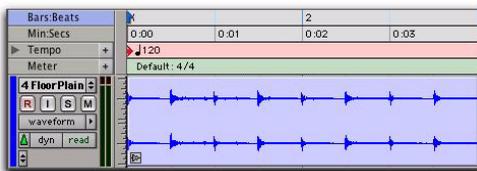




*A region group on a tick-based audio track at 120 BPM and at 160 BPM*

## Changing Region Group Timebase

The timebase format of a region group can be changed by:

- Changing the track's timebase.

- Dragging the region group to a track with a different timebase.

Changing the timebase creates a copy of the original region group. Both region groups (the original and the copy) appear in the Region List, but they have different timebases.

## Converting Samples to Ticks

When dragging a region group from a sample-based track to a tick-based track, the length of the region group does not change. This is because region groups are converted from samples to ticks after they are moved into tick-based tracks. The length of the region group only changes with subsequent tempo changes. If appropriate, change the local tempo on the tick-based track to match the tempo of the sample-based region group before moving a sample-based region group to a tick-based track.

## Converting Ticks to Samples

When dragging a region group from a tick-based track to a sample-based track, the length of the region group does not change unless it is moved to another time location with a different tempo. This is because region groups are converted from ticks to samples after they are moved into the sample-based tracks.

### Multitrack Region Groups with Sample- and Tick-Based Tracks

Multitrack region groups can include both sample-based and tick-based tracks. However, changing the tempo separates the region group between sample-based tracks and tick-based tracks.
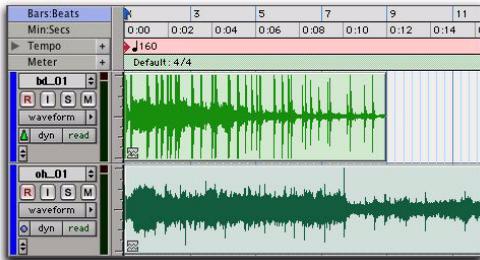


*A multitrack region group separated across sample-based and tick-based tracks after changing tempo*

## Editing Region Groups

Region groups are edited in much the same way as regular regions: They can be named, moved, cut, copied, pasted, trimmed, muted, locked, and so on. However, there are a few significant differences between editing regular regions and region groups.

### Editing MIDI Region Groups

If a MIDI region within a region group is modified in any way, a new region copy is created and placed over of the region group. For example, if you record, draw in a new note, edit MIDI controller data, or Quantize a Timeline selection, a new region is created over the region group.

### Editing Audio Region Groups

Certain audio editing commands create new regions over region groups. To use these commands and maintain the region group, ungroup the region group, perform the edit, and then regroup the region group.

The following edit commands create new regions over region groups:

• AudioSuite processing of a grouped region results in a new region over the region group.

• Consolidating a selection of a grouped region creates a new audio file and region over the region group.

• Recording into a region group creates a new audio file and region over the region group.

• Pencil tool waveform redraw results in a new region over the region group.

### Tabbing to Transients and Region Boundaries

With Tab to Transients enabled, the Tab key moves the Location Cursor to transients and region boundaries within a region group.

With Tab to Transients disabled, the Tab key moves the Location Cursor to region group boundaries only (and the sync point, if present).

📖 *For more information, see "Tabbing to Transients" on page 457.*

## Trimming Region Groups

Trimming region groups with the Standard Trimmer tool works the same way as trimming regular regions, regardless of whether you are trimming a single-track region group or a multi-track region group.

Trimming a region group does not trim the underlying regions, but rather trims the region group boundaries. All underlying regions retain their original length and location. This is true for all underlying audio and MIDI regions, and nested region groups. If you trim the region group shorter, underlying regions may not be heard on playback because they are outside the region boundaries of the trimmed region group.

When trimming region groups with the TC/E Trimmer tool, it applies only to audio regions, and creates a new region over the region group.

If you Ungroup after trimming a region group in (shorter), audio regions falling outside of the bounds of the current region group are trimmed to fit the region group boundary or removed.

## Recording

When recording audio or MIDI, new regions are created over (in front) of region groups instead of being included in the region group. To record into a region group, first ungroup the region group, then record, and then regroup the region group. The region group will be recreated intact with the newly recorded material.

## Fades and Crossfades on Region Groups

Region groups can have fades and crossfades just like regular regions. Fades only apply to audio regions. In addition to crossfading between region groups, you can also crossfade between region groups and regular audio regions.
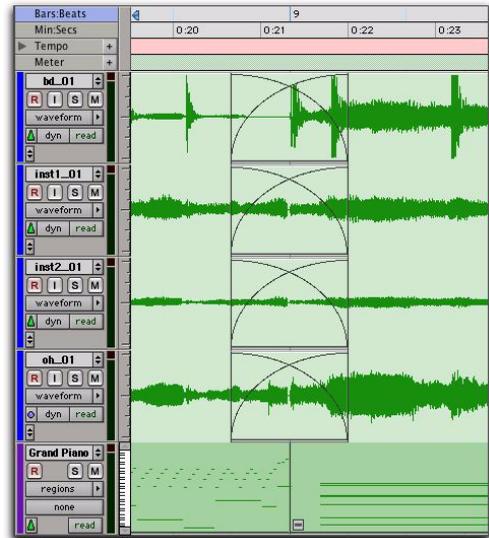


*Two adjacent multitrack region groups with crossfades on the audio tracks, but not on the MIDI track*

⚠ *Ungrouping a region group removes any region group level fades or crossfades. Fades and crossfades are restored by the Regroup command.*

⚠ *Region groups that contain regions with fades are not allowed on Elastic Audio–enabled tracks.*

💡 *When changing tempo with region groups on tick-based tracks, you may need to Ungroup, redo or create new fades, and then Regroup in order to maintain the desired fades.*

📋 *For information on working with fades and crossfades in Pro Tools, see Chapter 25, "Fades and Crossfades."*

## Importing and Exporting Region Group Files

Pro Tools can export and import region groups as region group files (.rgrp) to do any of the following:

- Separate region group metadata from audio files to avoid unnecessary file copy operations when exporting audio region groups composed from multiple source files
- Export MIDI data as part of a region group
- Create multitrack loops

Region group files store the following metadata:

- References to all audio files within the region group
- Region names and relative location in tracks
- Embedded fades and crossfades
- Region group names and format (single or multitrack)
- All MIDI data present in the region group (such as notes, controllers, Sysex, and so on)
- Track names
- Elastic Audio Warp markers and TCE factor
- Region timebase (samples or ticks)
- Sync points
- Loops
- Tempo map

Region group files do not store the following:

- Automation
- Plug-ins
- Track routing
- Meter map
- Region List information

📄 *For information importing and exporting region groups, see "Importing and Exporting Region Group Files" on page 282.*

# Chapter 34: Beat Detective

Beat Detective is a powerful tool for analyzing, editing, and manipulating audio or MIDI tracks that have an inherent rhythmic character.

Beat Detective analyzes an audio or MIDI selection, identifies its peak transients or accented notes, and generates *beat triggers* based on the detected peak transients or MIDI notes. From these beat triggers, Beat Detective can:

- Extract tempo and beat information to create Bar|Beat Markers that can be used to define the session's tempo map. See "Generating Bar|Beat Markers with Beat Detective" on page 693.

- Extract tempo and groove information as groove templates, called DigiGrooves. These templates can be applied to audio or MIDI using Beat Detective or Groove Quantize (see "DigiGroove Templates" on page 694.

- Separate an audio selection into discrete regions, and then conform (or "quantize") separated regions to the session's tempo map, or to groove templates. See "Separating Regions with Beat Detective" on page 696 and "Conforming Regions with Beat Detective" on page 698.

## Beat Detective and Source Material

Beat Detective is most effective with audio or MIDI that has clear attack transients or accent patterns (including most instruments used in popular music, such as drums, guitar, or bass). Beat Detective will be less successful with audio material with soft attacks, or legato phrasing (such as strings and vocals).

## Uses for Beat Detective

Beat Detective can be useful in many situations, including:

**Extracting Tempo from Audio** Beat Detective can generate Bar|Beat Markers, from which it can extract the tempo—even if the audio contains varying tempos, or material with a swing feel. Additionally, once Bar|Beat Markers have been generated, other audio and MIDI regions can be quantized to them.

**Creating DigiGrooves** Beat Detective can extract groove templates, called DigiGrooves, from an audio selection. DigiGrooves can be used to apply the groove, or feel of the captured passage to other audio selections (using Groove Conform) or MIDI data (using Groove Quantize).

**Conforming Audio Regions** Beat Detective can conform ("quantize") audio with a different tempo, or with varying tempos, to the session's current tempo map, or to a groove template.

**"Tighten Up" Performances** Beat Detective can be used to improve the timing of some audio material by calculating and extracting its average tempo, and then conforming its rhythmic components—regions separated with Beat Detective—to the session's tempo map.

**Loop Matching** Since Beat Detective can extract tempo and beat information from audio, and conform audio to an existing tempo map or groove template, this makes it very useful for aligning loops with different tempos or grooves. If a loop is at a different tempo than the current session, Beat Detective lets you quickly separate each beat in the loop and conform them to the tempo map (as an alternative to time compressing or expanding the loop, which can alter the pitch and tone of the audio).

**Remixes** Beat Detective can be used for remixes or creating new rhythms. It can extract tempo from the original drum tracks, or in some instances the original stereo mix. New audio or MIDI tracks can then be conformed to the original material, or the original material can be conformed to new drum tracks, achieving an entirely new feel.

*When working with tick-based audio, use Beat Detective's Region Separation command to quickly separate audio regions into individual "hits" (or slices). You can also create a region group of the separated regions to facilitate editing and arranging.*

**Smoothing Post Production Edits (Audio Only)** Beat Detective's Edit Smoothing can be used to automatically clean up foley tracks that contain many regions requiring trimming and crossfading, effectively removing the gaps of silence between the regions (thus retaining the room tone throughout the track).

# Beat Detective Requirements

Beat Detective is available with all Pro Tools systems.

⚠ *Beat Detective LE cannot be used across multiple tracks without the Music Production Toolkit option. When Beat Detective LE (without the Music Production Toolkit option) is applied to multiple tracks, only the top track is edited.*

## RAM Requirements for Beat Detective

Beat Detective operations can require a large amount of RAM, especially when working with multiple tracks and lengthy selections.

To avoid low memory situations with Beat Detective, do the following:

- If you begin to experience slower Beat Detective response, add more RAM to your computer.

- If your computer does not have the extra RAM, work with shorter selections, or individual tracks.

- Set the Editing preference for Levels of Undo to a smaller value (see "Levels of Undo and Memory" on page 415). Memory-intensive editing operations, such as Edit Smoothing (audio only) with Beat Detective, can use up a large amount of memory when in the Undo queue.

# The Beat Detective Window

The Beat Detective window appears as shown in Figure 14, below.
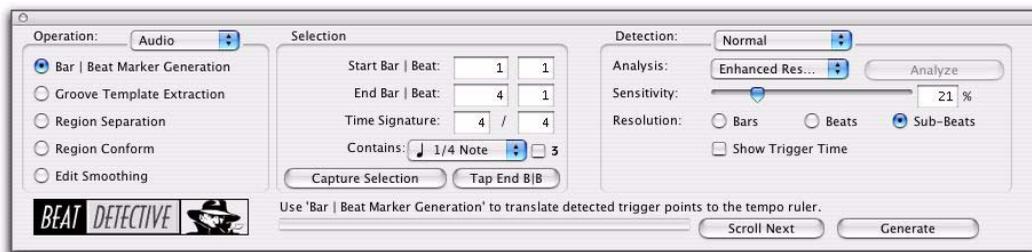


*Figure 14. Beat Detective (Pro Tools HD shown)*

**To open the Beat Detective window, do one of the following:**

- Choose Event > Beat Detective.

  – or –

- Press Control+8 (Windows) or Command+8 (Mac) on the numeric keypad.

Beat Detective is a floating window that can be left open while working. This lets you adjust the controls in real time during playback, while viewing the beat triggers that appear in your selection in the Edit window.

# Beat Detective Modes

The Beat Detective window is divided into three sections: Operation, Selection, and Detection. Depending on the Operation mode, the controls in the Action section change. The Selection options for Beat Detective are available in each of the Operation modes.

The Beat Detective modes include the following:

**Operation** Lets you choose to analyze either MIDI or audio material.

**Bar|Beat Marker Generation** Generates Bar|Beat Markers corresponding to transients detected in the audio selection.

**Groove Template Extraction** Extracts the rhythmic and dynamic information from audio, and saves this information to the Groove Clipboard, or as a DigiGroove template.

**Region Separation (Audio Only)** Separates and creates new regions based on transients detected in the audio selection.

**Region Conform (Audio Only)** Conforms all separated regions within the selection to the current tempo map. Beat Detective can conform audio regions to groove templates (such as DigiGroove templates) in addition to standard quantization.

**Edit Smoothing (Audio Only)** Fills the gaps between conformed regions by automatically trimming them, and if you choose, inserts crossfades.

## Defining a Beat Detective Selection

Whether you will be generating Bar|Beat Markers, extracting a DigiGroove template, or separating regions to be conformed, you must always define the audio or MIDI selection to be analyzed. The Beat Detective window provides tools to define and capture the selection range, time signature, and swing (sub-division) content for the selected audio.

💡 *To ensure the best possible results with Beat Detective, make sure the selected passage starts exactly on the attack of the first beat.*

For Beat Detective to generate beat triggers that are metrically accurate, the length and meter of the selection must be correctly defined. In addition, the selection should not contain any meter or tempo changes.

💡 *Use Loop playback to check the accuracy of your selection.*

**To define a selection for Beat Detective:**

**1** In the Edit window, select a range of audio or MIDI material in a single track or in multiple tracks.

⚠ *Beat Detective LE cannot be used across multiple tracks without the Music Production Toolkit option. When Beat Detective LE (without the Music Production Toolkit option) is applied to multiple tracks, only the top track is edited.*

💡 *To keep the Edit selection intact while playing or looping from any location, deselect Options > Link Timeline and Edit Selection.*
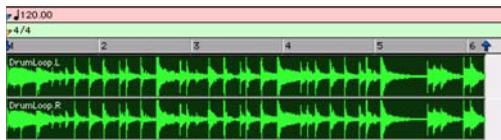


*Making an audio selection for Beat Detective*

Make sure the selection's start and end points fall cleanly on the beat. To zero in on an audio region's start and end points, zoom to the sample level and use the Tab to Transients option (see "Tabbing to Transients" on page 457).

💡 *To avoid losing an existing selection, save and recall an Edit selection by saving it as a Memory Location. See "Memory Locations and Markers" on page 637.*

**2** Choose Event > Beat Detective.

**3** You must define or capture the selection every time you make a new selection or change the tempo map. To define the selection range, do one of the following:

- If the tempo and meter of the audio selection do not match the session's default tempo and meter, enter the Time Signature, and Start Bar|Beat and End Bar|Beat locations. For a four-bar selection that starts on beat 1, enter 1|1 and 5|1.

- If the tempo and meter of the audio selection do not match the session's default tempo and meter, and you are unsure of the length of the material, enter the Time Signature and the Start Bar|Beat location; then start playback, and click the Tap button repeatedly to automatically calculate the End Bar|Beat. When using Tap with long selections, continue to tap until the End Bar|Beat stabilizes. Once stabilized, you may need to manually adjust the number to the nearest bar boundary.

• If the selection's tempo and meter match the session tempo and meter (see "Calculating Tempo with Beat Detective" on page 688), and it aligns correctly with the session's bars and beats, click the Capture Selection button. The correct Time Signature, and Start Bar|Beat and End Bar|Beat values will be filled in automatically.



*Beat Detective, Selection options*

💡 *As long as the audio material is correctly aligned with the session's tempo map, use Capture Selection each time you make a new selection or make any changes to the tempo map (such as changing tempo or meter).*

⚠️ *The Selection definition is not retained when a session is closed and re-opened*

**4** To improve Beat Detective's accuracy in analyzing swung notes, select the Contains option that indicates the smallest sub-division of the beat contained in the selection. The Contains option includes quarter-notes, eighth-notes, sixteenth-notes (the default setting), thirty-second-notes, and a triplet modifier. The selected Contains option determines the groove template grid locations for DigiGroove templates.

# Beat Detective Analysis

Beat Detective provides several analysis algorithms for beat detection appropriate to different types of audio material.

**High Emphasis** Works well with high frequency, inharmonic material, such as cymbals and hi-hats, while avoiding low frequency material.

**Low Emphasis** Works well with low frequency material, such as bass guitar and kick drum, as well as with most harmonic material, such as piano or rhythm guitar.

**Enhanced Resolution** Works well with the broadest range of material, such as full mixes and loops.

### Beat Detection Across Multiple Tracks

When analyzing a selection with multiple tracks, Beat Detective analyzes each independently. Transients that are detected in any track appear as Beat Triggers across all selected tracks regardless of whether or not the detected transient resides in any other track. However, for closely aligned events on multiple tracks, Beat Detective only identifies the first detected transient of a beat event.

For example, if you have four drum tracks—kick, snare, and a pair of overheads—transients in the overhead mics tracks occur a little later than the closely miked snare and kick tracks because it takes more time for the sound to travel from the source to the microphones. If you make a selection across all four tracks and analyze them using Beat Detective, only the transients in the kick and snare tracks will be identified as beat triggers because the transients on overheads will be recognized as being part of the

same beat events (only a little bit late). For information on individually analyzing multiple tracks, see "Using Collection Mode" on page 703.

## Calculating Tempo with Beat Detective

If you know the meter, and start and end points of the audio selection, use Beat Detective to calculate its tempo.

**To calculate a selection's tempo with Beat Detective:**

**1** Make an audio selection in the Edit window and define the selection in the Beat Detective window as described in "Defining a Beat Detective Selection" on page 686.

**2** Select Bar|Beat Marker Generation mode.

**3** In the Detection section (Normal mode), click Analyze.

**4** Set the Sensitivity slider set to 0%



*Beat Detective, Detection mode*

**5** Click Generate.

Bar|Beat Markers are automatically generated at the beginning and end of the selection, indicating the material's tempo and meter.



*Beat Detective generated Bar|Beat Markers identifying tempo and meter*

## Generating Beat Triggers

Once you have accurately defined the selection range, Beat Detective can generate beat triggers based on detected MIDI notes or audio peak transients. The range and type of transients found can be adjusted with the Detection settings, allowing you to zero in on the bars, beats, and sub-beats in the material, while avoiding the non-rhythmic content.

**To generate beat triggers from an audio selection:**

**1** In the Edit window, make an audio selection.

**2** Select Audio from the operation pop-up menu.

**3** In the Beat Detective window, select one of the following modes:

- Bar|Beat Marker Generation
- Groove Template Extraction
- Region Separation (audio only)

**4** Define or capture the selection as described in "Defining a Beat Detective Selection" on page 686.

**5** From the Analysis pop-up menu, choose the desired detection algorithm.

**6** Click the Analyze button.

**7** Depending on the rhythmic content of the selection, set the Resolution to Bars, Beats, or Sub-Beats.

**8** Adjust the Sensitivity slider until beat triggers appear on the beats and sub-beats in the selection.

Bar triggers are indicated with thick lines, beat triggers with medium lines, and sub-beat triggers with thin lines.
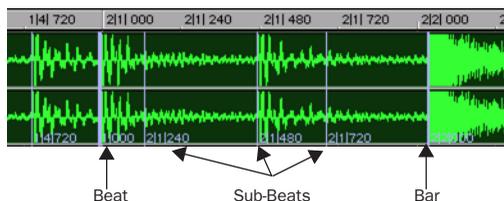


*Beat triggers*

**9** You can zoom to the sample level and click the Scroll Next button to scroll to the next trigger within the selection. To scroll to the previous trigger, Alt-click (Windows) or Option-click (Mac) the Scroll Next button (see "Navigating Consecutive Beat Triggers" on page 693). This is useful to confirm that the beat triggers are appearing in the appropriate locations. If *false triggers* appear between the beats or sub-beats (representing non-rhythmic material) delete them (see "Deleting Beat Triggers" on page 691), or reduce the Sensitivity value.

**10** To display the metric locations for the triggers, select the Show Trigger Time option.

**11** If you cannot get the beat triggers to appear at the right locations, repeat steps 5–10 trying the other Analysis algorithm (High or Low Emphasis).

### To generate beat triggers from a MIDI selection:

**1** In the Edit window, set the MIDI track you want to use to Notes View.

**2** Make a selection across a range of MIDI data. Make certain that the selection start and end points are at musically relevant locations, such as barlines.

**3** Choose Event > Beat Detective.

**4** Select MIDI from the operation pop-up menu.

**5** In the Beat Detective window, select one of the following modes:
  • Bar|Beat Marker Generation
  • Groove Template Extraction

**6** Define the selection range. If the tempo and meter of the audio selection do not match the session's default tempo and meter, enter the Time Signature, and Start Bar|Beat and End Bar|Beat locations. For a four-bar selection that starts on beat 1, enter 1|1 and 5|1.

**7** If your MIDI track contains chords, choose one of the following MIDI chord recognition algorithms from the Analysis pop-up menu:
  • Last Note
  • First Note
  • Loudest Note
  • Average Location
  • Highest Note
  • Lowest Note

**8** Click the Analyze button.

### MIDI Chord Recognition

Since MIDI notes in a chord may be played at slightly different moments, Beat Detective interprets notes that are close together (closer than half the time value that is set in the Selection Contains field) as a chord.
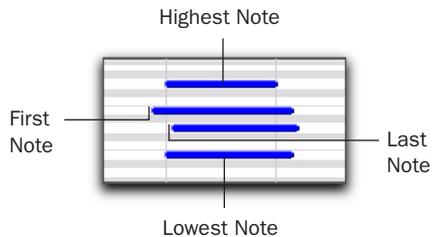


*MIDI chord analysis*

Beat Detective will use the criteria you set in the Analysis pop-up menu to interpret the location of the beat in relation to the chord.

**Last Note** Sets the beat trigger to the start of the last note played in the chord.

**First Note** Sets the beat trigger to the start of the first note played in the chord.

**Loudest Note** Sets the beat trigger to the start of the note in the chord played with the highest velocity.

**Average Location** Sets the beat trigger to a point that represents the average between the start of the first note played in the chord, and the last note played in the chord.

**Highest Note** Sets the beat trigger to the start of the highest note played in the chord.

**Lowest Note** Sets the beat trigger to the start of the lowest note played in the chord.

## Realign Session

Beat Detective's *Realign Session* function lets you generate Bar|Beat markers without tick-based material shifting. This is useful if you want to extrapolate Bar|Beat markers from tick-based material to align the tempo map and Bar|Beat grid to the tick-based material.

☼ *You can also switch tick-based material, such as a MIDI performance, to be sample-based and then manually insert Bar|Beat markers.*

Generating Bar|Beat markers in sessions with tick-based material, such as MIDI tracks and tick-based audio tracks, can cause the tick-based material to shift in absolute time. This can be useful if you want to align the tick-based material to Bar|Beat markers generated from sample-based material.

When you generate Bar|Beat Markers in a session that contains tick-based audio or MIDI, Beat Detective gives you the option to preserve the position of the session's tick-based material, or to allow the material to shift.



*Realign Session dialog*

**To generate Bar|Beat Markers with Beat Detective in a session with tick-based tracks:**

**1** In the Edit window, make an audio or MIDI selection.

**2** In the Beat Detective window, select Bar|Beat Marker Generation mode.

**3** Define or capture the selection as described in"Defining a Beat Detective Selection" on page 686.

**4** Set the Detection resolution to Bars or Beats.

**5** Click the Generate button.

**6** Do one of the following:
- In the Realign Session dialog, choose Preserve Tick Position if you want to let the tick-based material shift in absolute time. This option maintains prior Beat Detective functionality.

– or –

- Choose Preserve Sample Position if you want to have the tick-based material maintain its absolute position. This option can be useful when adding a meter and tempo map to a freely played performance.

**7** Click OK.

## Tips for Getting Useful Beat Triggers

Use the following tips to verify beat triggers:

◆ To focus on a particular area in the selection, unlink the Timeline and Edit Selections and set the playback range by clicking or dragging in any Timebase ruler.

◆ Check the thickness of the beat triggers to see if they align properly with the audio material. Thick triggers fall on barlines, medium triggers fall on beats, and thin triggers fall on sub-beats.

◆ Select the option for Show Trigger Time and see if the (assumed) metric locations of the triggers align with the material. A false trigger should be moved or deleted because it can cause subsequent triggers to appear in the wrong locations (see "Editing Beat Triggers" on page 691).

◆ Consider whether lengthy selections should first be broken down into smaller selections, which could be more easily managed. For example, working in 8- or 4-bar sections might yield better results more quickly.

◆ Beat triggers are preserved when switching between audio and MIDI modes. This allows using MIDI triggers for editing audio, or collecting triggers from combinations of MIDI and audio tracks (Pro Tools HD only).

◆ For selections across multiple tracks, consider whether it may be easier to work with them individually, or in Collection mode (Pro Tools HD and Pro Tools LE with Music Production Toolkit only). See "Detection (Normal) and Collection Mode" on page 702.

⚠ *Beat Detective LE cannot be used across multiple tracks without the Music Production Toolkit option. When Beat Detective LE (without the Music Production Toolkit option) is applied to multiple tracks, only the top track is edited.*

## Editing Beat Triggers

Even though Beat Detective offers a great deal of flexibility in how transients are detected, there may be times when beat triggers must be deleted, moved, or manually inserted. Additionally, triggers can be promoted so they are retained at lower sensitivity settings.

### Deleting Beat Triggers

False triggers, which do not represent an actual beat or sub-beat in the source material, may appear when raising the Sensitivity slider to detect quiet material. In these instances you can locate and manually delete any false triggers.

**To delete a beat trigger:**

**1** With the Beat Detective window open, select any Grabber tool in the Edit window.

**2** Locate the false trigger you want to delete. Transients for false triggers usually have smaller peaks than the other trigger points, and typically fall between the sub-beats.
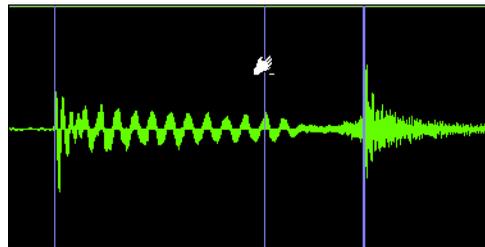


*Deleting a beat trigger*

**3** Alt-click (Windows) or Option-click (Mac) the trigger to delete it.

## Moving Beat Triggers

You can adjust the placement of triggers to allow for the attack of their transients, or to compensate for an individual transient that is slightly ahead of or behind the beat.

### To move a beat trigger:

**1** With the Beat Detective window open, select any Grabber tool in the Edit window.

**2** Locate the beat trigger you want to move and drag it left or right.
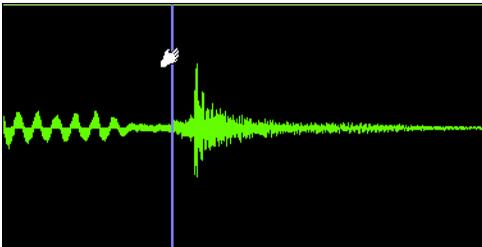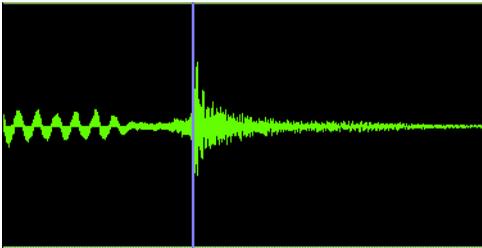


*Moving a beat trigger*

## Inserting Beat Triggers

If an important beat or sub-beat is not detected, because it is too quiet, you can manually insert a beat trigger.

### To insert a beat trigger:

**1** With the Beat Detective window open, select any Grabber tool in the Edit window.

**2** Click in the selection where you want to insert the new trigger. After inserting a beat trigger, you can drag it left or right to adjust its placement (see "Moving Beat Triggers" on page 692).

If you click too close to an existing trigger, the existing trigger will be moved to the new location.

## Promoting Beat Triggers

To ensure that important beat triggers do not disappear when lowering the Sensitivity value, you can *promote* them. This is useful if a selection has numerous false triggers (too many to bother deleting) at a Sensitivity level where crucial, necessary beat triggers are also displayed. If lowering the Sensitivity slider causes the needed triggers to disappear, simply promote them first.

### To promote a beat trigger:

**1** Raise the Sensitivity slider until the desired transient is detected and a beat trigger appears.

**2** Control-click (Windows) or Command-click (Mac) the beat trigger to promote it.

**3** If necessary, repeat steps 1–2 to promote additional beat triggers.

**4** Lower the Sensitivity slider to a value where the false triggers disappear.

Once beat triggers are promoted, they will only disappear if the Sensitivity value is set to 0%. To *demote* all beat triggers in the selection—returning them to their original state—click the Analyze button.

### Redefining a Beat Trigger's Metric Location

It is vital that beat triggers are accurately placed at the correct metric location. If a detected transient is slightly off the beat, Beat Detective may assign it, as well as other transients in the selection, to the wrong metric location.

For example, if you have a bass track where a note was intended to be a downbeat, but was played too early, Beat Detective may define its location as occurring a little before the downbeat. If you then separate and conform the region containing this note, it will be moved to the wrong location. Subsequent regions may be moved to the wrong locations as well.

If a beat trigger is not assigned the correct metric location, relocate it using Identify Trigger.

**To change the metric location of a beat trigger:**

**1** Double-click the beat trigger you want to relocate. The Identify Trigger dialog opens.

**2** In the Identify Trigger dialog, enter the correct location for the trigger, then click OK.
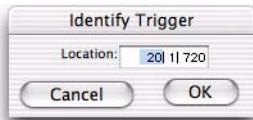


*Identify Trigger dialog*

### Navigating Consecutive Beat Triggers

Use the Scroll Next button to move from the currently selected beat trigger to the next beat trigger. To move to the previous beat trigger, Alt-click (Windows) or Option-click (Mac) the Scroll Next button. This is particularly useful for editing consecutive beat triggers when zoomed in at the sample level.

# Generating Bar|Beat Markers with Beat Detective

Once Beat Detective has accurately detected the peak transients in the audio selection and accurately generated beat triggers, the triggers can be converted to Bar|Beat Markers. Bar|Beat Markers generated by Beat Detective create a tempo map that can be used throughout the session.

Once a tempo map has been generated, other audio regions and MIDI notes can be conformed to the Bar|Beat Markers generated by Beat Detective.

If you want to match the audio material to the session's existing tempo map or a groove template, do not generate Bar|Beat Markers from the material. Instead, use Beat Detective to separate and conform the material (see "Separating Regions with Beat Detective" on page 696).

*If you are simply aligning a sloppy part to the other tracks, you probably do not need to generate Bar|Beat markers.*

**To generate Bar|Beat Markers with Beat Detective:**

**1** In the Edit window, make an audio selection.

**2** In the Beat Detective window, select Bar|Beat Marker Generation mode.

**3** Define or capture the selection as described in "Defining a Beat Detective Selection" on page 686.

**4** Set the Detection resolution to Bars or Beats, and configure the Detection settings so the selection's peak transients are accurately detected (see "Generating Beat Triggers" on page 688).

**5** Click the Generate button.

Bar|Beat Markers are generated, based on the beat triggers, and appear in the Tempo ruler.



*Bar|Beat Markers generated at Bar resolution*
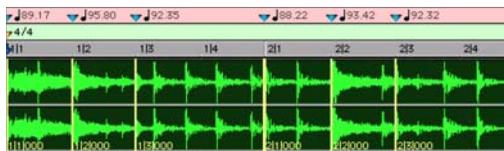


*Bar|Beat Markers generated at Beat resolution*

## Working with Sub-Beats

Tempo is derived from Bar|Beat Markers. Groove, or feel, is derived from Sub-Beats—the deviation of subdivisions of the beat from the strict tempo grid determines the groove or feel.

To extract the groove from a selection, set the Detection Resolution to Sub-Beats. This ensures that the inner rhythms within each bar (if they indeed exist) are represented when generating Bar|Beat Markers. These Bar|Beat Markers can then be used to quantize other audio regions or MIDI tracks, thereby conforming to the Bar|Beat Markers generated by Beat Detective.

⚠ *When quantizing regions or MIDI notes to Bar|Beat Markers on sub-beats that represent a swing feel, make sure to use a straight quantize value (with the Swing option for Quantize disabled).*

# DigiGroove Templates

Beat Detective allows the fine timing nuances of a rhythmic performance to be extracted and saved as a groove template, called a DigiGroove template. DigiGrooves can be saved locally to the Groove Clipboard, or saved to disk as Digi-Grooves.

Groove templates can be used to transfer the feel of a particular performance to:

• Selected audio regions using Groove Conform (see "Groove Conform" on page 700).

• Selected MIDI data using Groove Quantize (see "Groove Quantize" on page 564).

Groove templates are "quantization maps" derived from real musical performances. The rhythmic character of each performance is analyzed and stored as a groove template. Beat Detective analyzes an audio selection for transient peaks according to a defined threshold and maps the rhythmic relationships to a 960 parts per quarter note (ppq) template.

When creating DigiGroove templates, Beat Detective also analyzes the dynamics of a performance. MIDI velocity data is saved from MIDI tracks, and accents and peak levels in audio data are incorporated into the groove template as velocity data, which can be applied to change the dynamics of MIDI tracks.

Beat Detective translates the amplitude of signals in audio tracks to MIDI velocity according to a linear scale. For example:

• A 0 dBFS signal equals a MIDI velocity of 127.

• A signal at –6 dBFS equals a MIDI velocity of 64.

• A signal at –12 dBFS equals a MIDI velocity of 32.

• A –48 dBFS equals a MIDI velocity of 1.

Capturing this information is very important to preserving the feel of a performance, and can add life to MIDI tracks that lack dynamics.

⚠ *Beat Detective only captures duration data from MIDI tracks, not from audio tracks.*

**To extract a Groove Template:**

**1** In the Edit window, make an audio or MIDI selection. The selection should consist of one or more complete bars, starting and ending on downbeats.

⚠ *When extracting Groove Templates, the captured selection must not include Bar|Beat Markers. Otherwise, the accuracy of the Groove Template will be compromised.*

**2** In the Beat Detective window, select Groove Template Extraction mode.

**3** Define or capture the selection as described in "Defining a Beat Detective Selection" on page 686.

**4** Configure the Detection options so the selection's peak transients are accurately detected (see "Generating Beat Triggers" on page 688).

**5** Click the Extract button.

**6** In the Extract Groove Template dialog, enter comments about the groove. You can enter a maximum of 255 characters to describe the groove. Comments can be viewed using the Show Info button in the Beat Detective window.



*Extract Groove Template dialog*

**7** Do one of the following:

- To save the extracted template for use in the current session, without writing the template file to disk, click Save To Groove Clipboard. (This template will be lost when you close the current session.)

- To save the extracted template to disk in order to use it in other sessions or share it with other Pro Tools users, click Save To Disk. Enter a name for the template and click Save. (Do not change the location of DigiGroove template files and folders or they will not be available in your sessions.)

- Click Cancel to cancel without saving the template.

💡 *Use folders and subdirectories to organize DigiGroove templates. However, be sure they are always located in C:\ Program Files\Digidesign\Pro Tools\ Grooves (Windows) or Applications/ Digidesign/Pro Tools/Grooves (Mac). Groove template files located elsewhere will not be available in either Groove Quantize or Beat Detective.*

### Swing Content for Generating Groove Templates

When defining swing content of the selection, select the Contains eighth-note option if the audio selection has a heavily swung eighth-note groove. If the audio selection has relatively straight eighth-notes, use the Contains six-teenth-note option. This lets the resultant Digi-Groove template be applied more easily else-where. Although a groove might be based upon non-swung eighth-note material, you might want to apply the template to material that con-tains sixteenth-notes. If a template only has eighth-note resolution, but the material being conformed contains sixteenth-notes, adjacent sixteenth-notes will be mapped to the same eighth-note location.

### Groove Extrapolation

Beat Detective's ability to extract tempo data from a wide range of material is enhanced by its powerful "groove extrapolation" logic. Groove extrapolation automatically generates beat trig-gers for inclusion in groove templates even if a peak transient is not detected. For example, a drum loop might not have a hit on beat 3, con-sequently no peak transient is detected and no beat trigger is generated. Beat Detective will ex-trapolate from other beat triggers in the selec-tion and create a trigger for beat 3 in the groove template.

In addition, extrapolated triggers preserve the feel of triggers generated from detected peak transients. For example, if a bar of kick drum de-tected three beat triggers, all of which were 20 ticks ahead of the beat, any extrapolated beat triggers will also be mapped 20 ticks ahead of the beat.

# Separating Regions with Beat Detective

## (Audio Only)

Once beat triggers appear in your selection, they can be used to define start and end points for new regions that can be separated automati-cally. The new regions can then be conformed to the session's existing tempo map, or to a groove template.

If you want to clean up the timing for the selec-tion, without affecting the tempo, make sure to first calculate the tempo by generating Bar|Beat Markers (see "Calculating Tempo with Beat De-tective" on page 688).

### To separate regions with Beat Detective:

**1** In the Edit window, make an audio selection.

**2** In the Beat Detective window, select Region Separation mode.

**3** Define or capture the selection as described in "Defining a Beat Detective Selection" on page 686.

**4** Configure the Detection options so the selec-tion's peak transients are accurately detected (see "Generating Beat Triggers" on page 688).

**5** Click the Separate button.

Regions are separated based on the detected beat triggers.

## Trigger Pad

When separating regions, the Beat Detective window displays an option called Trigger Pad.



*Detection settings, Region Separation mode*

Enter a value (0–50 ms) in this field to pad region start points—where the point of separation is located in relation to the beat trigger (transient). This creates a space between the region start point and the region sync point, thereby ensuring that the attack portion of the material remains intact.
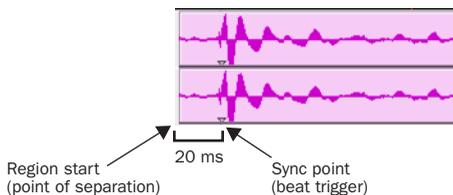


*Separated region with 20 ms Trigger Pad*

When conforming separated regions, the region sync point, not the region start point, determines where the region is placed.

📖 *For more information on region sync points, see "Sync Points" on page 662.*

## Separating Multiple Tracks

### (Pro Tools HD and Pro Tools LE with Music Production Toolkit Only)

You can use beat triggers from a single track, or subset of tracks, to separate a group of tracks.

⚠️ *Beat Detective LE cannot be used across multiple tracks without the Music Production Toolkit option. When Beat Detective LE (without the Music Production Toolkit option) is applied to multiple tracks, only the top track is edited.*

In the following example, the defined selection is a drum loop consisting of two bars of 5/4. The kick, snare, hi-hat, and overhead microphones are recorded to separate tracks.

Analyzing the loop's kick drum track, with Detection Resolution set to Beats, Beat Detective places beat triggers at the transients on beats 1 and 4 (see Figure 15).
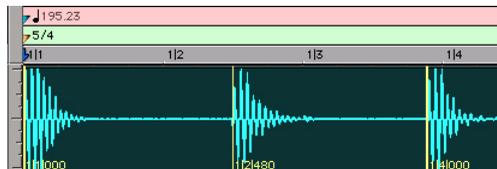


*Figure 15. Kick drum track*

Extending the selection to the snare, hi-hat, and overhead microphones tracks, and then performing the separation, results in separated regions in each of the drum tracks at the same location, based on the beat triggers from the kick drum track (see Figure 16).
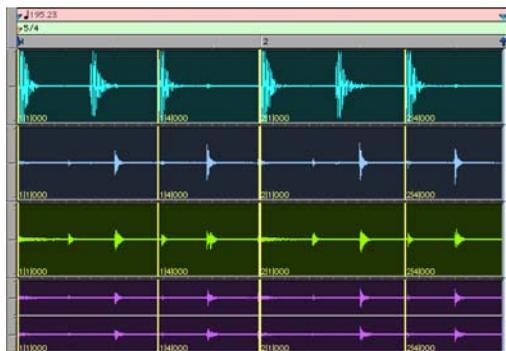


*Figure 16. Kick drum, snare, hi-hat, and overhead microphones tracks*

The separated regions can then be conformed as a group.

You can also utilize Collection mode (Pro Tools HD and Pro Tools LE with Music Production Toolkit only) when working with multiple tracks. Collection mode lets you analyze and detect triggers on tracks individually, and if you choose, add only the unique triggers from the current track to the overall collection. For more information, see "Detection (Normal) and Collection Mode" on page 702.

# Conforming Regions with Beat Detective

### (Audio Only)

After regions have been separated with Beat Detective, the regions can then be conformed using one of two modes:

**Standard Conform** Uses the session's current tempo map (Grid)

**Groove Conform** Uses groove templates.

Beat Detective will conform any selected region, whether or not it was separated with Beat Detective. However, in order to successfully conform regions with Beat Detective, the region start points must correspond to the start of the material that will align with the session's bars and beats. This should generally not be a problem if the regions were separated with Beat Detective (rather than manually separated or trimmed).

### Standard Conform

This is similar to using the Region > Quantize to Grid command, but with one important difference: With a single operation, Beat Detective can adjust the position of all regions, whether they have a straight or swing feel.
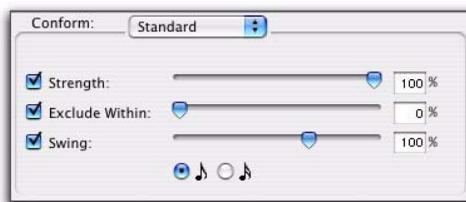


*Beat Detective, Standard Conform options*

**To conform regions using Standard Conform:**

**1** In the Beat Detective window, select Region Conform mode.

**2** Make sure Standard is selected.

**3** In the Edit window, if not already selected, select the separated regions you want to conform. Make sure the selection's start and end points fall cleanly on the beat.

**4** In the Beat Detective window, define or recapture the selection as described in "Defining a Beat Detective Selection" on page 686.

**5** To affect how strongly the regions are conformed to the Grid (tempo map), select the Strength option and specify a percentage value with either the slider or by typing in a value:

- Lower percentage values preserve the original feel of the regions.

- Higher percentage values align the regions more tightly to the tempo map, with 100% aligning precisely to the tempo map.

*To "tighten up" the original feel, while retaining it, set the Strength option to 85–88%.*

**6** To affect which regions are conformed, select the Exclude Within option and specify a percentage value with the slider or by typing in a value:

- Lower percentage values ensure that regions further away from the Grid are conformed, while those closer to the Grid are not.

- Higher percentage values ensure that regions closer to the Grid, as well as those further away, are conformed.

*To "tighten up" the original feel, while retaining it, set the Exclude Within option to 10–15%.*

**7** To achieve a swing feel for the conformed regions, select the Swing option and whether the swing is based on eighth-notes or sixteenth-notes, then specify a percentage value with the slider or by typing in a value:

- Smaller percentage values yield less swing, with 0% yielding none.

- Larger percentage values yield more swing, with 100% yielding a triplet, swing feel.

- Percentage values between 100–150 move the regions beyond a triplet, swing feel, toward the next sixteenth-note boundary (provided the Swing note value is set to eighth-notes).

*If Beat Detective has successfully captured enough of the sub-beats from a selection before separating, you can successfully conform with the Swing option to change the groove from a "straight" feel to one that is swung. You can also import a groove template containing a swing feel (see "Groove Conform" on page 700).*

**8** Click the Conform button to automatically conform all regions in the selection.



*Regions conformed with Beat Detective*

**9** Audition the new conformed regions by clicking Play in the Transport window.

**10** Do one of the following:

- If necessary, select Edit > Undo, and repeat steps 4–8 trying a different set of Conform settings.

– or –

- If necessary, apply Edit Smoothing (see "Edit Smoothing" on page 701).

## Groove Conform

Instead of using a grid based on the session's tempo map, Groove Conform uses a grid based on a groove template, or DigiGroove. DigiGrooves can be used to apply the feel of a captured passage to the selected audio regions. For information about creating DigiGroove templates, see "DigiGroove Templates" on page 694.

**To conform regions using Groove Conform:**

**1** In the Beat Detective window, select Region Conform mode.

**2** Select Groove.
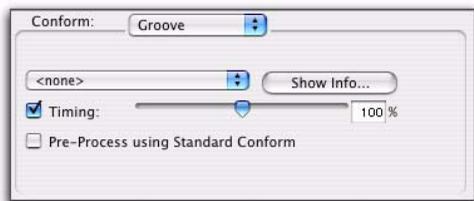


*Beat Detective, Groove Conform options*

**3** In the Edit window, if not already selected, select the separated regions you want to conform. Make sure the selection's start and end points fall cleanly on the beat.

**4** In the Beat Detective window, define or recapture the selection as described in "Defining a Beat Detective Selection" on page 686.

⚠️ *When using Groove Conform, the captured selection must not include Bar|Beat Markers. Otherwise, the accuracy of the Groove Template will be compromised.*

**5** From the Groove Template pop-up menu, select the Groove Clipboard or a saved groove template (for information on creating groove templates, see "DigiGroove Templates" on page 694).

**6** To see comments about the selected template, click Show Info.

**7** To affect how strongly the regions are conformed to the groove template, select the Timing option and specify a percentage value with either the slider or by typing in a value:

- Lower percentage values preserve the original feel of the regions.

- Higher percentage values align the regions more tightly to the groove templates grid, with 100% aligning precisely to the template grid.

- If the slider is set to 200%, regions move to a location that is twice the difference between the original region location and the position of the referenced template event.

For example, if a note was played at Bar 1|1|060 (a 16th note), and the corresponding template event is at 1|1|073, a slider value of 100% results in the note being shifted to 1|1|073; a slider value of 200% shifts the note to 1|1|086.

**8** If desired, enable the Pre-Process using Standard Conform option. With this option enabled, Beat Detective conforms regions to the current Standard Conform settings before applying the groove template. With material in which the performance was not accurate, Pre-Process using Standard Conform can lead to better results by ensuring that the performance is accurately mapped to the correct bars, beats, and sub-beats before the groove template is applied. Experimentation is the best way to determine when it is appropriate to use this option.

💡 *When conforming an audio passage to a heavily swung groove template, enabling Pre-Process using Standard Conform will often yield better results.*

**9** Click the Conform button to automatically conform all regions in the selection.

**10** Audition the new conformed regions by clicking Play in the Transport window.

**11** Do one of the following:

- If necessary, select Edit > Undo, and repeat steps 4–9 trying a different groove template or Groove Conform settings.

– or –

- If necessary, apply Edit Smoothing (see "Edit Smoothing" on page 701).

# Edit Smoothing

## (Audio Only)

After regions are conformed, there may be gaps between the regions. These gaps can cause the material to sound unnatural on playback.
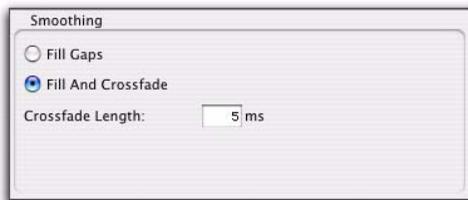


*Beat Detective, Smoothing options*

Beat Detective can automatically fill the gaps between regions, and even add crossfades if you choose. This Edit Smoothing option can be used with regions that have been conformed, or with a track that contains many regions that need to be trimmed and crossfaded (such as in a sound effects track). This automated process of smoothing region edits can save many hours of tedious editing.

**To use Edit Smoothing on conformed regions:**

**1** In the Beat Detective window, select Edit Smoothing mode.

**2** Select a Smoothing options:

**Fill Gaps** Select this option to trim region end points so that the gaps between regions are filled.

**Fill And Crossfade** Select this option to trim region end points and automatically add a pre-fade (in ms) directly before each region start point.

**3** In the Edit window, if not already selected, select the range of conformed audio regions you want to smooth. Make sure the selection's start and end points fall cleanly on the beat.

**4** Click the Smooth button to smooth the edits for the selected regions.
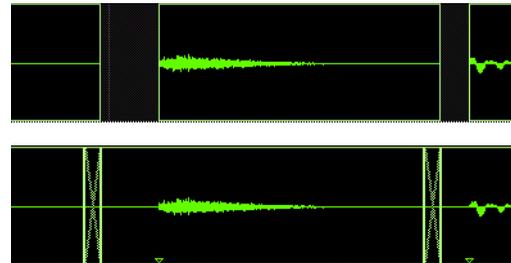


*Regions before and after Edit Smoothing*

**5** Audition the results by clicking Play in the Transport window.

**6** If necessary, select Edit > Undo, and repeat steps 2–5 trying a different Crossfade Length.

### Edit Smoothing Creates Sync Points

After smoothing edits with Beat Detective, sync points (corresponding to the material's start point) are automatically created for the conformed regions. This allows you to later conform the regions to a different tempo map or groove template, or use different Conform settings. However, sync points are only created as they are needed: If gaps between regions are created during Region Conform, Fill Gaps in Edit Smoothing mode will trim regions to fill the gap and a sync point will be created at each region's original start point. If there is no gap between regions, no sync point will be created by Edit Smoothing.

📖 *For more information on region sync points, see "Sync Points" on page 662.*

### Consolidating Regions after Edit Smoothing

The process of separating, conforming, and smoothing with Beat Detective can leave tracks with many regions and many crossfades. If you are working with multiple tracks, the density of these edits may lead to system performance problems.

💡 *If performance is not an issue, use the Region Group command for easier editing and manipulation of regions. This can be useful for arranging beats that were sliced with Beat Detective, especially if you plan on changing tempos with tick-based audio tracks. For more information on region groups, see "Region Groups" on page 675.*

Once you are satisfied with the results from Beat Detective, it is recommended that you flatten the tracks with the Consolidate command. For all regions selected, Consolidate creates a single, contiguous audio file to reduce the session's edit density. See "Consolidate Command" on page 475.

⚠ *Before consolidating a large selection across multiple tracks, make sure there is enough RAM available. See "RAM Requirements for Beat Detective" on page 684.*

## Detection (Normal) and Collection Mode

### (Pro Tools HD and Pro Tools LE with Music Production Toolkit Only)

In some instances, it may be difficult for Beat Detective to successfully analyze multiple tracks with the same Detection settings. With Beat Detective's Collection mode, you can collect a set of beat triggers from different tracks, each with different Detection settings, and use the collection of triggers to generate Bar|Beat Markers or DigiGroove templates, or separate new regions. Collection mode is the only way to analyze and create beat triggers on one track, and apply them to another track.

This method of selectively adding beat triggers from separate analysis passes on different tracks, until you get only the triggers you want, is potentially much more effective than manually deleting, inserting, or adjusting incorrect or false triggers.

⚠ *Beat Detective LE does not support Collection Mode without the Music Production Toolkit option.*

## Drum Tracks and Collection Mode

Suppose you have drum tracks for kick, snare, hi-hat, and overhead mics. If you analyze a selection across all of the tracks, you may get many false triggers when you raise the Sensitivity slider high enough to capture the hi-hat material (coming mainly from the tracks for the overhead mics).

However, if you analyze only the track for the overhead mics, the resulting beat triggers are slightly later than the material on the other tracks (since it will take more time for the sound to reach the overhead mics). If you then extend the selection to the other drum tracks and separate them, the regions from the kick, snare, and tom tracks will be cut slightly late (see Figure 17 below).
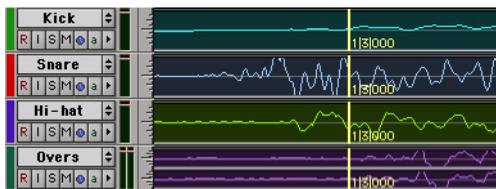


*Figure 17. Overhead mics generate late beat triggers*

Using Collection mode, you can analyze each drum track separately, one at a time, optimizing the Detection settings for each track until you get the triggers you want. The triggers for each track can be added successively to the collection, or you can choose to collect only the unique triggers from a track. The collection of triggers that results can then be used to generate Bar|Beat Markers or a DigiGroove template, or separate new regions.

## Using Collection Mode

Collection mode is available in Bar|Beat Marker Generation, Groove Template Extraction, or Region Separation mode (audio only), and is accessed by clicking the Collection Mode button in the Detection section.
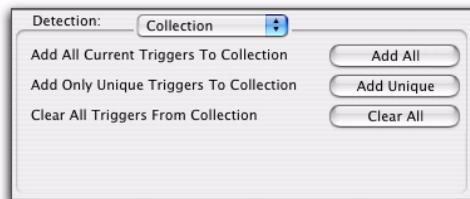


*Beat Detective, Collection mode options*

### To use Collection mode:

**1** In the Edit window, make an audio selection on a single track. Make sure the selection's start and end points fall cleanly on the beat.

**2** In the Beat Detective window, select one of the following modes:

- Bar|Beat Marker Generation
- Groove Template Extraction
- Region Separation (audio only)

**3** Define or capture the selection as described in "Defining a Beat Detective Selection" on page 686.

**4** Configure the Detection options so the selection's peak transients are accurately detected (see "Generating Beat Triggers" on page 688).

**5** Click the Collection Mode button.

**6** In the Detection (Collection Mode) section, click Add to add all the current beat triggers to the collection.

**7** Click the Normal Mode button and move the selection to the next track you want to analyze. Make sure to keep the selection range constant for each track.

> ⌂ *Press Start+P (Windows) or Control+P (Mac) to move the selection up, or Start+Semi-colon (Windows) or Control+Semi-colon (Mac) to move the selection down.*
>
> *With Commands Keyboard Focus enabled, press "P" to move the selection up, or Semi-colon (;) to move the selection down. Hold down the Shift key to retain and add to the current selection*

**8** Configure the Detection options so the selection's peak transients are accurately detected (see "Generating Beat Triggers" on page 688).

**9** Click the Collection Mode button again.

**10** Do one of the following:

- In the Detection (Collection Mode) section, click Add Unique Triggers to add only the *unique* triggers from the track to the collection.
- Click Add All to add *all* triggers to the collection.
- Click Clear All to clear *all* triggers from the collection.

Each new set of triggers added to the collection appears in a different color. If successive triggers in the collection are located closely together (for example, because of microphone leakage), Beat Detective keeps only the earlier triggers (see Figure 18).

**11** Repeat steps 7–10 for each additional track you are analyzing.

The beat triggers stored in the Collection mode are saved with sessions. Therefore, when a session is opened later, the previous collection material is still there (until it is cleared).

**12** Once the desired beat triggers have been added to the collection, you can use them to generate Bar|Beat Markers or groove template, or separate regions. However, this must be done from the Collection Mode section (when the triggers are displayed in multiple colors).

> ⌾ *To separate regions across multiple tracks, make sure to extend the selection to any additional tracks before separating.*
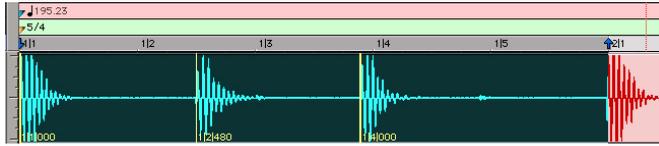
Beat triggers
detected in Kick track
added to collection
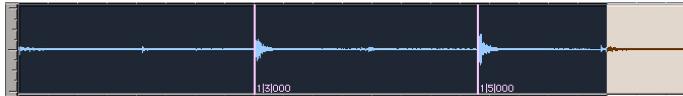
Unique beat triggers
detected in Snare track
added to collection
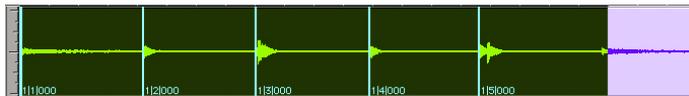
Unique beat triggers
detected in Hi-hat track
added to collection
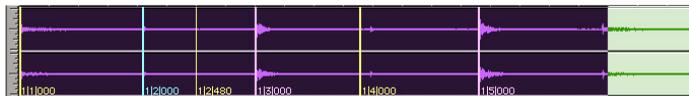
Collected beat triggers
applied to Overhead
microphones track

*Figure 18. Overhead mic track displaying a collection of beat triggers containing unique triggers generated from the
kick, snare, and hi-hat tracks*

# Part VII: Mixing

# Chapter 35: Basic Mixing

In addition to the final mixdown, mixing tasks can occur any time during a recording session. This chapter covers Pro Tools mixing, including audio signal flow, output and bus paths, sends, and signal routing for submixing and mixdown.

During mixing, real-time plug-ins and hardware inserts provide effects and signal processing (see Chapter 36, "Plug-in and Hardware Inserts").

## Mixing Concepts

Mixing involves making decisions about elements such as volume levels, panning, and effects in your studio. While you can control many variables in your studio (such as speakers and room acoustics), you cannot control the listening environment in which your final mix will be heard. The following tips will help you make your mix sound as good as possible to as many listeners as possible:

**Alternate Speakers and Reference Monitoring** Listen to your mixes on a variety of different speakers to gauge how well the mix will translate to different playback systems.

**Reference Mixes** Make discs and MP3s of rough mixes and audition them outside the studio in different listening environments.

**Format Compatibility Monitoring** Check stereo mixes for compatibility with mono playback systems, and multichannel surround mixes for compatibility with stereo playback systems. (see the *Pro Tools Sync & Surround Concepts Guide*).

## Metering and Calibration

Meters provide a visual display of signal levels. They tell whether signal is getting to a channel, and how loud or soft a signal is relative to (above or below) "0."

By calibrating all your equipment to standard reference levels, a consistent level can be achieved (and metered) among different recording devices in a studio, throughout a facility, or throughout an entire production chain. For example, a level of –18 dBFS coming out of a DAT deck should play and meter at –18 dBFS in Pro Tools.

### Calibrating Audio Interfaces

### (Pro Tools|HD with 192 I/O Only)

If you are using a Pro Tools|HD system with a 192 I/O audio interface, use the Calibration Reference Level option (in the Operation Preferences page) to set the reference level when Pro Tools is in Calibration mode.

📄 *For instructions on calibrating a 192 I/O Audio Interface, see the 192 I/O Guide.*

# Signal Flow by Track Type

Pro Tools provides the following track types:

- Audio
- Auxiliary Input
- Master Fader
- MIDI
- Instrument
- VCA Master (Pro Tools HD only)

Audio, Auxiliary Input, Master Fader, and Instrument tracks can route audio. MIDI and Instrument tracks can control MIDI data.

VCA Master tracks do not pass audio or control MIDI, but do affect controls on other tracks. See "VCA Master Tracks" on page 714.

Tracks can be identified in the Mix window by their Track Type icon.

Track Type icons
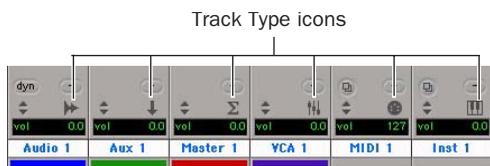


*Audio, Auxiliary Input, Master Fader, VCA Master, MIDI, and Instrument tracks*

📖 *For information on creating tracks, see "Creating Tracks" on page 144.*

## Audio Tracks

Audio tracks play audio from disk, record audio to disk, and monitor input signals when record-enabled or in TrackInput monitoring mode. Inserts on audio tracks are pre-fader. Sends on audio tracks can be pre- or post-fader.

Mono and stereo audio tracks are available on all Pro Tools systems.

Multichannel audio tracks and surround mixing formats are supported by Pro Tools HD only.
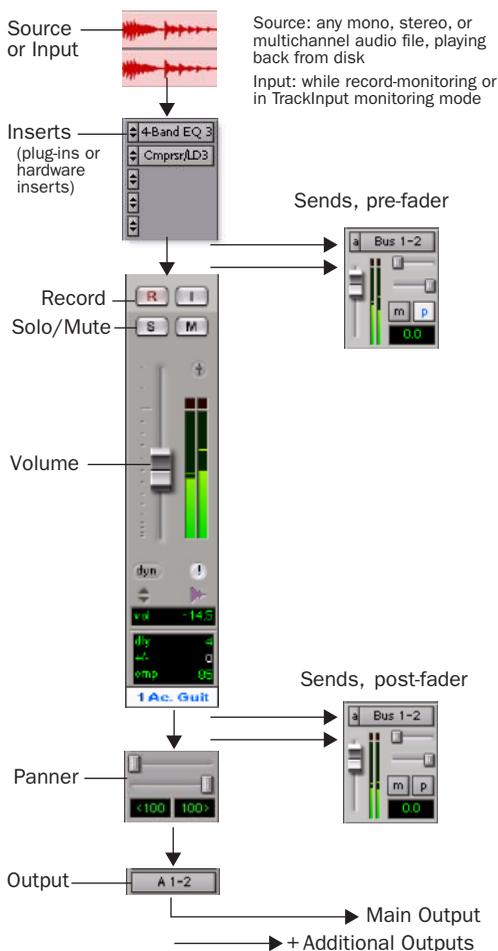


*Audio track audio signal flow*

# Auxiliary Input Tracks

Auxiliary Input tracks provide the same signal routing options as audio tracks, except that their input must come from an internal bus or hardware input. Inserts on Auxiliary Inputs are pre-fader.
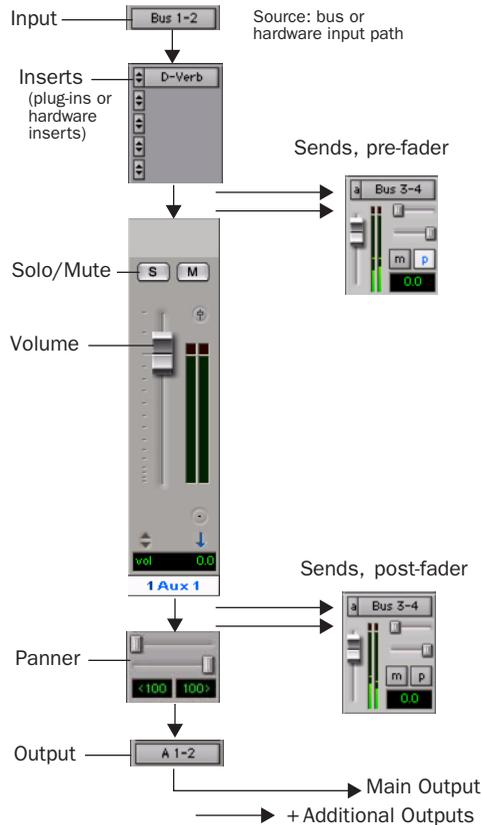


*Auxiliary Input track audio signal flow*

Auxiliary Input tracks are used as inputs for audio from external MIDI instrument and other sources, as well as to submix internal bus and output paths. They can be fully automated. When using Auxiliary Input tracks as inputs for external sources, adjust the source output levels to achieve proper recording levels.

## Common Uses for Auxiliary Inputs

Auxiliary Inputs can be used to:

- Apply real-time plug-ins or an external processor to a submix, using the Auxiliary Input as an effects return (such as reverb or bus line compression)

- Input audio from external MIDI instruments and other audio sources into the mix, to monitor or route to audio tracks for recording to disk (such as from the audio outputs of a MIDI synthesizer)

- Consolidate volume control of any submix under a single fader

- Integrate an instrument plug-in (such as Digidesign's Xpand!) into a session. However, the preferred way to integrate instrument plug-ins is with Instrument tracks.

### To route an Auxiliary Input:

**1** Click the Input Path selector of the Auxiliary Input and choose an input or bus path.

**2** Click the Output Path selector of the Auxiliary Input and choose an output or bus path.

**3** Adjust the Auxiliary Input fader to set the return volume.

*See the submix examples in "Signal Routing for Monitoring and Submixing" on page 735.*

## Master Fader Tracks

Master Fader tracks control the master output levels of output and bus paths. When assigned to an active output or bus path, they provide post-fader effects processing and master level control for a main mix, headphone and cue mixes, stems, effects sends, and other signal routing applications. Master Faders support all track formats supported on your Pro Tools system.
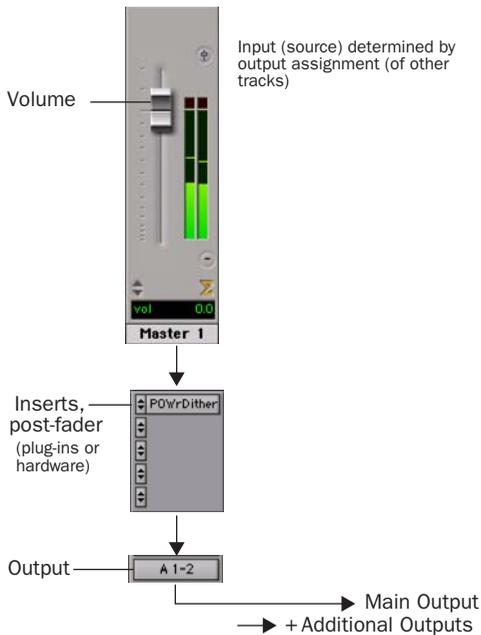


*Master Fader track audio signal flow*

Unlike inserts on audio tracks and Auxiliary Inputs, Master Fader inserts are post-fader. This lets you insert a dither plug-in, or similar plug-in, on your master mix, and affect its processing with the Master Fader level. For more information, see "Dither" on page 746.

Master Faders provide up to five *post-fader* inserts and no sends. Also, Master Fader tracks do not have Pan sliders, or Mute and Solo buttons.

*If you absolutely must have a pre-fader insert on your Master Fader signal, set up an Auxiliary Input before the Master Fader.*

### Common Uses for Master Faders

Master Faders can be used to:

- Control and process output mixes
- Monitor and meter an output (such as a bus or hardware output) to guard against clipping
- Control submix levels
- Control effects sends levels
- Control submaster (bussed tracks) levels
- Apply dither or other inserts to an entire mix

Use Master Faders to control submix levels, send level masters, and other outputs. Master Faders can control either audio interface outputs or internal busses. A Stereo Master Fader controls the level of a pair of outputs. Master Faders do not consume any of your system's audio processing power.

### To use a Master Fader as a stereo master volume control:

**1** Create a stereo Master Fader track.

**2** Set the outputs of all audio tracks in the session to the main output path (for example, outputs 1–2 of your primary audio interface) and set the panning for each track.

**3** Set the output of the Master Fader to the main output path.

### Master Fader Meters

Meters on Master faders always show post-fader levels, regardless of the Pre-Fader Metering setting in the Options menu.

### Master Faders and Paths

Master Faders can be assigned to main or sub-paths as defined in the I/O Setup. Multiple Master Faders cannot be assigned to the same path.

### Active and Inactive Master Faders

When a Master Fader track is inactive, its associated plug-ins, I/O assignments, and their resources are made inactive.

When a Master Fader output assignment (path assignment) is made inactive, the Master Fader no longer controls the master gain of that path.

When you duplicate a Master Fader track, the duplicated track's assignment will be inactive.

## Instrument Tracks

Instrument tracks provide the same audio signal routing options as Auxiliary Input tracks, except that their input must come from an instrument plug-in inserted on that Instrument track, or from a bus or hardware input.
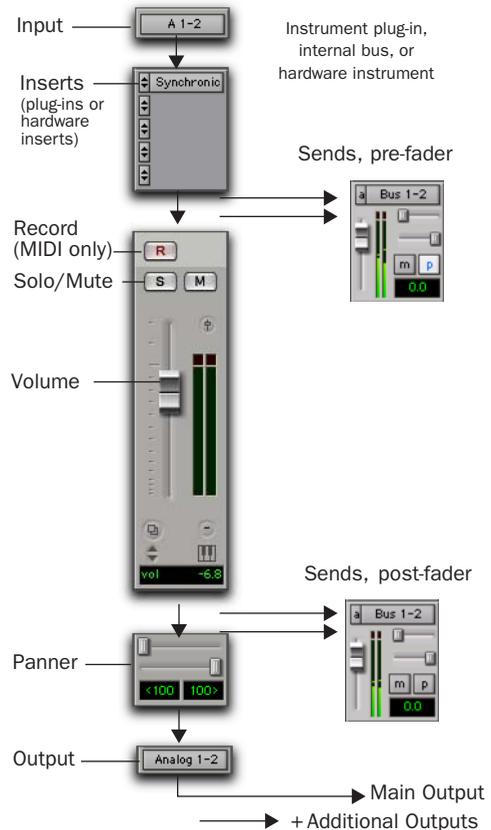


*Instrument track audio signal flow*

Instrument tracks are used as inputs for instrument plug-ins, and other sources (including internal busses). They can be fully automated. When using an Instrument track as an input for an external source, adjust the output level at the source to achieve proper recording level.

### Common Uses for Instrument Tracks

By playing back MIDI from or through an Instrument track you can control and monitor the audio from:

- Instrument plug-ins, such as software synthesizers or samplers.
- External MIDI instruments, such as synthesizers and samplers

**To route audio from an external MIDI instrument to an Instrument track:**

**1** Click the Input Path selector of the Instrument track and choose the corresponding hardware input for your external MIDI instrument.

**2** Click the Output Path selector of the Instrument track and choose an output or bus path.

**3** In Instruments View, click the MIDI Input selector, and assign a device and channel from the pop-up menu to record and control the external MIDI instrument.

**4** In Instruments View, click the MIDI Output selector, and assign the port and channel for the external MIDI instrument from the pop-up menu.

**5** Adjust the Instrument fader to set the volume.

> 📄 *For information on assigning MIDI input and output for Instrument tracks, see "Assigning MIDI Input and Output for Instrument Tracks" on page 166.*

> 📄 *For information inserting Instrument plug-ins on Instrument tracks, see "Inserting Instrument Plug-ins on Instrument Tracks" on page 167.*

# VCA Master Tracks
## (Pro Tools HD Only)

VCA Master tracks emulate the operation of voltage-controlled amplifier channels on analog consoles, where a VCA channel fader would be used to control, group, or offset the signal levels of other channels on the console.

VCA Master tracks do not pass audio, so they do not have inputs, outputs, inserts or sends. A Mix group is assigned to a VCA Master track, which appears in the VCA track's Group Assignment selector. The controls of the tracks in that Mix group, called the *slave* tracks, are modified by the controls on the VCA Master.
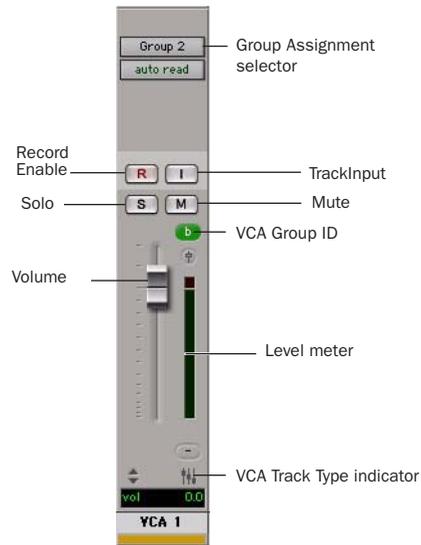


*VCA Master track*

### VCA Slave Track Control Indications

Unlike VCAs on traditional analog consoles, VCA Master tracks in Pro Tools directly affect their slave tracks, so that the controls on each slave track always show their actual values:

- The output level of each slave track is indicated by the position of its fader.
- The solo, mute, record enable, and Track-Input status of each slave track are indicated by the corresponding controls on the track.

This ensures that even when a VCA Master track is not visible, the true state of its slave tracks is accurately displayed.

### VCA Slave Track Controls and Group Behavior

When a group is assigned to a VCA Master, the VCA-modifiable controls (Volume, Mute, Solo, Record Enable and TrackInput) on its slave tracks, by default, do not follow any grouped behavior that may be set in the Attributes page of the Groups dialog. This lets you control the output levels of the group's member tracks while retaining the ability to adjust individual member track levels.

Slave tracks can be set to follow normal grouped behavior. See "Assigning Groups to VCA Masters" on page 717.

### Common Uses for VCA Master Tracks

By grouping tracks in a Mix group and assigning that group to a VCA Master track, you can:

- Control the output levels of all the VCA group's member tracks without the need to bus them to an Auxiliary Input track or to the same output path
- Create multiple, nested VCA groups and control the output levels of multiple submixes at the same time
- Automate a submix by automating its VCA Master track

## VCA Master Track Controls

The controls on a VCA Master track affect the corresponding controls on the slave tracks in its assigned Mix group. VCA Master tracks have the following controls:

### Volume

The VCA Volume fader controls the Volume fader on audio, Auxiliary Input, Instrument, Master Fader, and other VCA Master tracks in a VCA-controlled group. (Volume faders on MIDI tracks are not affected.) Volume faders on slave tracks move to show the *composite level*, or the level on each track resulting from the position of the VCA Master Volume fader.

### Mute

The VCA Mute button controls the mute state of audio, Auxiliary Input, Instrument, MIDI, and other VCA Master tracks in a VCA-controlled group. Muting a VCA-controlled group does not change the underlying mute state of slave tracks. (Mute buttons on slave tracks that were previously unmuted show an implicit mute.)

### Solo

The VCA Solo button controls the solo state of audio, Auxiliary Input, Instrument, MIDI, and other VCA Master tracks in a VCA-controlled group.

- Soloing a VCA Master will implicitly mute all tracks except its slave tracks, thereby indirectly soloing the slave tracks.
- Soloing a VCA Master will clear any explicit solos on its slave tracks, leaving them indirectly soloed, and implicitly mute all other tracks.
- Explicitly soloing a slave track while its VCA Master track is soloed will override the VCA Master solo.

### Record Enable

The VCA Record Enable button toggles the Record Enable status of only those audio, Instrument, and other VCA tracks that have already been record-enabled individually. You can then toggle record enable on and off for those tracks using the VCA Master Record Enable.

**To temporarily force all slave tracks to toggle their record enable status:**

- Alt-click (Windows) or Option-click (Mac) the Record Enable button on the VCA Master.

### TrackInput

The VCA TrackInput button toggles the input monitor status of only those audio tracks in a VCA-controlled group that are record-enabled. You can toggle input monitor status for those tracks using the VCA Master TrackInput button.

**To temporarily force all slave tracks to toggle their input monitoring status:**

- Alt-click (Windows) or Option-click (Mac) the VCA Master TrackInput button on the VCA Master.

### Level Meter

On VCA Master tracks, level meters indicate the highest level occurring on any of its individual tracks, not a summed level of all slave tracks.

The channel format of level meters on the VCA Master is set according to the channel formats of its slave tracks, as follows:

- If all slave tracks are the same channel format (mono, stereo or a multichannel format), the number of level meters on the VCA Master track is identical to that of the slave tracks.
- If the slave tracks are different formats, the number of level meters on the VCA Master track is set to one.

### Record Enable, TrackInput and Slave Tracks

When a slave track is record-enabled (the Record Enable button is lit) or set to Input Only mode (the TrackInput button is lit), its automation is temporarily turned off, and its Volume fader is no longer affected by the VCA Master.

## Assigning Groups to VCA Masters

An existing Mix group can be assigned to a VCA Master, or a new Mix group can be assigned to a VCA Master while it is being created. Only one group can be assigned to a VCA Master at a time. A VCA Master cannot control a group that includes itself.

**To assign an existing group to a VCA Master:**

■ Click the Group Assignment selector on the VCA Master track and choose an available group from the pop-up menu.
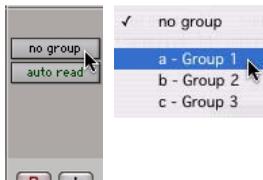


*Assigning an existing group to a VCA Master*

**To assign a new group to a VCA Master:**

**1** While creating a new group, select Mix or Mix/Edit as the Group type.

**2** In the Group dialog, choose an available VCA Master track from the VCA pop-up menu.



*Assigning a new group to a VCA Master*

## Track Membership in Multiple VCA Groups

It is possible for a single slave track to be a member of more than one VCA-controlled group. In this case, the contribution of all VCA Master Volume faders is summed on the slave track. Mute, Solo, Record Enable, and TrackInput follow the same rules for enabling or disabling slave tracks.

## Allowing Grouped Behavior of VCA Slave Track Controls

When a track is a VCA slave track, its Volume, Mute, Solo, Record Enable, and TrackInput controls follow VCA functions, and normally do not follow Mix group behavior.

However, these slave track controls can be set to allow Mix group behavior in addition to their VCA functions.

**To allow grouped behavior of VCA-related controls on slave tracks:**

**1** Choose Setup > Preferences and click Mixing.

**2** In the Automation section, deselect the "Standard VCA Logic for Group Attributes" option.

Volume, Mute, Solo, Record Enable, and TrackInput are made available as Mix group attributes in the Group dialog.

# Inserts

Pro Tools lets you insert up to five inserts on each audio, Auxiliary Input, Master Fader, or Instrument track. Each insert can be either a software *plug-in insert* or a *hardware insert*, or an *instrument plug-in*.

Inserts provide the following features:

- Plug-ins and hardware inserts route the signal from the track through the effect of your choice, and automatically return it to the same track.

- Hardware inserts send and return the signal to corresponding input and output channels of an audio interface, which can be connected to outboard effects.

- Some Instrument plug-ins (such as Virus Indigo) accept audio from the track input (letting you use them as processing plug-ins).

- Inserts on audio, Auxiliary Input, and Instrument tracks are pre-fader.

- Inserts on Master Faders are post-fader.

- Inserts can be bypassed or made inactive.

- Most plug-in controls are fully automatable.

📖 *See Chapter 36, "Plug-in and Hardware Inserts" for details about using plug-ins and inserts.*

## Track Output Format and Plug-ins

Pro Tools supports mono, multi-mono, stereo, and multichannel plug-ins (Pro Tools HD with Surround Mixer only).

Because inserts process in series, changing the plug-in format can alter the channel format. For example, inserting a mono-to-stereo plug-in on a mono Auxiliary Input changes the signal path from that plug-in through the rest of the track.

This restricts all hardware inserts or plug-ins after the stereo plug-in to be stereo-in/stereo-out plug-ins (or the supported multichannel format).

## Plug-in Formats

Pro Tools supports mono and stereo plug-ins, including the following three types of plug-in paths:

- mono-in/mono-out
- mono-in/stereo-out
- stereo-in/stereo-out

Pro Tools HD sessions running with the Surround mixer also support 3–8 channel multi-mono and multichannel plug-ins.

# Views in the Mix and Edit Windows

The Mix and Edit windows can be configured to show or hide various mixing controls, using menu commands or view selectors.

Most of these views are available in both windows, unless noted.

## Window View Selectors

Both the Edit window and Mix window provide Window View selectors to configure their views.
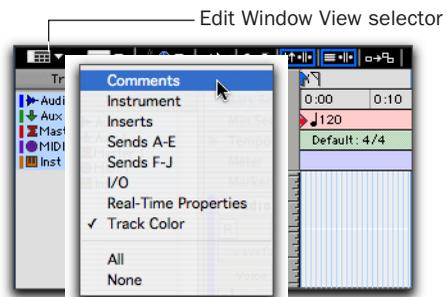


*Edit Window View selector*
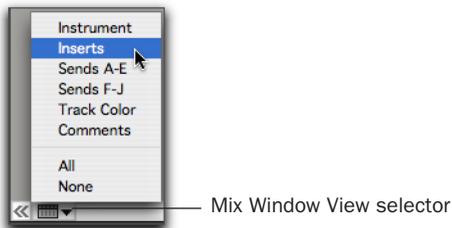
*Mix Window View selector*

## Displaying Views

**To display all views in the Mix or Edit window, do one of the following:**

■ Select View > Mix Window (or Edit Window) > All.

– or –

■ Click the Mix Window View selector (or Edit Window View selector), and select All.

**To display none of the views in the Mix or Edit window, do one of the following:**

■ Select View > Mix Window (or Edit Window) > None.

– or –

■ Click the Mix Window View selector (or Edit Window View selector), and select None.

**To show or hide available views in the Mix and Edit windows, do one of the following:**

■ Choose View > Mix Window (or Edit Window) and select or deselect one of the view types (such as Comments).

– or –

■ Click the Mix Window View selector (or Edit Window View selector), and select or deselect one of the view types (such as Comments).

**Comments View** Shows any text entered as comments in the Track Name/Comments dialog. For more information, see "Naming Tracks" on page 145.
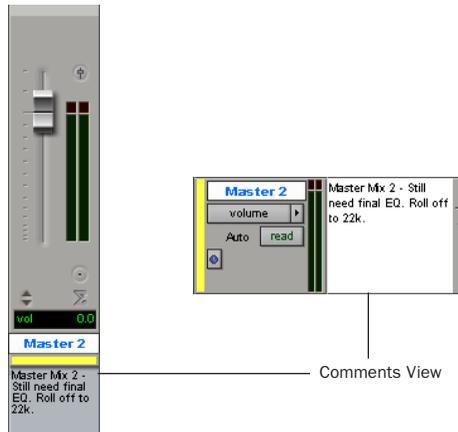


*Comments View in the Mix and Edit windows*

**Mic Preamps View (Pro Tools HD Only)** Shows controls in each track for the Digidesign PRE. For detailed information, see the *PRE Guide*.



*Mic Preamps View*

**Instruments View** Shows MIDI controls on Instrument tracks (MIDI Input selector, MIDI Output selector, MIDI volume, MIDI pan, and MIDI mute).



*Instruments View*

**Inserts View** Shows inserts (software plug-ins and hardware I/O inserts) in each track.

**Sends View (Sends A–E and Sends F–J)** Shows
send assignments in each track. Deselect to
hide. For more information, see "Configuring
Sends View in the Mix and Edit Windows" on
page 725.
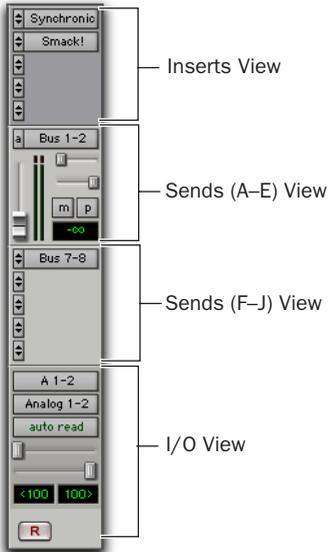


*Views in the Mix window*

**I/O View (Edit Window Only)** Shows Input and
Output selectors, and Volume and Pan indica-
tors in each track.



*I/O View (Edit window)*

Click on the volume or pan indicators in the
Edit window I/O View to adjust the volume or
pan controls with a pop-up fader.
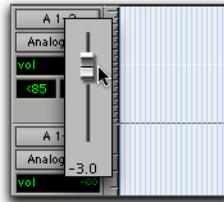


*I/O View Volume pop-up fader (Edit window)*



*I/O View Pan pop-up slider (Edit window)*

**Real-Time Properties View (Edit Window
Only)** Shows controls for Real-Time Properties
for MIDI and Instrument tracks. For more infor-
mation on Real-Time Properties, see "MIDI Real-
Time Properties" on page 549.
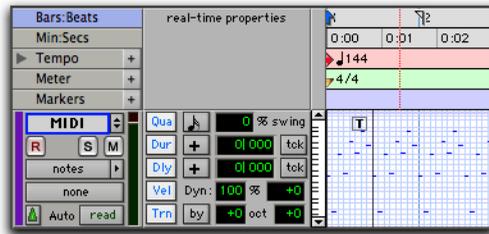


*Real-Time Properties View (Edit window)*

**Delay Compensation View (Mix Window on Pro Tools HD Only)** The Delay Compensation View displays the total amount of plug-in (TDM and RTAS) and hardware insert delay on each track, lets you apply a user offset of track delay, and displays the total amount of delay that Pro Tools applies to each track. The Delay Compensation View can be shown or hidden in the Mix Window.



*Delay Compensation View*

Delay values can be specified in either samples or milliseconds, as selected in the Operation Preferences page. For more information on Delay Compensation, see "Delay Compensation" on page 741.

**Track Color View** Shows track color in each track. For detailed information, see "Color Coding for Tracks, Regions, Markers, and Groups" on page 172.

**Transport View (Edit Window Only)** Displays functional transport controls in the top upper–right of the Edit window. These controls are the same as those in the Transport window. For more information, see "Transport Window" on page 116.



*Transport Controls (Edit window)*

## Hiding Views in the Edit Window

You can quickly hide View columns in the Edit window using a simple keyboard shortcut.

**To hide a View column in the Edit window:**

■ Alt-click (Windows) or Option-click (Mac) at the top of the column you want to hide (Mic Pre, Comments, Instrument, Inserts, Sends A–E, Sends F–J, I/O, Real-Time Properties, or Track Color).

# Audio Input and Output Paths

Pro Tools lets you configure the physical input and outputs of your audio interfaces and also internal bus paths and subpaths in the I/O Setup dialog and the Hardware Setup dialog. These hardware inputs and outputs, and internal bus paths can be assigned as inputs and outputs on audio, Auxiliary Input, Instrument, and Master Fader tracks.

## Input Audio Path

Input Path selectors determine the source input for audio, Auxiliary Input, and (optionally) Instrument tracks. Track inputs can be set from hardware inputs or internal bus paths or subpaths. For detailed information on assigning track inputs, see "Assigning Audio Inputs" on page 158.

Hardware input and bus paths can be configured in the I/O Setup. For more information, see Chapter 6, "I/O Setup."

You can also define what physical ports are routed to Pro Tools input ports in the Hardware Setup dialog. For more information, see "Configuring Pro Tools System Settings" on page 34.

## Output Audio Path

Track Output Path selectors route the post-fader signals to the assigned output or bus paths. The Output Path selector routes the main track output to the chosen main or sub-path. Tracks can be routed directly to hardware output or internal bus paths and subpaths for submixing (main or sub-paths).

The track format (mono, stereo, or multichannel) determines the available main and sub-path choices for track output. For detailed information on assigning track outputs, see "Assigning Audio Outputs" on page 159.

When audio, Auxiliary Input, Master Fader, and Instrument tracks are created, their mono, stereo, or greater-than-stereo multichannel format is defined:

- Mono tracks can be assigned to any available mono, stereo, multichannel main and sub-paths.

- Stereo tracks can be assigned to any available mono, stereo, or multichannel main and sub-paths.

- Multichannel tracks (Pro Tools HD only) can be assigned to any mono path, or path of the same number of channels (for example, an LCRS track can be assigned to a mono or LCRS path).

## Output Windows

Output windows provide the essential track mixing controls (such as track panning and volume), as an alternative to Mix and Edit window views. Multichannel Output and Send windows also provide expanded Panner views, and other surround-specific controls. See Chapter 41, "Surround Panning and Mixing (Pro Tools HD Only)."

Output windows are useful in large sessions to leave important tracks in an anchored location, unaffected by Mix and Edit window (or control surface) banking. See "Output Windows for Tracks and Sends" on page 730.

## Multiple Output Assignments

Pro Tools audio, Auxiliary Input, and Instrument tracks can be assigned to multiple output paths. Assigning to multiple paths is an efficient way to route an identical mix to other discrete outputs, for simultaneous monitor feeds, headphone mixes, or other situations where a parallel mix is needed.

### To assign a track to multiple outputs:

**1** Assign a main output path by selecting it from the track's Output Path selector.

**2** Start-click (Windows) or Control-click (Mac) an additional output path in the track's Output Path selector. The newly selected output destination is added as an additional output.

> [SHIFT] *Alt-Start-click (Windows) or Option-Control-click (Mac) to add the assignment to all tracks, or Alt-Shift-Start-click (Windows) or Option-Shift-Control-click (Mac) to add to all selected tracks.*

### Display of Multiple Output Assignments

When a track is assigned to multiple output paths, the Output Path selector denotes multiple assignment status and active/inactive status with the following indicators:

- A plus sign (+) indicates that the track has multiple output assignments.

+A 3-4

*Indication of multiple output assignments*

- In the Output Path selector menu, all currently assigned track outputs are checked to indicate they are active for the current track.

- An asterisk (*) indicates that one or more currently assigned outputs is Inactive.

*A 1-2
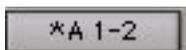
*Indication of multiple output assignments with at least one inactive output*

### Inactive Outputs

An output path can be made inactive, either globally in the I/O Setup dialog (affecting all tracks assigned to that path), or locally per assignment (only affecting that output on that audio track Auxiliary Input track, or Instrument track).

When opening sessions, outputs will be made inactive automatically if the required hardware or other resources are not available.

Inactive outputs retain all associated automation playlists. Edits made in the session also affect the inactive track's output automation playlists.

📖 *See "Making Tracks Inactive" on page 171.*

### Inactive Outputs and DSP Resources

Making a track output inactive silences the output, while retaining all automation and playlist data. Inactive outputs do not consume resources for TDM mixer connections, but any assigned plug-ins on the track continue to use their required DSP resources. RTAS plug-ins require CPU resources, and TDM plug-ins use the DSP available on Pro Tools|HD cards.

You can free up DSP of an unused plug-in by making its track inactive, or by making just the plug-in inactive.

📖 *See "Active and Inactive Items" on page 17, and "Making Inserts Inactive" on page 755 for more information.*

### About the "No Output" Option

Track outputs can be set to No Output. Assigning a track output to No Output causes any panning automation associated with the track to be lost.

Tracks assigned to No Output will not be audible, but they do not free their associated DSP resources.

## Sends

Pro Tools lets you insert up to ten sends (A–E and F–J) on each audio track, Auxiliary Input, or Instrument track.

Sends provide the following features:

- Sends can be set as pre- or post-fader.
- Send level, pan, mute, and LFE controls can be configured to follow Groups.
- Send level, send mute, and send pan (for stereo and multichannel sends) are fully automatable. See "Automating Sends" on page 790.
- Send controls can be displayed and edited from the Mix or Edit windows, or in their own output windows.
- Sends can be assigned to available output and bus paths (main or sub-paths), in mono or stereo, or any of the supported multichannel formats for surround mixing.
- Each send can have multiple assignments (for example, to available output and bus paths).

To be audible in Pro Tools, sends must be returned to the mix through an Auxiliary Input, audio track, or Instrument track. The sends can then be monitored and processed through an Auxiliary Input (or Instrument track), recorded to audio tracks, and bounced to disk. (Bouncing and mixdown are explained in Chapter 38, "Mixdown.")

## Assigning Sends to Tracks

**To add a send to a track:**

**1** Make sure Sends View is enabled in the Mix or Edit window (see "Views in the Mix and Edit Windows" on page 718 for information).

**2** Click the Send selector on the track and choose a path from the pop-up menu.
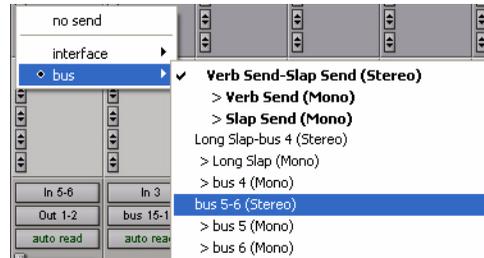


*Assigning a send to a stereo bus path*

The send can be a mono or stereo (or any of the supported multichannel formats for surround mixing) output or bus path.
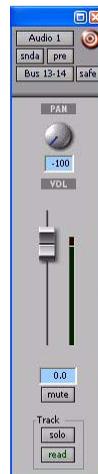


*Send window (mono)*

**3** Set the output level of the send in the Send window by doing one of the following:

- Adjust the Send Level fader.

– or –

- Set the send level to unity gain (0 dB) by Alt-clicking (Windows) or Option-clicking (Mac) the Send Level fader.

When you create a new send, its initial output level depends on the setting of the "Sends Default to –INF" preference.

**To change the default setting for sends:**

**1** Choose Setup > Preferences and click the Operation tab.

**2** Do one of the following:

- Select Sends Default to "–INF."

– or –

- Deselect Sends Default to "–INF" and new sends will default to unity gain (0 dB).

**To remove a send from a track:**

▪ Click the Sends button on the track and choose No Send from the pop-up menu.

## Send Formats

**Mono and Stereo Sends** When you click the Sends button on a track, you can choose from a list of mono or stereo output or bus paths.

**Multichannel Sends (Pro Tools HD Only)** When you click the Sends button on a track, you can choose from a list of multichannel output or bus paths.

## Send Path Choices

The choices available in track Send selectors include bus and output paths.

📋 *The names, format, and channel mapping of busses and output paths can be customized in the I/O Setup dialog. See "Creating New Paths" on page 57.*

**Internal Mix Busses** Pro Tools HD provides 128 busses and Pro Tools LE provides 32 busses for routing signals internally. Internal bus paths are useful for submixing and processing with plug-ins. Bus paths are defined in the I/O Setup dialog, and are available in all supported channel formats (mono, stereo, or multichannel, as supported on your system).

**Hardware Outputs** Hardware sends are often used for headphone cue mixes, or for sending signals to external effects processors. Sends do not automatically return audio as do hardware inserts.

## Configuring Sends View in the Mix and Edit Windows

Audio tracks, Auxiliary Inputs, and Instrument tracks include two sets of Sends Views: Sends A–E (sends 1–5) and Sends F–J (sends 6–10). The View menu provides separate options for viewing these sends in the Mix and Edit windows.

**To display sends in the Mix window:**

▪ Select any of the following:

- View > Mix Window > Sends A–E.
- View > Mix Window > Sends F–J.

**To display sends in the Edit window:**

▪ Select any of the following:

- View > Edit Window > Sends A–E.
- View > Edit Window > Sends F–J.

## Sends View Options

Sends are displayed in the Mix and Edit window according to the Sends A–E View and Sends F–J View options. Each Send View has six view choices: Assignments View and five individual Send Views (A–E or F–J).

### Assignments View

This is the default Sends View, showing all five of the Sends A–E or Sends F–J sends on all tracks displayed in the Mix and Edit windows.
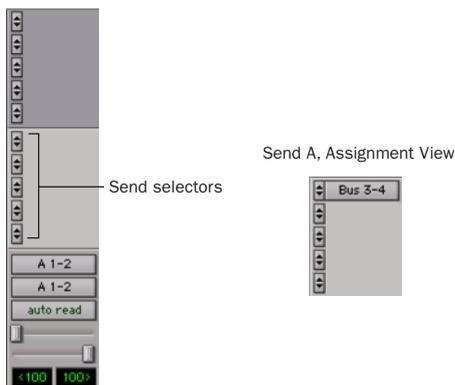


*Assignments View, no sends (left) and with an assigned send (right)*

In Assignment View, send controls are adjusted from Send windows. See "To view a different track Output or Send window:" on page 731.

### To show all send assignments:

**1** If sends are not currently visible on your tracks, select View > Mix Window (or Edit Window) > Sends A–E (or Sends F–J).

**2** Do one of the following:

- Select View > Sends A–E > Assignments or View > Sends F–J > Assignments.

– or –

- When displaying sends in an individual Send View (such as Send A View), Control-click (Windows) or Command-click (Mac) the Send selector and select Assignments.

### Individual Send Views (A–J)

Individual Send Views (such as Send A) provide send level, pan, and mute controls for a single send across all tracks.
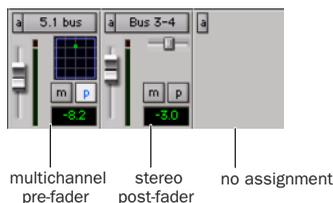


*Send A View, with different types of send assignments*

Send controls can be adjusted directly from these Send Views. Sends can also be opened for control or metering in Send windows. See "Output Windows for Tracks and Sends" on page 730.

**To display the controls for an individual send across all tracks:**

**1** If sends are not currently visible on your tracks, select View > Mix Window (or Edit Window) > Sends A–E (or Sends F–J).

**2** Do one of the following:

- Select View > Sends A–E (or Sends F-J) and select one of the individual Send Views (such as Send A).

– or –

- In Assignment View, Control-click (Windows) or Command-click (Mac) the Send Assignment selector.
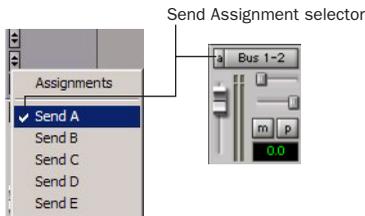


*Sends Views*

## Editing Sends in the Mix and Edit Windows (Individual Send Views)

Individual Send Views (such as Send A) display all the controls of an individual send in the sends area of the Mix and Edit windows. These views provide full access to all controls for that send on all tracks.
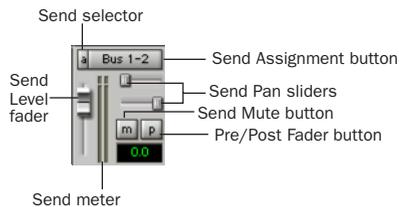


*Send A View, with stereo send shown*

Send level and mute can follow Mix groups, to adjust multiple send controls from a single set of controls.

## Individual Send Views and Meters

When you display the controls for an individual send, you also have the option of displaying send level meters.

Send level meters show peak values and indicate clipping that occurs while the meter is displayed (if a send clips any time before its meter is displayed, this is not shown). If you are using a slower computer, hiding send level meters can improve screen redraw times.

**To display send level meters when viewing individual sends:**

**1** Choose Setup > Preferences and click the Display tab.

**2** Select Show Meters in Sends View and click OK.

**To clear a send meter's Clip indicator:**

- Click the Clip indicator.

**To clear all meters, do one of the following:**

- Option-click any Clip indicator.

- Choose Track > Clear All Clip Indicators.

- Press Alt-C (Windows) or Option-C (Mac).

💡 *In Assignment View, edit sends by opening their Output windows. See "Output Windows for Tracks and Sends" on page 730.*

## Send Status Display

When displaying all controls for an individual sends, the Send status is visible directly in the Mix or Edit windows.

In Assignment View, Send status is displayed as follows:

- By default, the Send button is gray, to indicate that it is unmuted.

- The Send button text is red when the send has clipped.

- The Send button is blue when the send is muted.

- The Send button is lit whenever a send's window is open.
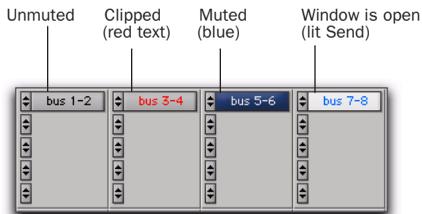


*Indication of Send mute, clipping, and window status*

If you use a control surface (such as D-Control or 003) with Pro Tools, colored outlines around sends, inserts, and outputs indicate the current controller focus.

## Inactive Sends

Sends can be made inactive. Inactive sends free their DSP and mixer resources, while retaining their position in track Sends View. Inactive sends do not output audio. However, Inactive sends retain all related automation playlists. In addition, edits made to regions on tracks with inactive sends can still affect the sends automation playlists.

When opening sessions, sends will automatically be made inactive if the required hardware or other resources are not available.
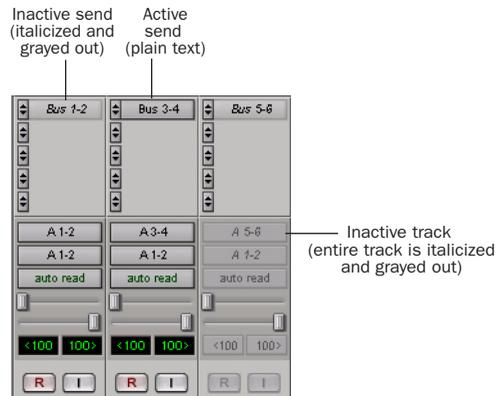


*Display of inactive sends*

**To make a send inactive, do one of the following:**

■ Control-Start-click (Windows) or Command-Control-click (Mac) on the Send assignment.

– or –

■ Make the Track inactive. See "Making Tracks Inactive" on page 171.

**To toggle sends in the same position (A–J) and assigned to the same path on all tracks active or inactive:**

■ Control-Start-Alt click (Windows) or Command-Control-Option click (Mac) a send button in the position you want to toggle.

**To toggle sends in the same position (A–J) and assigned to the same path on all selected tracks active or inactive:**

■ Control-Start-Alt-Shift-click (Windows) or Command-Control-Option-Shift-click (Mac) a send button in the position you want to toggle.

## Moving or Copying Sends

Sends can be moved or copied to other tracks, or to other positions on the same track by dragging. Sends can be dragged to create new sends at the destination, or dragged onto existing send assignments to replace them.

Sends can be moved and copied to tracks with compatible send formats (mono, stereo, or other). Pro Tools alerts you when you try to move or copy a send to an incompatible destination. (For more information, see "Send Format and Track Compatibility" on page 729).

### To move a send:

▪ Click the send name and drag it to a new position in the original track or in a different track.

### To copy a send:

▪ Alt-drag (Windows) or Option-drag (Mac) the send to a new position.

Moving or copying a send maintains all routing assignments, automation, level/pan/mute settings, and output format.

### Send Format and Track Compatibility

Sends can only be copied to other tracks with a compatible send output format (mono, stereo, or other). In addition, the following conditions apply when moving or copying sends among tracks:

• When copying a stereo send from a mono track to a stereo track, Send pan automation (if any) will be dropped without warning.

• When copying a stereo send from a stereo track to a mono track, the left Send pan automation data is retained and the right side data is dropped. A warning dialog appears for you to confirm or cancel this destructive operation.

• When moving or copying a send and replacing an existing send, all automation on the existing send will be replaced. A warning dialog appears for you to confirm or cancel this destructive operation.

## Copying Track Settings to Sends
### (Pro Tools HD Only)

Sometimes you need send settings to match the settings in the track itself—for example, to provide a headphone mix based on the main mix. You can copy the current values or the entire automation playlist from selected tracks to any of their sends.

📄 *For more information, see "Copying Track Automation to Sends" on page 790.*

## Linking Send Pan and Main Pan Controls

You can link pan controls of individual Sends to the Main pan controls of their corresponding tracks, allowing for fast setup of cue mixes or effects processing.



*Linking Send Pan to Main Pan*

Linked Send pan controls appear in light gray.

**To link a Send's Pan controls to the Main Pan controls of a track:**

**1** Click the Send Assignment button for the Send you want to link to open the Send window.

**2** In the Send window, click the FMP (Follow Main Pan) button.

**To change the default FMP (Follows Main Pan) setting for newly created Sends:**

**1** Choose Setup > Preferences and click Mixing.

**2** Under Setup, select or deselect Send Pans Default to Follow Main Pan.

## Output Windows for Tracks and Sends

Track outputs and sends can be opened for display and editing in dedicated windows.

- Track Output windows provide track fader, pan, automation, solo, and mute controls.
- Send windows provide send level, pan, automation, and mute controls.
- Standard Output and Send window controls provide additional routing, assignment, and display settings.

**To open a track Output window:**

■ Click the Output Window button in the channel strip.
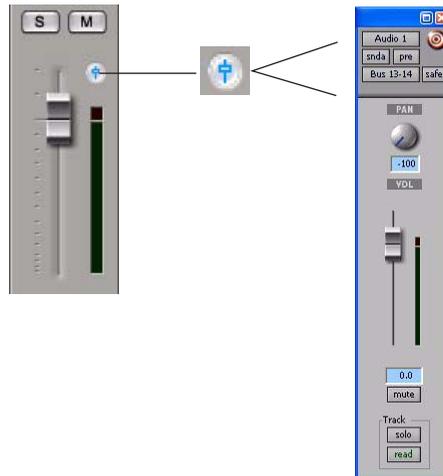


*Opening a track Output window*

**To open a Send window:**

■ Click the Send Assignment button in the Mix or Edit window.
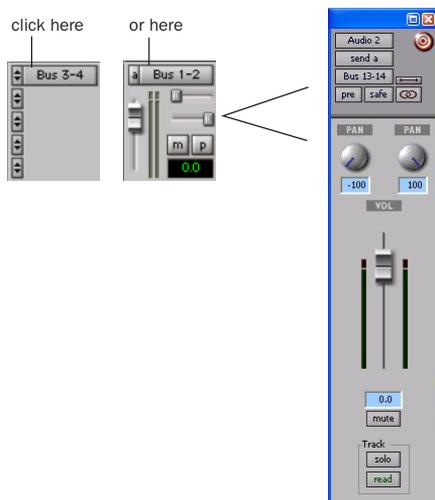


*Opening a Send window*

**To view a different track Output or Send window:**

■ Click an Output Window button, or Send Assignment button, in the Mix or Edit window.

If a similar Output window was already open with a highlighted Target icon (red, lit), the newly selected send will open in its place.

## Opening Multiple Output Windows

Multiple track and Send windows can be displayed simultaneously using either of the following methods.

**To open additional Output windows:**

■ Shift-click any Output Window button or Send Assignment button.

**To set a window to remain open when opening additional Output windows:**

■ Make sure the Target is disabled.



*Multiple Send windows*

For additional information, see "Targeted Windows" on page 734.

## Panner Linking

Stereo outputs provide two panning controls, one for each side of the left/right pair. Multichannel outputs provide a multichannel panner.

The Output window provides controls to link channels for precise panning of stereo and multichannel tracks.

In the linked state, all sides match changes to any other side's Pan control. This is Absolute Link mode. To mirror panning changes, see "Inverse Linked Panning" on page 732.

When unlinked, Pan controls are completely independent of each other.



*Unlinked (left), linked (middle), front inverse linked (right) Output windows*

### To enable linking:

■ Enable the Link icon.

### To unlink an output for independent panning:

■ Deselect the Link icon.

## Inverse Linked Panning

When linked and set to Inverse mode, panning moves are inverted or reversed in the other channels.

Inverse panning reflects one side's location and direction in the other side. For example, when enabled for Front Inverse, if you pan one side of a stereo track output from right to left, the other side will exactly mirror that movement and pan left to right.

Front Inverse linking is available on all systems. Rear Inverse, and Front/Rear Inverse linking are available on Pro Tools|HD systems only, and only appear as options on multichannel plug-ins and panners/output windows.
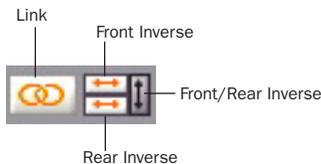


*Link and Inverse selectors (multichannel track)*

### To enable inverse linking:

**1** Enable the Link icon.

**2** Select an Inverse mode.

## Standard Selector Controls in Output Windows

All Output windows provide standard selectors for path, automation, and other controls in the top area of the window (the Output Editor area).
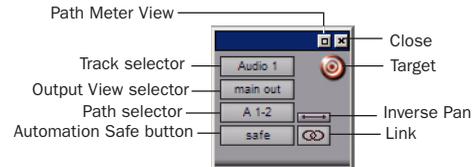


*Output window standard controls*
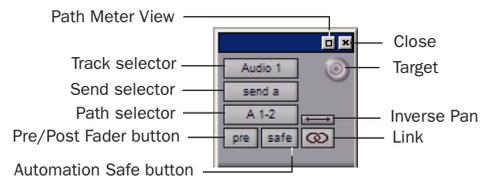


*Send window standard controls*

**Close** Closes the window.

**Track Selector** Provides access to any audio track, Auxiliary Input, or Master Fader in the session.

**Output View Selector** Provides access to other outputs (track and send) in the track, if any, displaying the selected output in the current window.

**Send View Selector (Send Window Only)** Provides access to other sends on the track.

**Output Path Selector** Allows you to assign the Output path for the current track or send.

**Pre/Post Fader button (Send Window Only)** Determines whether the send is pre- or post-fader.

**Automation Safe** Protects track and send level, pan, and other controls from automation overwrites by placing them in Automation Safe mode. See Chapter 37, "Automation" for more information.

**Inverse Pan** Reflects one side's panning location and direction in the other side (for example, left- and right-channel Pan controls).

**Link and Unlink** Lets you link and unlink left and right (or other) outputs in stereo (or multi-channel). Unlinked mode provides discrete adjustment of individual sides, or channels. When linked, all changes affect all channels. See "Panner Linking" on page 731.

**Target** Identifies the target of plug-in settings commands. Also sets the current window for display of Output windows. See "Targeted Windows" on page 734.

**Path Meter View** Opens the path Meter View. These meters display levels of the selected path (not the levels of the track or send).
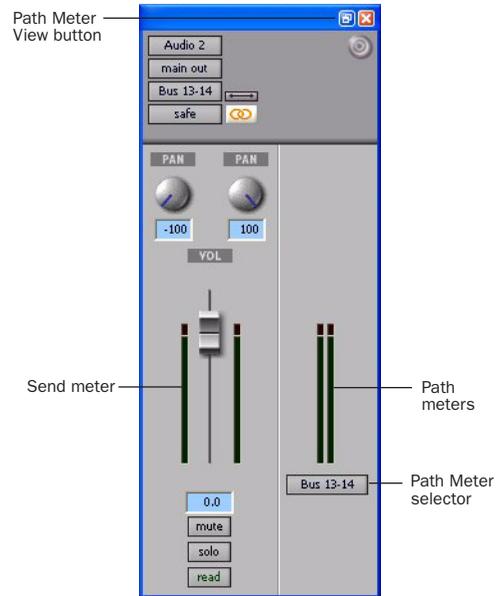


*Path Meter View in a Send window*

## Track Fader, Pan Controls, and Solo, Mute, and Automation Controls

Output windows provide the associated track's Volume fader, Pan controls, Solo and Mute switches, and Automation Mode selector. Use these to adjust or automate the controls of the Output window.

### Targeted Windows

When lit (red), the Target indicates its window is "targeted," and the next window opened of the same type replaces the current display (unless it is opened as an additional window with the Shift modifier). When unlit, the target is gray, and the current window anchors to its current contents and location on-screen. Opening additional windows does not affect anchored windows.

**To set an open Send window as the target window:**

■ Click the Target, so that it is lit (red).

📄 *Plug-in windows have additional features related to the Target (such as Focus of Settings commands). See "The Plug-in Window" on page 760.*

## Using Output Windows

Output windows provide standard Pro Tools track, send, Target, and other controls.

**To move to a different track:**

■ Click the Track selector and choose a track from the pop-up menu.



*Selecting a track from the Output window*

**To reassign output:**

■ Click the Output Path selector and select a path from the pop-up menu.



*Selecting a path in the Output window*

**To display the controls for a different send on the same track:**

■ Click the Send View selector and select the send.
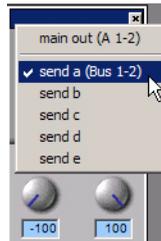


*Accessing another send in the Output window*

**To assign a different send to the same track:**

■ Click the Send selector and choose an output or bus path from the pop-up menu.

**To add an additional output assignment to the current send:**

■ Press Start (Windows) or Control (Mac) while selecting an additional output path from the Send selector (or Output Path selector.

# Signal Routing for Monitoring and Submixing

The bussing and mixing features in Pro Tools support many possibilities for submixing and monitoring, including the ability to:

- Monitor and mix playback of audio tracks with audio inputs or with MIDI instruments
- Bus submixes for effects processing or monitoring
- Mix submixes with Master Faders

## Monitoring and Mixing Audio with Auxiliary Input Tracks

Use Auxiliary Input tracks to monitor and mix audio from external sources, such as MIDI instruments, tape, or microphone inputs, in a Pro Tools mix.

**To use an Auxiliary Input track to monitor and mix external audio sources:**

**1** Connect the audio outputs of your audio source (such as a MIDI synthesizer or tape output) to available inputs on your Pro Tools audio interface.

**2** If necessary, configure the I/O Setup dialog for the input paths you plan to use (see Chapter 6, "I/O Setup.")

**3** Use an existing or create a new Auxiliary Input track with a channel format that corresponds to the channel format of your audio source (mono, stereo, or multichannel).

**4** Set the input of the Auxiliary Input track to the corresponding input path.

**5** Assign the track output to the appropriate path or paths for monitoring.

**6** Adjust the Auxiliary Input fader to mix the audio input.

## Monitoring and Mixing Audio with Instrument Tracks

Use Instrument tracks to monitor and mix audio from instrument plug-ins or external MIDI instruments in a Pro Tools mix.

**To use an Instrument track to monitor and mix the output of an instrument plug-in:**

**1** Use an existing or create a new Instrument track.

**2** Choose View > Mix Window > Instruments to show the MIDI controls of the Instrument track.

**3** Select an instrument plug-in from the first Insert selector on the Instrument track (such as Digidesign's Xpand!).
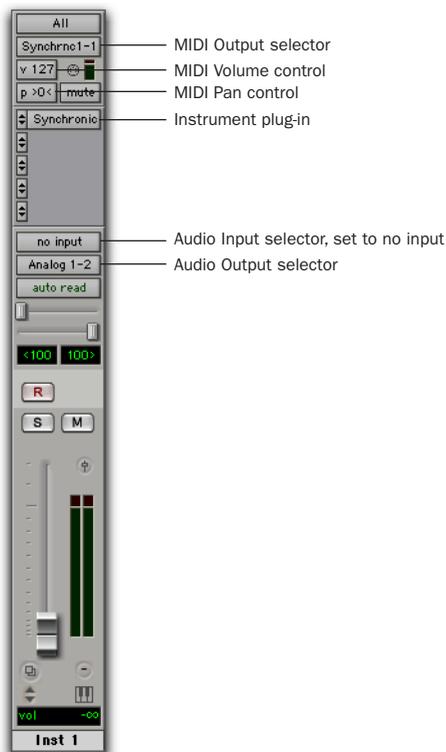


*Instrument track configured to control and monitor an instrument plug-in (Digidesign Synchronic)*

**4** The virtual MIDI node (port) for the instrument plug-in should be automatically selected for the Instrument track's MIDI Output. If not, select the MIDI channel and corresponding port for the instrument plug-in.

**5** Assign the track output to the appropriate path or paths for monitoring.

**6** Adjust the Instrument track fader to mix the audio input.

**7** If you are controlling the Instrument plug-in from the Instrument track, you can also mix using the MIDI Volume and Pan controls in the Instrument View.

📄 *For information on configuring audio and MIDI signal routing for controlling and monitoring ReWire client applications, see the DigiRack Plug-ins Guide.*

**To use an Instrument track to monitor and mix audio from an external MIDI instrument:**

**1** Connect the audio outputs of your external MIDI instrument (such as a MIDI synthesizer) to available inputs on your Pro Tools audio interface.

**2** If necessary, configure the I/O Setup dialog for the input paths you plan to use (see Chapter 6, "I/O Setup.")

**3** Connect the MIDI input and output of your external MIDI instrument to available MIDI input and output ports on your MIDI interface.

**4** If necessary, configure the MIDI Studio Setup (Setup > MIDI > MIDI Studio).

**5** Use an existing or create a new Instrument track with a channel format that corresponds to the channel format of your audio source (mono, stereo, or multichannel).

**6** Choose View > Mix Window > Instruments to show the MIDI controls of the Instrument track.

**7** Set the audio input of the Instrument track to the corresponding input path.

**8** In the Instrument track's Instrument View, set the MIDI output to the corresponding MIDI port connected to the MIDI input of your external MIDI instrument.

**9** Assign the track output to the appropriate path or paths for monitoring.
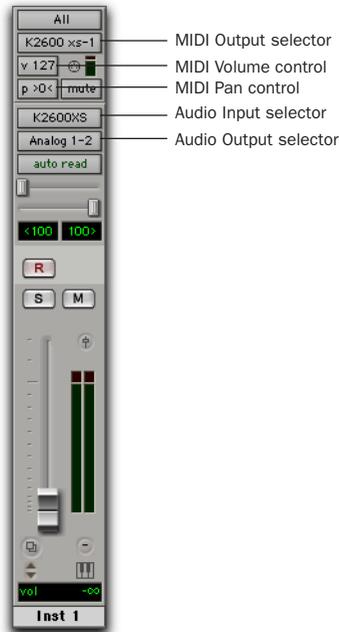


*Instrument track configured to control and monitor an external MIDI instrument (K2600XS)*

**10** Adjust the Instrument track fader to mix the audio input.

**11** If you are controlling the external MIDI instrument from the Instrument track, you can also mix using the MIDI Volume and Pan controls in the Instrument View.

**To monitor and mix audio from an Instrument plug-in with multiple audio outputs:**

**1** Use an existing or create a new Instrument track.

**2** Choose View > Mix Window > Instruments to show the MIDI controls of the Instrument track.

**3** Select a multi-output instrument plug-in from the first Insert selector on the Instrument track (such as Digidesign Strike).

**4** The virtual MIDI node (port) for the instrument plug-in should be automatically selected for the Instrument track's MIDI Output. If not, select the MIDI channel and corresponding port for the instrument plug-in.

**5** In the plug-in window, assign the individual audio outputs of the plug-in. (In the Strike plug-in, channel outputs are assigned from the Mix page.)

**6** Create an Auxiliary Input track for each output of the plug-in. Make sure the channel format of the Auxiliary Inputs corresponds to the channel format of the plug-in outputs (mono, stereo, or multichannel).

**7** Set the inputs of the Auxiliary Input tracks to receive the individual outputs of the plug-in.

**8** Assign the outputs of the Auxiliary Input tracks to the appropriate path or paths for monitoring.

**9** Adjust the Auxiliary Input faders to mix the individual outputs of the plug-in.
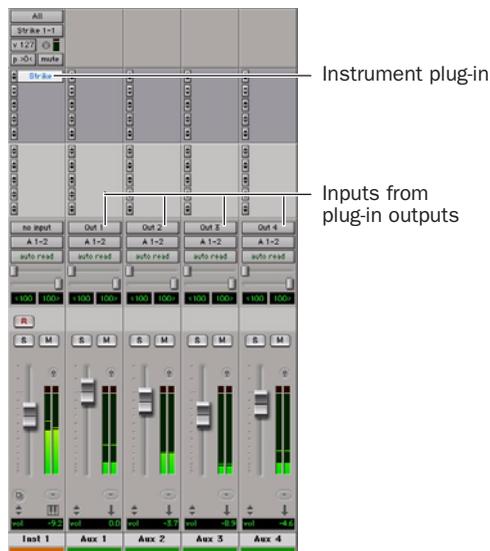


*Instrument plug-in with multiple outputs routed to Auxiliary Input tracks*

## Creating a Submix

A submix is created by routing multiple audio sources to a common bus or output path. This "submixes" the sources to a single path that can be returned to an Auxiliary Input, where the submix can be processed with plug-ins or external effects processors.

Audio is routed to a submix by assigning any combination of sends and track output to available bus or output paths.

### Submixing with Track Outputs or Sends

You can use both track outputs and sends to route audio for submixing, depending on whether you want a *discrete* or *send and return* submix.

## Discrete Submix Output

Pro Tools lets you discretely route source audio through a submix. This is preferred for dither or other mastering processing, where you do not want unprocessed audio heard in addition to the processed signals. Use track outputs (not sends) to assign tracks to a bus path for discrete submixing. In this arrangement, the balance of processed and unprocessed signal is controlled by plug-in wet/dry settings.

**To create a discrete submix:**

**1** Set the output of the tracks you want to include in the submix to a stereo bus path.

**2** Pan each track.

**3** Choose Track > New.

**4** Specify the track type (Aux Input) and format (stereo), then click Create.

**5** Set the input of the Auxiliary Input to the same bus path to which you assigned all contributing tracks.

**6** Set the output of the Auxiliary Input track to your main stereo mix outputs (typically, outputs 1–2).

**7** Set the Auxiliary Input Track level.

**8** To process the submix, assign a plug-in or hardware insert on the Auxiliary Input.

**9** Set the controls of the plug-in. The plug-in Bypass and Wet/Dry controls (if available) determine the amount of effect heard.

The contributing track faders control the balance within the submix. The Auxiliary Input track controls the output levels of all tracks routed to it.

You can apply mix automation to the volume, pan, mute, and send level, send pan, and send mute controls of the Auxiliary Input.

You can also bounce a submix to disk to free up the voices for use by other tracks. See Chapter 38, "Mixdown" for more information.

## Send and Return Submixing for Effects Processing

When you are submixing for reverb, delay, and similar effects processing, use sends to achieve traditional send/return bussing. You can use a real-time plug-in or a hardware insert as a shared resource for all tracks included in a submix. The wet/dry balance in the mix can be controlled using the track faders (dry level) and Auxiliary Input fader (effect return, or wet, level).

📖 *See Chapter 36, "Plug-in and Hardware Inserts" for more information.*

**To create an effects return submix with a plug-in or hardware insert:**

**1** Assign each track's main output to your main mix outputs.

**2** On the source tracks, assign a send (mono or stereo) and select a mono or stereo bus path from the Send selector. Configure the sends for pre- or post-fader, as needed.

**3** Choose Track > New.

**4** Specify the track type (Aux Input) and format (stereo), then click Create.

**5** From the Auxiliary Input track's Input Path selector, select the send bus path.

**6** Solo safe the track so that if you solo another track that uses the effects send, you won't mute the effects return (see "Solo Safe Mode" on page 170).

**7** Assign a plug-in or hardware insert on the Auxiliary Input.

**8** Set the effect to "100% wet," and set any other controls.

**9** From the Auxiliary Input track's Output Path selector, select an output path (main outputs).

Adjust the individual track faders to balance the dry (unprocessed) tracks. With the send set to pre-fader, the amount of effect is controlled by the level of the Send Level fader or the Auxiliary Input Volume fader. If the send is post-fader, the Send Level fader follows volume level.



Effect (plug-in or hardware) Insert

Send to effect bus

Controls level of send to effects bus

Input set to send bus path

Output set to main mix outs

Controls level of dry signal

Controls level of effect return
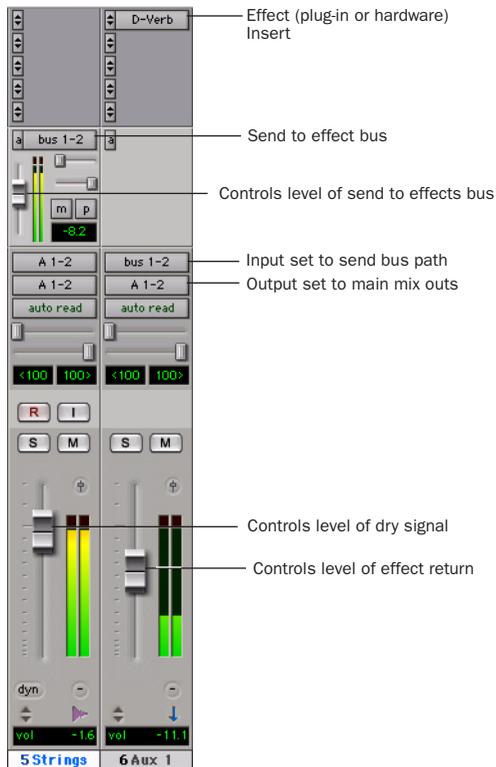
*Send/return setup for a plug-in or hardware insert*

## Send and Return Submixes with External Devices

### To create an effects return submix with an external device:

**1** Assign each track's main output to your main mix outputs.

**2** Assign a send (mono or stereo) and set the send destinations on the source tracks to the output path connected to the external device. Configure the sends for pre- or post-fader, as needed.

**3** Choose Track > New.

**4** Specify the track type (Aux Input) and format (stereo or mono), then click Create.

**5** From the Auxiliary Input track's Input Path selector, select the input path connected to the external device.

**6** From the Auxiliary Input track's Output Path selector, select an output path (main outputs).

**7** Adjust the individual track faders to balance the dry (unprocessed) tracks.

The amount of effect is controlled by the level of the Send Level fader or the Auxiliary Input Volume fader.



- Send to external device
- Input set to device's return
- Output set to main mix outs
- Controls level of dry signal
- Controls level of effect
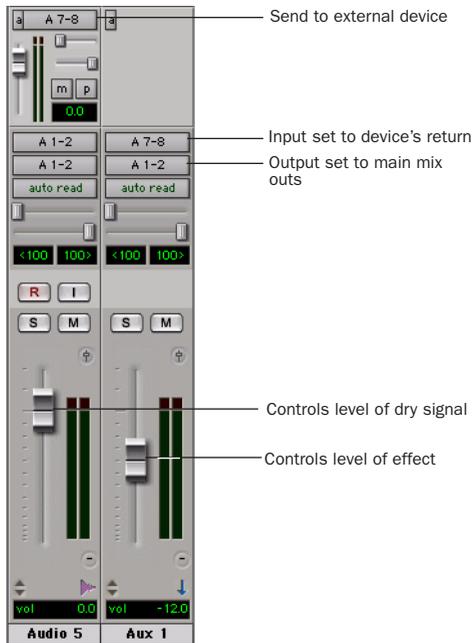
*Send/return setup for an external device*

## Creating Monitor Submixes

Route track sends to one or more Auxiliary Input tracks to monitor submixes in a studio environment. For example, you may want to provide the bassist with a drum submix for tracking a new bass part.

**To create a monitor submix:**

**1** Assign each track's main output to your main mix outputs.

**2** Assign a send (mono or stereo) and set the send destinations on the source tracks to the output path connected to the external device. Configure the sends for pre- or post-fader, as needed.

**3** Choose Track > New.

**4** Specify the track type (Aux Input) and format (stereo or mono), then click Create.

**5** From the Auxiliary Input track's Output Path selector, select the output path (not the main outputs) for monitoring the mix.

Adjust the Auxiliary Input track fader to control the volume for the monitor mix.



*Drum submix for monitoring*

## Creating a Master Send Level Control

A Master Fader can control the overall level of bus and output paths.

**To create a Master send level control:**

**1** Choose Track > New.

**2** Specify the track type (Master Fader), and mono, stereo, or any of the supported multi-channel formats for surround mixing.

**3** Click Create.

**4** Do one of the following:

- Set the output of the Master Fader to the same path that you are using to send to an Auxiliary Input track.

- Set the output of the Master Fader to match the path that you have chosen for your effects send.

You can then adjust send levels to balance the source tracks, and use the Master Fader as a master level control for the entire submix.

### Soloing Tracks in a Submix

Soloing any tracks implicitly mutes all other tracks, including Auxiliary Inputs. Solo-safing an Auxiliary Input prevents this implicit muting and lets the Auxiliary Input continue to pass audio when its source tracks are in Solo.

**To solo safe an Auxiliary Input:**

■ Control-click (Windows) or Command-click (Mac) the Solo button on the Auxiliary Input track.

**To solo an individual track that is part of a group:**

■ Start-click (Windows) or Control-click (Mac) the Solo button.

### Generating Stereo Output from a Mono Send/Return

You can use an Auxiliary Input to generate a stereo output from a mono send. Set the send destination to a mono Auxiliary Input track and place a mono to stereo plug-in on the Auxiliary Input. The output of the Auxiliary Input becomes stereo.

To create a "stereo" effect from a mono source, you must use reverb, delay, or other time domain effects.

## Delay Compensation

### (Pro Tools HD Only)

Pro Tools provides Delay Compensation for managing DSP delays from plug-in and hardware inserts, and mixer routing (bussing). With Delay Compensation enabled, Pro Tools maintains phase coherent time alignment between tracks that have plug-ins with differing DSP delays, tracks with different mixing paths, tracks that are split off and recombined within the mixer, and tracks with hardware inserts.

To maintain phase coherent time alignment, Delay Compensation should be enabled during playback and mixing.

### Enabling Delay Compensation

**To enable Delay Compensation:**

■ Select Options > Delay Compensation.

When Delay Compensation is enabled, the Delay Compensation status indicator in the Edit Window bar is displayed (see "Timeline, Session, and Delay Compensation Status Indicators" on page 115).

If desired, the Delay Compensation View for tracks can be displayed in the Mix Window (see "Delay Compensation View" on page 742).

## Configuring Delay Compensation Engine

The amount of Delay Compensation available for your session is set in the Playback Engine. The total amount of delay due to inserts and mixer routing for the entire session is displayed in the Session Setup window.

There are three settings in the Playback Engine dialog to dedicate DSP resources for Delay Compensation:

**None** Allocates no DSP resources for Delay Compensation.

**Short** Allocates minimum DSP resources of Delay Compensation for each channel. This is the most efficient setting for Pro Tools|HD Accel systems. For sessions with only a few plug-ins that do not induce too much DSP-based delay, this setting should be sufficient.

**Long** Allocates maximum DSP resources for Delay Compensation for each mixer channel. For sessions with a lot of plug-ins resulting in a large amount of DSP-induced delay, select this setting.

### To configure the Delay Compensation Engine:

**1** Choose Setup > Playback Engine.

**2** From the Delay Compensation Engine pop-up menu, select a Delay Compensation setting.

**3** Click OK.

### Delay Compensation Time Mode

Delay values can be specified in either samples or milliseconds, as selected with the Delay Compensation Time Mode option in the Operation Preferences page.

### Delay Compensation Limit

The Delay Compensation limit is displayed in samples in the Delay Compensation Engine pop-up menu in the Playback Engine dialog. This is the maximum amount of Delay Compensation available for the session. This value is different depending on the session sample rate and which Delay Compensation Engine option is selected.

### System Delay

Pro Tools adds the exact amount of delay to each track necessary to make that particular track's delay equal to the total System Delay. The total System Delay is the longest delay reported on a track, plus any additional delay caused by mixer routing.

The System Delay is shown in the Session Setup window. Reference the reported System Delay to monitor whether or not you are close to exceeding the Delay Compensation limit.
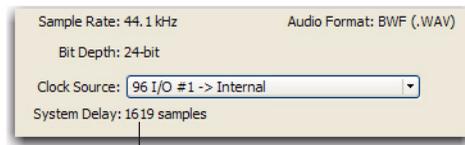


System Delay

*System Delay in Session Setup window*

## Delay Compensation View

The Delay Compensation View displays the total amount of plug-in (TDM and RTAS) and hardware insert delay on each track, lets you apply a user offset of track delay, and displays the total amount of delay that Pro Tools applies to each track. The Delay Compensation View can be shown or hidden in the Mix Window.
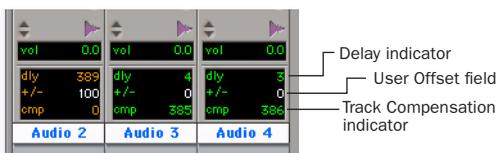
*Delay Compensation View*

### To view Delay Compensation information:

▪ Select View > Mix Window > Delay Compensation.

## Delay Compensation View Indicators and Field

### Delay (dly) Indicator

The Delay (dly) indicator reports the total plug-in (TDM and RTAS) and hardware insert delay on the track.

The Delay indicator's report to Pro Tools Delay Compensation Engine can be bypassed when Delay Compensation is enabled. This is useful for manually time-aligning a track when the total delay on a track exceeds the Delay Compensation limit. See "Delay that Exceeds the Compensation Limit" on page 744.

The display color indicates reported track delay, as follows:

**Green:** Indicates that track delay reporting is enabled and the track does not exceed the available amount of Delay Compensation.

**Orange:** Indicates that this is the track reporting the longest plug-in and hardware insert delay in the session.

**Red:** Indicates that the amount of plug-in and hardware insert delay on the track exceeds the available amount of Delay Compensation (see "Delay that Exceeds the Compensation Limit" on page 744).

**Gray:** Track delay report is bypassed.

### User Offset (+/–) Field

This field lets you adjust track delays manually while Delay Compensation is enabled. The User Offset is in addition to or subtraction from the amount of delay applied by Track Compensation. The User Offset is useful for the following cases:

• For manually time-aligning a track if a plug-in is incorrectly reporting its delay.

• For adjusting the timing "feel" of a track.

The color of the values in this field indicate User Offset status, as follows:

**White:** Indicates that the User Offset is enabled on the track and the User Offset compensation value is applied to the track.

**Gray:** Indicates that the User Offset is disabled on the track and the User Offset compensation value is not applied.

### To change track delay using the User Offset field:

**1** In the Delay Compensation View, click in the User Offset edit field.

**2** To set your delay value (in samples or milliseconds depending on your current preferences), do one of the following:

• Enter a positive number (with or without the "+" modifier) for a positive delay (later in time) or negative number (with the "–" modifier) for a negative delay (earlier in time).

• Drag in the User Offset field to scroll to a new value. For finer resolution, Control-drag (Windows) or Command-drag (Mac).

• Press the Up and Down Arrow keys to increase or decrease the numerical values.

**3** Press Enter.

**To bypass the user delay:**

■ Start-Control-click (Windows) or Command-Control-click (Mac) the User Offset field. The user-defined delay appears grayed out and does not apply to the track.

### Track Compensation (cmp) Indicator

This indicator shows the amount of Delay Compensation Pro Tools applies to each track.

The display color indicates the amount of Delay Compensation applied, as follows:

**Green:** Track compensation is enabled and the track does not exceed the Delay Compensation limit. The amount of Delay Compensation shown in the indicator is applied to the track.

**Blue (Audio Tracks Only):** Indicates that Delay Compensation is force-enabled on the track. When the track is record-enabled or TrackInput-enabled, Delay Compensation is not suspended and remains enabled (see "Overriding Suspended Delay Compensation" on page 745).

**Red:** Indicates that the track delay exceeds the available amount of Delay Compensation and no Delay Compensation is applied to the track (see "Delay that Exceeds the Compensation Limit" on page 744).

**Gray:** Indicates that Delay Compensation for the track is bypassed and no delay is applied to the track.

### Delay that Exceeds the Compensation Limit

When the total delay on a track exceeds the total available amount of Delay Compensation (selected in the Playback Engine dialog), no Delay Compensation is applied on that track. Any audio on that track will no longer be properly time-aligned and will be out of phase. Both the Delay indicator and Track Compensation indicator turn red to show that the track delay exceeds the Delay Compensation limit. The maximum available Delay Compensation is applied to all other tracks.

**To compensate for delay that exceeds the compensation limit, do one of the following:**

■ If the Delay Compensation Engine setting in the Playback Engine is set to Short, change the setting to Long.

    – or –

■ If the Delay Compensation Engine is already set to Long, do the following:

  • Bypass the reported delay for the track by Start-Control-clicking (Windows) or Command-Control-clicking (Mac) the Delay indicator. The track information is grayed out once it is bypassed.

  – and –

  • Manually nudge any audio data on the track earlier by the amount of delay reported in the track's Delay indicator.

## Low Latency Monitoring During Recording

When an audio track is armed for recording (record-enabled), TrackInput-enabled, DestructivePunch-enabled, or punched in, the track's Delay Compensation is automatically suspended (and the Track Compensation indicator displays 0). This provides low-latency monitoring on those track outputs.

Tracks that are not record enabled still apply Delay Compensation. Pro Tools automatically compensates for any timing discrepancies between the recorded material and the delay-compensated mix. When the track is played back (with both record-enable and TrackInput disabled) it is correctly time-aligned with the other delay-compensated tracks.

### Overriding Suspended Delay Compensation

You can override the automatic suspension of Delay Compensation on record-enabled tracks, but you will introduce latency in the signal path by the amount of Delay Compensation. This latency may be acceptable depending on the recording source.

For example, if you are bus recording a mixdown, you will want to force-enable Delay Compensation on the record track. Or, if you are recording a source that does not need to monitor the session, you can force Delay Compensation on a track so that it is not automatically suspended for record-enabled, TrackInput-enabled, or DestructivePunch-enabled tracks.

**To apply Delay Compensation to tracks where Delay Compensation was suspended:**

▪ Start-Control-click (Windows) or Command-Control-click (Mac) the Track Compensation indicator. Track delay is applied to the track and the Track Compensation indicator displays in blue.

## Delay Compensation on Auxiliary Inputs

Delay Compensation on Auxiliary Inputs can be bypassed to let you monitor outside sources (such as the audio tracks of a slaved video deck) with minimal latency, while still reporting the track's delay.

**To bypass an Auxiliary Input's Delay Compensation:**

▪ Start-Control-click (Windows) or Command-Control-click (Mac) the Track Compensation indicator. The reported track delay will be zero, and will appear grayed out.

## Delay Compensation for MIDI

When Delay Compensation is active, a MIDI event that is recorded to sound "in time" with delay-compensated material actually is recorded late by the length of total delay in effect.

To compensate, MIDI events are shifted back in time by the total session delay following each MIDI recording pass.

### Low-Latency Recording with Virtual MIDI Instruments

When a MIDI or Instrument track that is routing MIDI data to an instrument plug-in is record-enabled, Pro Tools automatically suspends Delay Compensation through the main outputs of the audio track, Auxiliary Input, or Instrument track on which the instrument plug-in is *inserted*. This allows for latency-free monitoring of the instrument plug-in during recording.

⚠️ *Delay Compensation for virtual MIDI instruments works only when all MIDI and audio connections take place inside of Pro Tools. For example, Pro Tools does not suspend Delay Compensation when you are using ReWire to connect software synthesizers and samplers in other ReWire client applications (such as Reason).*

#### MIDI and Audio Processing Plug-ins

Some audio processing plug-ins (such as Bruno and Reso) and many instrument plug-ins let you process audio while allowing MIDI data to control processing parameters. When you record enable a MIDI or Instrument track that is controlling an audio processing plug-in, the track the plug-in is inserted on will go into low-latency mode, effectively making the processed audio play early. The steps to prevent this and keep audio time-aligned depend on the type of track on which the plug-in resides.

**To keep audio time-aligned when recording using a MIDI controlled plug-in on an audio track:**

■ Start-Control-click (Windows) or Command-Control-click (Mac) the Track Compensation indicator for the audio track to apply Delay Compensation.

**To keep audio time-aligned when recording using a MIDI controlled plug-in on an Auxiliary Input:**

**1** Start-Control-click (Windows) or Command-Control-click (Mac) the Track Compensation indicator for the Auxiliary Input to bypass Delay Compensation.

**2** Enter the total system delay into the User Offset field.

# Dither

Dither is used to minimize quantization artifacts when reducing the bit depth of an audio signal, for example, from 24-bit to 16-bit. Quantization artifacts are most apparent when a signal is near the low end of its dynamic range, such as during a quiet passage or a fade-out.

Dither minimizes quantization artifacts by introducing very low-level random noise to a signal, which smooths out the distortion that can result when the signal's bit depth is reduced.

With dither there is a trade-off between signal-to-noise performance and less-apparent distortion. Proper use of dither lets you get better subjective performance when reducing the bit depth of audio.

## Dither in Pro Tools

There are several ways dither can be used in Pro Tools. Each has a specific application within the various operations that could benefit from using dither.

**Dither Plug-ins for Mixdown** Whenever you are mixing down or bouncing to disk and your destination bit depth is lower than 24-bit, insert a dither plug-in on a Master Fader that controls the output mix. You can use real-time dither plug-ins from Digidesign or third-party manufacturers.

For important information on using dither when mixing down or bouncing to disk, see "Dithering" on page 834.

📋 *For more information on Dither plug-ins, see the DigiRack Plug-ins Guide.*

**AudioSuite Dither** Some AudioSuite plug-ins can automatically apply dither when processing. You can select this option in the Processing Preferences page.
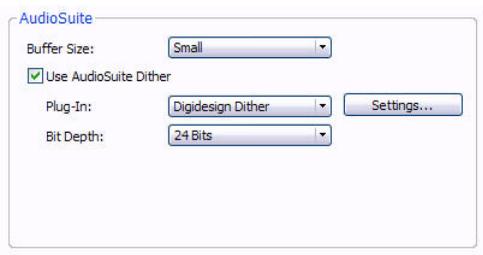


*Operation preferences, for AudioSuite dither*

The Use AudioSuite Dither option enables a preset, noise-shaped dither for the following DigiRack AudioSuite plug-ins:

- Gain
- Normalize
- Smack!
- Sonic NoNOISE

📋 *For more information on AudioSuite Dither, see the DigiRack Plug-ins Guide.*

**Dither in Fades and Crossfades** In the Fades dialog (Edit > Fades > Create), the Use Dither option enables a preset, noise-shaped dither.
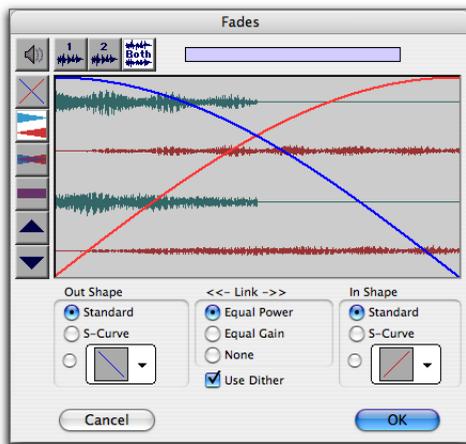


*Create Fades dialog*

📋 *For more information on using the Dither in fades and crossfades, see "Use Dither" on page 485.*

**Dither on Export and Import** When you export audio to a lower bit depth, or when you import an audio file into a session that is at a lower bit depth than the file, a preset, noise-shaped dither is applied.

📋 *For more information about the application of dither on export, see "Exporting Audio" on page 263.*

*For more information about the application of dither on import, see "Bit Depth Conversion and Dithering" on page 253.*

**Dithered Mixer Plug-ins (Pro Tools HD Only)** Digidesign has developed a mixer that provides all of the benefits of the standard Stereo Mixer and Surround Mixer plug-ins, but also provides uncorrelated dither on any summed output. There are two Mixer plug-ins that feature dither with noise shaping: Stereo Dithered Mixer and Surround Dithered Mixer.

For more information on using the Dithered Mixer plug-ins, see the Pro Tools|HD Getting Started Guide.

## Noise Shaping

Noise shaping can further improve audio performance and reduce perceived noise inherent in dithered audio. Noise shaping uses filtering to shift noise away from frequencies in the middle of the audio spectrum (around 4 kHz), where the human ear is most sensitive.

Noise Shaping is available in the Digidesign Dither and POW-r Dither plug-ins.

For more information on using Noise Shaping, see the DigiRack Plug-ins Guide.

# Using an Ethernet Control Surface with Pro Tools

Digidesign offers several Ethernet-based control surface options for Pro Tools.

### Digidesign D-Control and D-Command (Pro Tools HD Only)

D-Control and D-Command tactile worksurfaces are part of Digidesign's ICON, a flexible, integrated system that extends the functionality of Pro Tools.

### Digidesign ProControl (Pro Tools HD Only)

ProControl is an expandable, dedicated control surface that provides access to Pro Tools recording, mixing, editing, signal routing, plug-in control, and automation features.

### Digidesign Control|24 (Pro Tools HD and LE Only)

Control|24 is a dedicated control surface that provides access to nearly all Pro Tools recording, mixing, editing, signal routing, plug-in control, and automation features.

## Enabling an Ethernet Control Surface in Pro Tools

**To enable an Ethernet control surface in Pro Tools:**

**1** Choose Setup > Peripherals and click Ethernet Controllers.

**2** Select Enable.

**3** If your Ethernet control surface consists of more than one unit, select the units in numerical order as you want them arranged left to right.

**4** Click OK.

# Using a MIDI Control Surface with Pro Tools

MIDI Control Surfaces add hands-on control to many Pro Tools functions, allowing you to adjust faders and knobs, activate transport controls, or edit plug-in parameters.

### Digidesign Command|8

Command|8 is Digidesign's compact USB-based MIDI control surface for Pro Tools systems.

📖 *For complete instructions on connecting and configuring Command|8, see the Command|8 Guide.*

### Other MIDI Control Surfaces

Pro Tools supports MIDI control surfaces from CM Labs (such as MotorMate and MotorMix), and Mackie (such as Mackie Control and HUI), as well as other control surfaces that support the MotorMix and HUI controller personalities.

## MIDI Control Surface Personalities

*MIDI Control Surface Personalities* are files that allow Pro Tools to communicate with the MIDI control surface. When you install Pro Tools, these files are installed by default in the Controllers folder inside the Pro Tools application folder. If the files are not present, run the Pro Tools installer to install the personality files.

# Connecting a MIDI Control Surface

If your Pro Tools hardware includes MIDI ports, you can connect a MIDI control surface directly to your system. If it does not include MIDI ports, you will need to use a MIDI Interface such as the Digidesign MIDI I/O.

### To connect a MIDI control surface:

**1** Using a standard 5-pin MIDI cable, connect the MIDI Out port on your MIDI control surface to the MIDI In port on your Pro Tools hardware or MIDI interface.

**1** Using a standard 5-pin MIDI cable, connect the MIDI In port on your MIDI control surface to the MIDI Out port on your Pro Tools hardware or MIDI interface.

**2** If you have a multi-port MIDI interface, note which MIDI port the control surface is connected to.

# Configuring Your System for a MIDI Control Surface

A MIDI Control Surface is configured in the same way as any other MIDI device in Pro Tools, using MIDI Studio Setup (Windows) or Audio MIDI Setup (Mac).

📖 *For complete instructions on configuring you r MIDI studio, see the Getting Started Guide that came with your system.*

## Enabling a MIDI Control Surface in Pro Tools

### To enable a MIDI control surface in Pro Tools:

**1** Choose Setup > Peripherals and click the MIDI Controllers tab.

**2** Choose your MIDI control surface device name from the Type pop-up menu.

**3** Choose the MIDI control surface's source port from the Receive From pop-up menu.
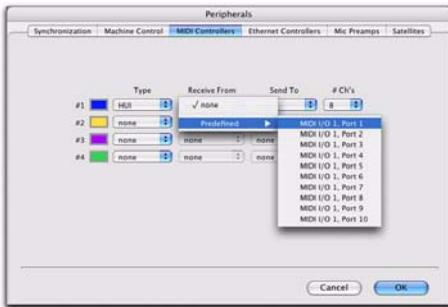


*Choosing the source port for a MIDI control surface*

**4** Choose a destination port from the Send To pop-up menu.
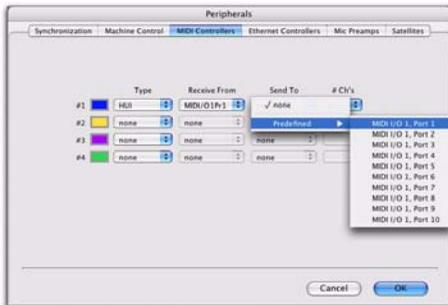


*Choosing the destination port for a MIDI control surface*

**5** If your MIDI control surface has more than eight channel strips, or if you are using multiple devices of the same type in series, choose the appropriate number of channel strips from the pop up menu under #Ch's.

**6** Click OK.

You can configure additional MIDI control surfaces (up to a total of four) by repeating the above steps. Make sure that none of the control surfaces are assigned to the same MIDI source and destination ports or channels in the Pro Tools Peripherals dialog.

## Enabling the MIDI Control Surface as an Input Device

You must enable the MIDI control surface as an input device in Pro Tools.

### To enable a MIDI control surface as an input device:

**1** Choose Setup > MIDI > Input Devices.

**2** Select the source port that you selected in the Receive From pop-up menu in the MIDI Controllers page of the Peripherals dialog.
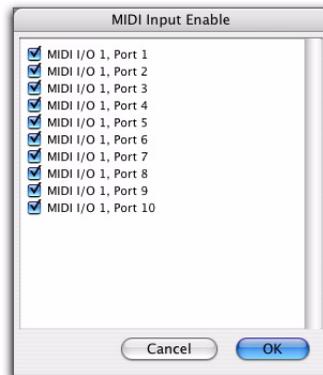


*Enabling a MIDI input device*

**3** Click OK.

If you want to prevent control surface MIDI data from reaching Pro Tools, you can deselect its source port in the MIDI Input Enable window.

# Chapter 36: Plug-in and Hardware Inserts

Pro Tools provides up to five unity-gain inserts on each audio, Auxiliary Input, Master Fader, and Instrument track. Audio, Auxiliary Input, and Instrument track inserts are pre-fader, and Master Faders inserts are post-fader.
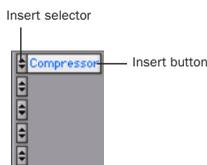


*Insert button and selector on a track*

An insert can be either a software DSP *plug-in* or a *hardware insert*. A Pro Tools insert routes the signal from the track to a plug-in or external hardware effect of your choice and automatically returns it to the same track. Inserts do not alter the original audio source files, but process audio in real time, during playback. You can permanently apply real-time effects to tracks by recording or bouncing the effect to disk (see Chapter 38, "Mixdown" for more information).

**Plug-in Inserts** Plug-in inserts are software inserts that process audio material on a track in real time. For example, the DigiRack EQ, compressor, and delay plug-ins supplied with your Pro Tools system can be used as real-time plug-in inserts.

*For more information about the plug-ins supplied with your Pro Tools system, see the DigiRack Plug-ins Guide.*

Additional real-time plug-ins are available from Digidesign and from many third-party developers.

*For information about optional Digidesign plug-ins, see the electronic Digidesign Plug-ins Guide. For information about third-party plug-ins, visit the Digidesign website (www.digidesign.com).*

**Hardware I/O Inserts** Hardware I/O inserts can route audio through an external device connected to parallel inputs and outputs of an audio interface. You can process the audio material on a track with a hardware insert in real time.
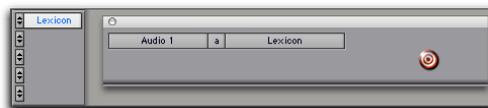


*Hardware I/O insert*

Insert paths require audio interface inputs and outputs, and are determined by the I/O Setup configuration of your system.

### General Information

When more than one insert is used on a track, they are processed in series. Each effect is added to that of any previous plug-ins or inserts (flowing from top to bottom in the Mix window Inserts View, and left to right in the Edit window Inserts View).

Inserts on audio tracks and Auxiliary Inputs and Instrument tracks are pre-fader. You can cause clipping if you boost their gain to extremes, especially on tracks recorded at high amplitude. Watch on-screen metering for indication of clipping. (Inserts on Master Faders are post-fader.)

### Using Inserts for Effects Processing

Inserts can be used in two ways:

**On Single Tracks** An insert can be applied to an individual audio, Auxiliary Input, Master Fader, or Instrument track.

With in-line inserts, you control the amount of effect by adjusting the balance (or the wet/dry mix) controls of the plug-in or external device.

**As Shared Resources** An insert can be used as a shared resource in a send-and-return arrangement, by bussing signals from several tracks to an Auxiliary Input, and then applying the insert to the Auxiliary Input track. You can then control the send level for each track, and the overall level of the effect can be controlled from the Auxiliary Input track. Using sends and other signal routing features helps maximize your system's processing power.

📄 *For examples of send and return busses and other submixing setups, see "Signal Routing for Monitoring and Submixing" on page 735.*

### Insert Formats

**Mono Inserts** Used on mono tracks. Inserts that occur on a track after a stereo insert are automatically used in stereo as well.

**Stereo Inserts** Used on stereo tracks. A stereo hardware I/O insert sends the signal to an input/output path.

**Mono In/Stereo Out Plug-in Inserts** Used to return a stereo effect from a mono source. Certain plug-ins (such as D-Verb) let you generate stereo output from a mono channel. A track made into stereo in this way has panning controls for each channel of the stereo signal. Any inserts that occur on a track after a stereo insert are automatically used in stereo as well.

**Multi-Mono Plug-in Inserts** Used on stereo or greater-than-stereo multichannel tracks when a multichannel version of the plug-in is not available. Controls for all channels are linked by default so that you can adjust them in tandem. You can unlink controls for independent adjustment using the Master Link button. See "Linking and Unlinking Controls on Multi-Mono Plug-ins" on page 770.

**Multichannel Plug-in Inserts** Used on stereo and greater-than-stereo multichannel tracks. On greater-than-stereo multichannel tracks, the controls for all channels are generally linked together.

⚠ *Relinking may cause automation to be lost. See "Linking and Unlinking Controls on Multi-Mono Plug-ins" on page 770*

### TDM and RTAS Plug-ins

There are three plug-in formats supported by Pro Tools (TDM, RTAS, and AudioSuite), two of which can be used as real-time inserts, as follows:

**TDM Plug-ins** Used with Pro Tools HD systems, these plug-ins rely on the processing power of DSP on Pro Tools|HD system cards.

**RTAS Plug-ins** Similar to their TDM counterparts, but unlike TDM plug-ins, they rely on and are limited by the host processing power of your computer.

**AudioSuite Plug-ins** Non-real-time, file-based processing plug-ins for Pro Tools (see the Digi-Rack Guide).

Depending on your Pro Tools software, plug-ins can be used as follows:

#### Pro Tools HD

- Both TDM and RTAS plug-ins can be used on audio, Auxiliary Input, Master Fader, and Instrument tracks.

⚠ *With Pro Tools HD, RTAS plug-ins placed on Auxiliary Input, Master Fader, and Instrument tracks will use additional voices and may introduce extra latency based on the HW Buffer Size. For more information, see "Voice Usage and Total Latency for RTAS Plug-ins" on page 753.*

#### Pro Tools LE

- RTAS plug-ins can be used on audio, Auxiliary Input, Master Fader, and Instrument tracks.

📖 *For tips on maximizing RTAS performance, see the DigiRack Plug-ins Guide.*

### Voice Usage and Total Latency for RTAS Plug-ins

#### (Pro Tools HD Only)

With Pro Tools HD, the initial insert of an RTAS plug-in may cause additional latency, and will take up two additional voices per channel (one voice for input and one voice for output) in the following conditions:

- When inserted on an Auxiliary Input or Master Fader track
- When inserted on an Instrument track that does not contain an instrument plug-in
- When inserted after a TDM plug-in on any kind of track

For example, the initial insert of an RTAS plug-in on a mono Auxiliary Input track uses two voices (one channel with two voices), while the initial insert of that plug-in on a *stereo* Auxiliary Input track uses four voices (two channels with two voices each).

Subsequent RTAS plug-ins on the same track do not take up additional voices unless a TDM plug-in is inserted between other RTAS plug-ins.

⚠ *Avoid inserting TDM plug-ins between RTAS plug-ins on any kind of track—this causes unnecessary voice usage and may cause additional latency.*

Audio tracks that have active RTAS plug-in inserts cannot be explicitly voiced. The voice allocation must be set to Dynamic or Off.

Furthermore, one additional voice is used for each occurrence of any of the following conditions when using voices for RTAS plug-ins on a track:

- When you use the external key side-chain of an RTAS plug-in on that track
- When you select multiple track outputs for that track (one voice used for each output)
- When you select an AFL/PFL Path output in the Output tab of the I/O Setup dialog (one voice used for each channel)

⚠ *When you use Pro Tools 6.9.x or lower to open a session originally created with Pro Tools 7, any RTAS plug-ins inserted on Auxiliary Input or Master Fader tracks—or after TDM plug-ins on any kind of track—will become inactive.*

## Viewing Inserts

Both the Mix and Edit windows can be configured to show or hide inserts. Plug-in windows provide complete access to plug-in controls.

**To show (or hide) inserts, do one of the following:**

■ In the Mix window (or Edit window), select View > Mix Window (or Edit Window) > Inserts.
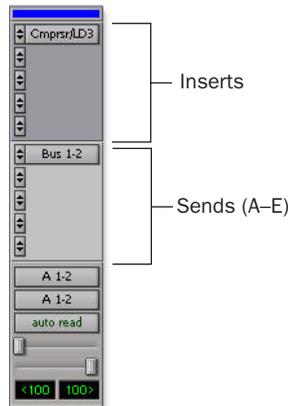


*Showing Inserts in the Mix Window*

– or –

■ Select Inserts View from the Edit Window or Mix Window View selector.
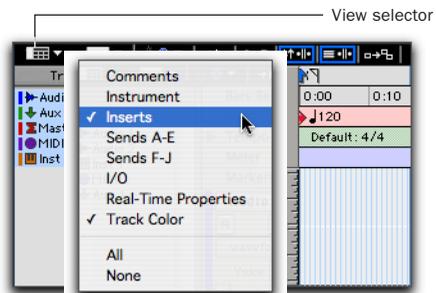


*Showing Inserts using the View selector*

## Display of Plug-in Window Status

In the Mix and Edit window, the plug-in button and selector display the currently inserted plug-in, its bypass state (see "Bypassing Plug-ins" on page 770), target status, and window status.

 ————— Lit plug-in name
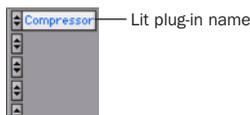
*Indication of open plug-in window*

### Indicating the Controller Target

If you are using a control surface with Pro Tools, only one plug-in can be targeted at a time. The current controller target, if any, is indicated with a color outline around its name:

 ————— Target outline
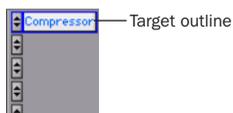
*The controller target*

## Making Inserts Inactive

Plug-in and hardware inserts can be made inactive to free up their resources for other uses. When a plug-in insert is inactive it retains its assignment, position, and related automation playlists. However, it will not pass audio and does not consume any DSP or TDM resources.

When opening sessions, inserts will automatically be made inactive in any of the following situations:

• The system has insufficient DSP resources.

• A plug-in is not installed.

• A plug-in type is not available (RTAS or TDM).

• Opening the session results in plug-in type substitutions. This can happen if the type is available but substituting would result in an unsupported condition, such as opening a session containing a TDM plug-in for which an RTAS version is unavailable.

**To make an insert inactive, do one of the following:**

■ Control-Start-click (Windows) or Command-Control-click (Mac) the Insert button.

– or –

■ Make the track inactive. See "Making Tracks Inactive" on page 171.

**To toggle inserts in the same position on all tracks active or inactive:**

■ Control-Start-Alt click (Windows) or Command-Control-Option click (Mac) an Insert button in the position you want to toggle.

**To toggle inserts in the same position on all selected tracks active or inactive:**

■ Control-Start-Alt-Shift-click (Windows) or Command-Control-Option-Shift-click (Mac) an Insert button in the position you want to toggle.

### Inactive Plug-in Inserts

Inactive plug-in inserts retain all associated automation playlists. In addition, any edits made in the session affect the plug-in automation playlists. You cannot record automation or adjust the controls for an inactive plug-in.
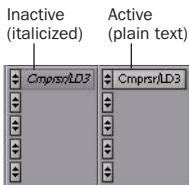


*Display of inactive plug-ins*



*Display of inactive Plug-in window*

### Inactive Hardware Inserts

Inactive hardware inserts retain their assignments, but do not pass audio and do not consume any DSP resources.

☼ *Hardware inserts do not provide a bypass control. You can use the inactive feature whenever you need to mute or bypass a hardware insert.*

# Inserting Plug-ins on Tracks

To use a real-time plug-in, insert it on a track.

⚠ *Plug-ins cannot be inserted or removed during recording.*

**To insert a plug-in on a track:**

**1** Make sure the Inserts View is shown in the Mix or Edit window.

**2** Click the Insert selector on the track and select the plug-in that you want to use. (See "TDM and RTAS Plug-ins" on page 753 for related information.)
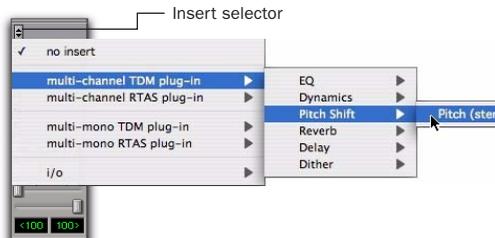


*Inserting a TDM plug-in*

☼ *You can insert a plug-in on a track by dragging one of its Plug-ins Settings (.txf) files from a DigiBase browser onto an available track Insert position in the Mix window. See "Dragging and Dropping Plug-in Settings Files" on page 769.*

**To remove an insert from a track:**

■ Click the Insert selector and choose No Insert.
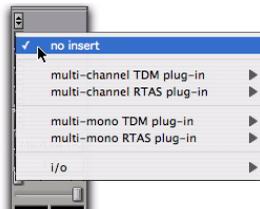


*Removing a plug-in*

## Ordering RTAS and TDM Plug-ins on Audio Tracks

### (Pro Tools HD Only)

With Pro Tools HD, when RTAS and TDM plug-ins are combined on an audio track, Auxiliary Input, or Master Fader, the order in which they are inserted produces different results:

**RTAS Plug-ins Grouped Before TDM Plug-ins** No additional voices will be used, and no processing latency will occur. RTAS plug-ins will be bypassed when Record Enable or TrackInput monitoring is enabled for that track.

**TDM Plug-ins Grouped Before RTAS Plug-ins** Each initial insert of an RTAS plug-in after a TDM plug-in on a track will cause processing latency, and will use voices as described in "Voice Usage and Total Latency for RTAS Plug-ins" on page 753. RTAS plug-ins will stay active while Record Enable or TrackInput monitoring is enabled for that track.

⚠ *As a rule, always group plug-ins of the same type together, especially if inserting RTAS after TDM plug-ins. Otherwise, additional voices may be unnecessarily used.*

### Ordering Recommendations

When combining RTAS and TDM plug-ins on an audio track, use one of the following two strategies based on your recording needs:

• To ensure that RTAS plug-ins stay active when you record enable a track or use TrackInput monitoring, order all TDM plug-ins before RTAS plug-ins.

– or –

• To conserve voices and minimize processing latency, order all RTAS plug-ins before TDM plug-ins.

## Plug-in Menu Organization

You can customize how plug-in lists (plug-in menus) are organized in the Insert selector and Plug-in selector.

Use the "Organize Plug-in Menus By" pop-up menu in the Pro Tools Display Preferences page to organize plug-in menus in a Flat List (with plug-ins in alphabetical order), or by Category, Manufacturer, or Category *and* Manufacturer.
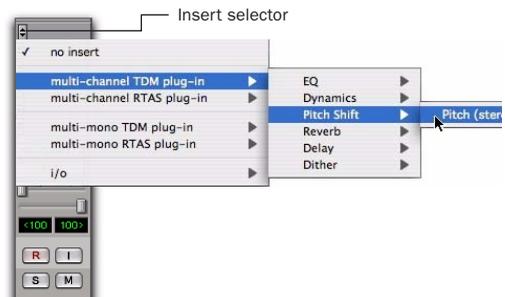


*Plug-ins organized by category (using the Insert selector)*
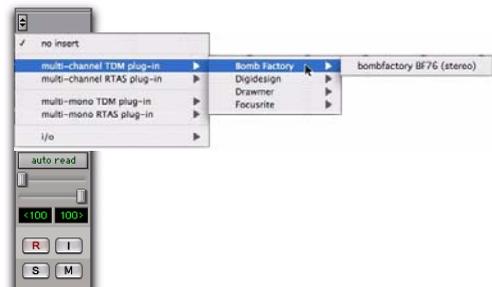


*Plug-ins organized by Manufacturer (using the Plug-in selector)*

### "Organize Plug-in Menus By" Pop-Up Menu

**Flat List** Organizes plug-ins in a single list, in alphabetical order.

**Category** Organizes plug-ins by process category (such as EQ, Dynamics, and Delay), with individual plug-ins listed in the category submenus. Plug-ins that do not fit into a standard category (such as the DigiRack Signal Generator), or third-party plug-ins that have not had a category designated by their developers, appear in the Other category. Plug-ins can appear in more than one category.

Plug in categories include:

- EQ
- Dynamics
- Pitch Shift
- Reverb
- Delay
- Modulation
- Harmonic
- Noise Reduction
- Dither
- Sound Field
- Hardware
- Instrument
- Other
- Effects

The Effects subfolder organizes special effects, multi-effect processors, and other plug-ins. All plug-ins that specify their plug-in category as an "Effects" type will be displayed within the Effects subfolder.

⚠ *If no plug-ins within a certain category are installed on your system, the subfolder named for that category will not appear in the menu.*

**Manufacturer** Organizes plug-ins by their manufacturer (such as Digidesign, Eventide, Line 6, and McDSP), with individual plug-ins listed in the manufacturer submenus. Plug-ins that do not have a Manufacturer defined will appear in the "Other" manufacturer folder.

Most Digidesign-distributed third-party plug-ins will be grouped under Digidesign when this option is enabled.

⚠ *If no plug-ins by a certain manufacturer are installed on your system, the subfolder named for that manufacturer will not appear in the menu.*

**Category and Manufacturer** Organizes plug-ins in two levels of menus. The top menus display plug-ins by process category (such as EQ, Dynamics, and Delay), with individual plug-ins listed in the category submenus. The bottom menus display plug-ins by manufacturer (such as Digidesign, Eventide, Line 6, and McDSP), with individual plug-ins listed in the manufacturer submenus.

#### To select how plug-ins are organized:

**1** Open or create a session.

**2** Choose Setup > Preferences, and click Display.

**3** Click the "Organize Plug-in Menus By" pop-up menu, and select one of the view options.

**4** Click OK.

The current "Organize Plug-in Menus By" setting is saved with Pro Tools preferences (it is not saved with the Pro Tools session file).

## Control Surface Support

Digidesign control surfaces with multi-color LCDs (such as D-Control) indicate plug-ins as follows:

- Plug-in categories (such as EQ) and plug-in manufacturers (such as Digidesign) are indicated in green text.
- Specific plug-ins located in the plug-in sub-folders (such as EQ III in the EQ subfolder) are indicated in yellow (amber) text.

Control surfaces with single-color displays (such as ProControl and Command|8) do not indicate plug-in view choices. They display contents of a plug-in folder as a single list of plug-ins.

## Default EQ and Dynamics Plug-ins

You can set a default EQ plug-in and Dynamics plug-in, which places them at the top of the Insert selector pop-up menu on-screen, and first in the list of menu choices when assigning inserts on ICON worksurfaces.
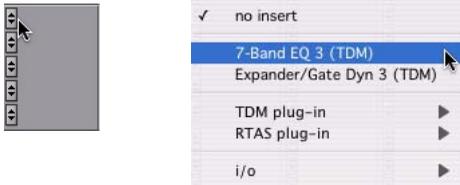


*Default plug-in display in Insert selector menu*

**To set a default plug-in:**

**1** Choose Setup > Preferences and click Mixing.

**2** Under Setup, choose a plug-in from the Default EQ or Default Dynamics pop-up menu.

**3** Click OK to close the Preferences window.

## Plug-in Favorites

To find a plug-in faster, a plug-in can be designated as a *favorite*. Favorite plug-ins are shown at the top of the plug-in menu.

When a plug-in becomes a favorite, it is still shown in its plug-in category and its name appears in bold.
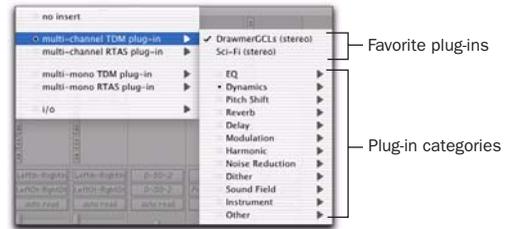


*Menu display of favorite plug-ins*

**To designate a plug-in as a favorite:**

■ Control-click (Windows) or Command-click (Mac) the Insert selector and select a plug-in from a to designate it as a favorite.

**To change the status of a plug-in favorite:**

■ Control-click (Windows) or Command-click (Mac) the Insert selector and select a plug-in favorite that you no longer want designated as a favorite.

When selecting the plug-in favorite to change, you can select the plug-in from the list of favorites at the top of the plug-in menu, or in its plug-in category (where the plug-in appears in bold).

## Moving and Duplicating Plug-in and Hardware Inserts

You can move or duplicate an insert by dragging it to a different position on the same track or a different track. Inserts that are moved or duplicated retain their original settings and automation.

⚠️ *Plug-ins cannot be moved or duplicated during recording.*

**To move an insert:**

■ Drag the insert to a new insert location.
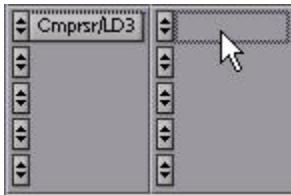


*Moving a plug-in*

💡 *Dragging an insert on top of an existing insert will replace it and any automation.*

**To duplicate an insert:**

■ Alt-drag (Windows) or Option-drag (Mac) the insert to a new insert location. Duplicated plug-in inserts retain their original settings and automation.

💡 *You can also duplicate Sends. See "Moving or Copying Sends" on page 729*

## The Plug-in Window

The Plug-in window appears whenever you click a plug-in's Insert button on a track. This floating window lets you edit the adjust the controls of any real-time plug-in insert in use on a track.
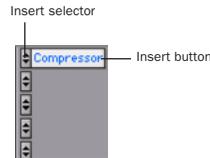


*Insert button and selector on track*
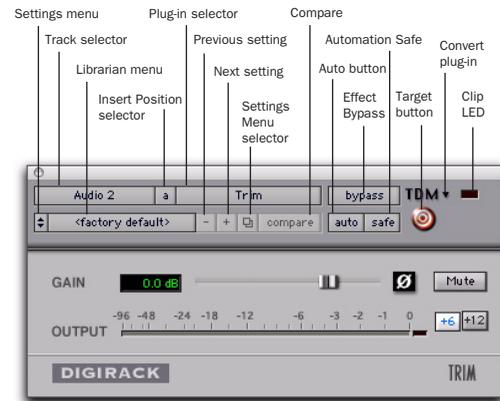


*Plug-in window (mono Trim shown)*

**Track Selector** Accesses any non-MIDI track in a session.

**Insert Position Selector** Accesses any insert on the current track.

**Plug-in Selector** Lets you select any real-time plug-in installed in the Plug-ins folder (that is created when you install Pro Tools).

**Effect Bypass Button** Disables the currently displayed plug-in. This lets you compare the track with and without the effect.

**Convert Plug-in Selector** Lets you convert the insert from a TDM plug-in to an RTAS plug-in of the same type (or vice-versa). This feature can only be used on plug-ins that are available in both TDM and RTAS formats.

**Clip LED** Lights red to indicate if any meter in a plug-in has clipped (not available on all plug-ins). The Plug-in Clip LED follows Pro Tools settings for clip indication.

**Settings Menu** Lets you copy, paste, save, and import plug-in settings.

**Librarian Menu** Recalls settings files saved in the plug-in's root settings folder or in the current session's Settings folder. See "Using the Librarian" on page 763.

**Next (+) and Previous (–) Setting Buttons** Let you select the next or previous plug-in setting from the Librarian menu.

⚠️ *You will lose the current settings if they are not saved before you use the Next and Previous Setting buttons. Always save your settings to the Librarian menu.*

**Plug-ins Settings Select Button** Accesses the Plug-in Settings dialog, which lists the settings files for the current plug-in. From this list, you can select a new setting, or audition a series of settings.

**Compare** Toggles between the original saved plug-in setting and any changes you have made to it so you can compare them.

**Auto Button** Lets you enable individual plug-in controls for automation recording. See "Automating Plug-ins" on page 791.

**Automation Safe** When enabled, prevents existing plug-in automation from being overwritten.

**Target Button** When multiple Plug-in windows are open, clicking this button selects that plug-in as the target for any computer keyboard commands. For more information, see "Targeted Windows" on page 734.

**Key Input Selector** Lets you select audio on a particular input or bus and route it to trigger the plug-in. This menu only appears on plug-ins that feature side-chain processing. Key inputs are monophonic.



Key Input selector    MIDI node
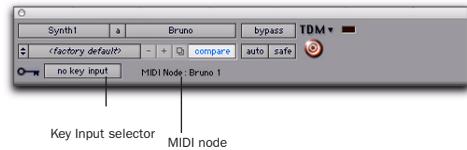
*MIDI node display in a plug-in header (Bruno shown)*

**MIDI Node Display** Shows MIDI node information for MIDI-enabled plug-ins. MIDI nodes are virtual connections from Pro Tools to software instruments and other MIDI-enabled plug-ins. MIDI nodes are useful for routing multiple MIDI tracks to different channels of a single virtual MIDI device. MIDI node numbers are also displayed in a track's MIDI Output selector.

**Master Link Button** When enabled, links the controls on all channels of a multi-mono plug-in so that they can be adjusted in tandem.



Phase Invert          Master Link button
                      Link Enable buttons
                      Channel Selector

*Plug-in window (multi-mono 1-Band EQ shown)*

**Link Enable Buttons** Let you selectively link or unlink the controls of specific channels of a multi-mono plug-in. Each square represents a speaker channel. The Master Link button must be disabled to use the Link Enable buttons. See "Linking and Unlinking Controls on Multi-Mono Plug-ins" on page 770.

**Channel Selector** Accesses a specific channel within a multichannel track for plug-in control editing. This menu appears only on multi-mono plug-ins inserted on tracks with more than one channel. Shift-clicking this selector opens a separate Plug-in window for each channel of the multichannel track on which the plug-in is inserted.



Phase Invert button

LFE Enable

*Plug-in window (multichannel Compressor shown)*

**Phase Invert Button** Inverts the phase polarity of the input signal on some plug-ins.

**LFE Enable** Enables plug-in processing of the LFE (low frequency effects) channel on a multi-channel track formatted for 5.1, 6.1, or 7.1 surround formats on some plug-ins. To disable LFE processing, deselect this button.

**Tempo Sync** Enables compatible plug-ins to automatically synchronize to the session tempo, for rhythmic delay, echo, and similar effects.

# Opening Plug-in Windows

**To open a plug-in window:**

■ Click the plug-in button in the Mix or Edit window channel strip.

By default, each plug-in you open will appear in the same location as a currently open plug-in, replacing it in the same window location.

# Opening Multiple Plug-in Windows

Pro Tools normally displays a single plug-in window from which you can adjust the controls of any session plug-in. You can also open additional Plug-in windows for specific plug-ins. Once you begin working with multiple plug-in windows, you will need to click the Target button on the plug-in whose controls you want to adjust using keyboard commands.

**To open an additional plug-in window:**

■ In the Mix window, Shift-click the Insert button of a plug-in.

**To open plug-in windows for each channel of a multi-mono plug-in:**

■ Alt-click (Windows) or Option-click (Mac) the Channel selector in the Plug-in window of a plug-in insert.

**To close all currently open plug-in windows:**

■ Alt-click (Windows) or Option-click (Mac) the close box of any currently open plug-in window.

## Plug-in Window Controls

All plug-ins provide standard Pro Tools controls for track and insert selection, bypass, and other controls, in addition to the EQ, dynamics, and other processor-specific controls.

### To select a different plug-in on the same track:

■ Click the Insert selector and select a plug-in from the pop-up menu.



*Selecting a plug-in from the Plug-in window*

### To choose a different track:

■ Click the Track selector and choose a track from the pop-up menu.
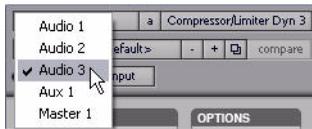


*Selecting a track from the Plug-in window*

### Target Window and Settings Shortcuts

When multiple plug-in windows are open, a highlighted target indicates the target window. Pro Tools keeps a single plug-in target window. Opening a new plug-in opens it as the new target window, in the same location. In addition, the plug-in target window is also the focus of keyboard shortcuts for plug-in settings.

## Using the Librarian

The Settings Librarian makes it easy to create your own library of plug-in settings. Using the Librarian and Settings pop-up menus, you can copy, paste, save, and import these settings from plug-in to plug-in, or from session to session.



*Librarian menu*

Once you create and save settings files to disk (and tell Pro Tools where to find them by assigning their *root* folder) they appear both in the Librarian menu and in the Plug-in Settings dialog. The also appear as Plug-in Settings files (.txf) in DigiBase browsers.

💡 *You can also use the Plug-in Settings dialog to select settings or audition plug-in settings. See "Plug-in Settings Dialog" on page 767.*

# The Settings Menu

Use the Settings menu commands to save, copy, paste, and manage plug-in settings files.



*Settings menu*

Settings menu commands include:

**Save Settings** Saves the current settings. This command overwrites any previous version of the settings. The setting then appears in the Librarian menu.

**Save Settings As** Saves the current settings under a different name.

**Copy Settings** Copies the current settings. You can then apply these settings to the same type of plug-in on a different track by choosing the track in the Plug-in window and pasting the settings with the Paste Settings command.

**Paste Settings** Pastes settings copied with the Copy Settings command.

**Import Settings** Imports a settings file from a location other than the Root Settings folder or Session folder.

**Delete Current Settings File** Permanently deletes the current settings file from disk.

**Lock Settings File** Prevents the current settings from being overwritten by the Save command. If you attempt to save control settings, you will be required to save them using a different name or disk location.

**Set As User Default** Defines the current settings as the User Default for a specific plug-in.

## Settings Preferences

The Settings Preferences submenus are for choosing preferences for saving and importing plug-in settings. They include:

**Set Plug-in Default To** Sets the default setting to either Factory Default (the standard default setting for that plug-in) or User Default (your custom setting).

**Save Plug-in Settings To** Selects the folder where plug-in settings are saved. If you choose Session Folder, the settings are saved in a folder named "Plug-in Settings" within the current Session folder. If you choose Root Settings Folder, the settings are saved in the folder you specified with the Set Root Settings Folder command.

**Set Root Settings Folder** Selects a location or *root* folder for saving and importing settings. This root settings folder must be named "Plug-in Settings." Use this command only if you want to choose a location other than the default Plug-in Settings folder.

The default location for the Root Plug-in Settings folder is as follows:

**Windows** Program Files\Common Files\ Digidesign\DAE\Plug-in Settings

**Mac** Library/Application Support/
Digidesign/Plug-in Settings

⚠️ *To save plug-in settings to any location other than the default Plug-in Settings folder, you must first create a folder named "Plug-in Settings" in the new location and then save to that folder.*

## Choosing a Destination for Settings

Before you save plug-in settings, select their destination folder.

**To select a destination folder:**

■ From the Settings pop-up menu, choose Settings Preferences > Save Plug-in Settings To, and choose Session Folder or Root Settings Folder.

If you choose Root Settings folder, Pro Tools saves to the default Root Plug-in Settings folder unless you have specified a different location for the Root Settings folder.

**To select a different Root Settings folder:**

**1** From the Settings pop-up menu, choose Settings Preferences > Set Root Settings Folder.

**2** Select the folder you want to use as your Root folder and click Select.

## Creating Subfolders for Settings

To make it easier to find specific types of settings, you can subdivide settings files by creating subfolders for them.



*Librarian menu*

**To create a settings subfolder:**

**3** From the Settings pop-up menu, choose Save Settings.

**4** Click the New Folder button and type a name for the subfolder.

**5** Name the setting and click Save. The setting is saved within the subfolder.

## Managing Settings

Use the Settings pop-up menu to manage settings.

⚠ *Unlinked multi-mono plug-ins have specific rules for settings. See "Linking and Unlinking Controls on Multi-Mono Plug-ins" on page 770.*

**To save a setting:**

**1** Choose Save Settings from the Settings pop-up menu.

**2** Type a name and click OK. The setting appears in the Librarian menu.

⬚ *Press Control+Shift+S (Windows) or Command+Shift+S (Mac) to save plug-in settings.*

**To load a previously saved setting:**

▪ Choose the setting from the Librarian pop-up menu.

**To import a setting:**

**1** Choose Import Settings from the Settings pop-up menu.

**2** Locate the settings file you want to import and click Open. Pro Tools loads the setting and copies it to the root destination folder.

**To copy a setting:**

▪ Choose Copy Settings from the Settings pop-up menu.

⬚ *Press Control+Shift+C (Windows) or Command+Shift+C (Mac) to copy plug-in settings.*

**To paste a setting:**

**1** Open the destination plug-in.

**2** Choose Paste Settings from the Settings pop-up menu.

⬚ *Press Control+Shift+V (Windows) or Command+Shift+V (Mac) to paste plug-in settings.*

**To create a custom User Default setting:**

**1** Create and save a setting.

**2** Choose Set As User Default from the Settings pop-up menu.

**To make a plug-in default to your custom setting:**

▪ From the Settings pop-up menu, choose Settings Preferences > Set Plug-in Default To > User Setting.

### Changing Settings with the Next (+) and Previous (–) Setting Buttons

These buttons let you select the next or previous setting of the Librarian menu.

**To change plug-in settings using the +/– buttons:**

▪ Click the Plus (+) or Minus (–) buttons to select the next or previous plug-in settings file. The next (or previous) settings file are enabled, and the Librarian menu changes to reflect the new setting.

⚠ *You will lose the current settings if they are not saved before you use the Next and Previous Setting buttons. Always save your settings to the Librarian menu.*

### Editing Settings on Unlinked Multi-Mono Plug-ins

When a multi-mono plug-in is unlinked, importing, copying, pasting, or bypassing settings affects only the currently selected channel.

**To apply an operation to all channels of an unlinked plug-in:**

■ Hold down the Alt key (Windows) or Option key (Mac) while performing the command.

## Plug-in Settings Dialog

The Plug-in Settings dialog lists the settings files for the current plug-in type. From this list, you can select a new setting, or audition a series of settings. Auditioning plug-in settings is especially useful for selecting patch names for virtual MIDI instrument plug-ins or trying out different effects types applied to your audio.

Use the Folder pop-up menu at the top of the Settings dialog to switch between plug-in settings subfolders, or root and session settings folders.
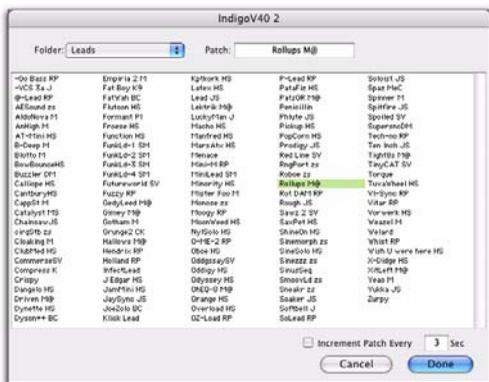


*Plug-in Settings dialog*

The Plug-in Settings dialog includes the following:

**Folder** This pop-up menu lets you switch between settings located in root or session folders (and any available subfolders).

**Patch Field** This field displays the name of the active (highlighted) setting.

**Increment Patch Every X Sec** This option lets you audition contiguous plug-in settings on-the-fly by automatically scrolling through them for a specified number of seconds.

**To change plug-in settings using the Plug-in Settings dialog:**

**1** Click the Settings Select button.

**2** Do one of the following:

• Select a plug-in setting from the dialog list.

– or –

• Use the Arrow keys to scroll through the available settings.

⇧ *To switch between settings subfolders, press Control (Windows) or Command (Mac) and use the Up/Down Arrow keys.*

**3** Click Done.

## Auditioning Plug-in Settings

When the Plug-in Settings dialog is open, you can have Pro Tools automatically scroll through and audition the settings files saved in the plug-in's root settings folder or in the current session's settings folder.

**To audition plug-in settings:**

**1** Click the Settings Select button.

**2** From the dialog list, click a setting—the starting point from which you will scroll through the settings files.

**3** Enter a value for the number of seconds that will elapse between each program change.

**4** Select the option for Increment Patch.

After the specified number of seconds, Pro Tools selects the next setting.

**5** When you are finished auditioning settings, do one of the following:

- Click Done to stop incrementing patches, and to close the Plug-in Settings dialog.

– or –

- Select the Increment Patch option to stop incrementing patches and keep the Plug-in Settings dialog open.

## DigiBase and Plug-in Settings Files

DigiBase browsers recognize plug-ins settings files (.txf) as a known Type and lets you drag and drop them to Pro Tools plug-in windows and Inserts. You can also search for plug-in settings by type.

### Searching for Plug-in Settings Files

**To search for plug-in settings files:**

**1** In the Workspace browser, click the Search icon.

**2** Select Plug-in Settings File from the Type pop-up menu.
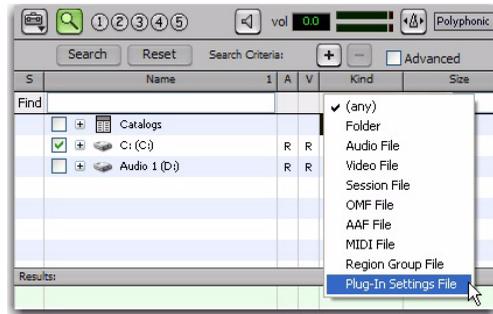


*Searching for plug-in settings files*

**3** To further narrow your search, type all or part of the name of the plug-in settings file you want.

**4** Click Search.

**5** To sort your search by Plug-in Name or Manufacturer, click the corresponding column title.
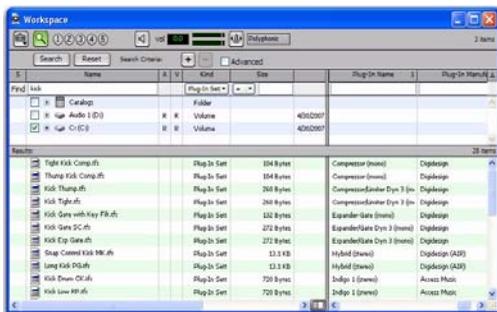


*Plug-in settings files found in the Workspace browser and sorted by Plug-in Name*

💡 *With DigiBase Pro (Pro Tools HD and LE with DV Toolkit 2 only), you can create catalogs of specific plug-in settings that you work with frequently to streamline your workflow. For more information on DigiBase Pro Catalogs, see "DigiBase Pro Catalogs" on page 243.*

### Dragging and Dropping Plug-in Settings Files

You can insert a plug-in with a specific plug-in settings file, as well as change plug-in settings of inserted plug-ins by dragging and dropping plug-in settings files from a DigiBase browser, Windows Explorer, or the Mac Finder.

**To insert a plug-in by drag and drop:**

▪ Drag and drop a plug-in settings file from a DigiBase browser, Windows Explorer, or the Mac Finder to an Insert in the Mix (or Edit) window.



*Dragging and dropping a plug-in settings file to an Insert*

**To change plug-in settings by drag and drop:**

▪ Drag and drop a plug-in settings file from a DigiBase browser, Windows Explorer, or the Mac Finder to the plug-in window. The plug-in settings file must be for the same plug-in name. For example, you cannot replace a 1-Band EQ 3 with a plug-in setting for 4-Band EQ 3.
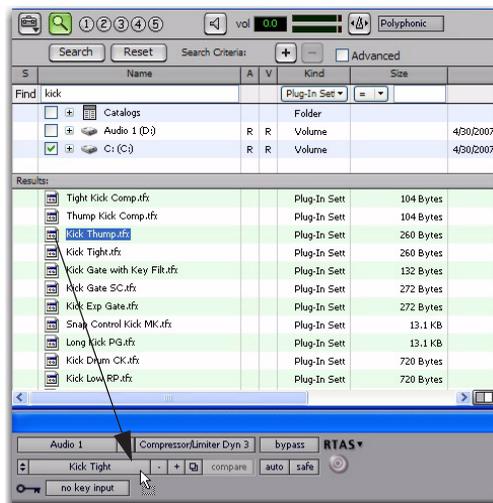


*Dragging and dropping a plug-in settings file to a plug-in*

## Bypassing Plug-ins

Plug-ins can be bypassed from their Plug-in window, or from the Mix and Edit window Inserts View.

💡 *When a plug-in insert is bypassed, the Insert selector in the Mix window changes its color to blue for easy visual reference. If some, but not all channels of an unlinked multi-mono plug-in are bypassed, the Insert selector appears purple.*

**To bypass a plug-in, do one of the following:**

■ Click the Plug-in window's Effect Bypass button.

– or –

■ Control-click (Windows) or Command-click (Mac) the plug-in's Insert button in the Mix or Edit window.
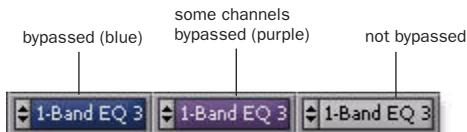


*Indication of bypassed plug-in state*

## Linking and Unlinking Controls on Multi-Mono Plug-ins

When a multi-mono plug-in is used on a stereo track or greater-than-stereo multichannel track (Pro Tools HD only), the controls are linked by default. Adjusting the Gain control on one channel, for example, will adjust it for all channels.

You can unlink multi-mono plug-in controls on specific channels of a track and edit them independently. You can also selectively link the controls of specific channels.



*Channel selector and Link controls (shown with Link disabled)*

**To unlink controls on a multi-mono plug-in:**

■ Deselect the Master Link button.

**To access controls for a specific channel:**

■ Select the channel from the Channel selector.

**To link the controls of specific channels:**

**1** Deselect the Master Link button if it is not already deselected.

**2** Click the Link Enable buttons for the channels whose controls you want to link. For example, on plug-ins that do provide discrete LFE controls from the LFE Enable button, you can link all channels except the LFE by highlighting the icons representing the five full-range speakers in a multi-mono plug-in.



*All channels linked except the LFE*

# Editing Plug-in Controls

You can adjust plug-in controls by dragging the control's slider or knob, or by typing a value into the control's text box. For instructions on editing specific plug-ins, see the plug-in's documentation.

📋 *The DigiRack plug-ins (installed with Pro Tools) are documented in the DigiRack Plug-ins Guide.*

**To adjust a plug-in control:**

**1** Begin audio playback so that you can hear the control changes in real time.

**2** Adjust the controls of the plug-in for the effect you want.

**3** Close the Plug-in window to save the most recent changes.

## Editing Parameters Using a Mouse

You can adjust rotary controls by dragging horizontally or vertically. Parameter values increase as you drag upward or to the right, and decrease as you drag downward or to the left.

### Keyboard Shortcuts

◆ For finer adjustments, Control-drag (Windows) or Command-drag (Mac) the control.

◆ To return a control to its default value, Alt-click (Windows) or Option-click (Mac) the control.

## Editing Parameters Using a Computer Keyboard

You can use your computer keyboard to edit plug-in controls.

If multiple Plug-in windows are open, Tab and keyboard entry remain focused on the plug-in that is the target window.

💡 *The plug-in target window is the focus of keyboard shortcuts for plug-in settings. To make a plug-in the target for any computer keyboard commands (including key shortcuts), click the plug-in's Target button in its Plug-in window.*

**To change control values with a computer keyboard:**

**1** Click or Navigate to the control text field that you want to edit to activate the field.

💡 *To move forward through the different control fields, press the Tab key. To move backward, press Shift+Tab.*

**2** Change the value by doing one of the following.

- To increase a value, press the Up Arrow on your keyboard.
- To decrease a value, press the Down Arrow on your keyboard.
- Type the value.

💡 *In fields that support values in kilohertz, typing "k" after a number value will multiply the value by 1,000. For example, type "8k" to enter a value of 8,000.*

**3** Do one of the following to confirm the value:

- Press Enter on the numeric keyboard to input the value and remain in keyboard editing mode.

– or –

- Press Enter on the alpha keyboard (Windows) or Return (Mac) to enter the value and leave keyboard editing mode.

**To clear plug-in clipping**

▪ Press Alt-C (Windows) or Option-C (Mac).

# Plug-in Automation and Safe

All real-time plug-ins can be fully automated, and support all Pro Tools Automation modes (Write, Touch, and Latch, plus Trim).

The Auto button opens the Plug-in Automation dialog, where you can enable individual plug-in controls for automation recording. (See "Automating Plug-ins" on page 791 for more information.)

The Safe button engages Automation Safe mode. When enabled, existing plug-in automation is protected from being overwritten. (See "Record Safing Plug-in Automation" on page 793.)

# Using a Side-Chain Input

The *side-chain* input is the split-off signal used by a plug-in's detector to trigger dynamics processing, and is generally drawn internally from the input signal. However, some plug-ins let you switch between internal and external side-chain processing.

With external side-chain processing, a plug-in's detector is triggered by an external signal (such as a separate reference track or audio source) known as the *key input*.

A typical use for external side-chain processing is to control the dynamics of one audio signal using the dynamics of another signal (the key input). For example, a kick drum track could be used to trigger gating of a bass track to tighten it up, or a rhythm guitar track could be used to gate a keyboard pad.

**Side-Chain Filters**

Some plug-ins feature key high-pass and low-pass filters. These controls let you define a specific frequency range in the side-chain signal with which to trigger the plug-in effect. A common production technique is to use these controls to filter a drum track so that only specific high frequency sounds (such as a hi-hat) or low frequency ones (such a tom or a kick) trigger the effect.

## Using a Key Input for External Side-Chain Processing

**To use a key input for external side-chain processing:**

**1** Click the plug-in's Key Input selector and select the input or bus carrying the audio you want to use to trigger the plug-in.
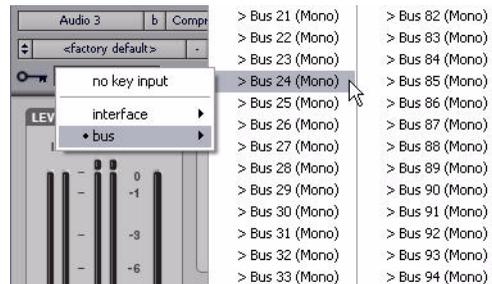


*Selecting a Key Input*

**2** Click the External Key to activate external side-chain processing.

**3** Press the Spacebar to begin playback. The plug-in uses the input or bus that you chose as a key input to trigger its effect.

**4** During playback, do any of the following to fine-tune key input triggering:

- To hear the audio source you have selected to control the key input, enable Side-Chain Listen or Key Listen (depending on the plug-in). When finished, disable Side-Chain Listen/Key Listen to resume normal plug-in monitoring.

- To filter the key input so that only specific frequencies trigger the plug-in, use the filtering controls (if available) to select the frequency range.

**5** Adjust the plug-in's Threshold control (if available) and other controls as needed.

## Instrument Plug-ins

Instrument plug-ins are software instruments (such as synthesizers or samplers) that generate audio and that can be controlled with MIDI. Instrument plug-ins can be inserted on audio, Auxiliary Input, and Instrument tracks.

💡 *By inserting an instrument plug-in on an Instrument track, you can control both the MIDI input to the plug-in and audio output of the plug-in from a single track. See "Monitoring and Mixing Audio with Instrument Tracks" on page 735.*



MIDI Output routed to plug-in
MIDI meter (Velocity) showing MIDI input
Instrument plug-in insert

Audio Output selector

Level meters showing audio output
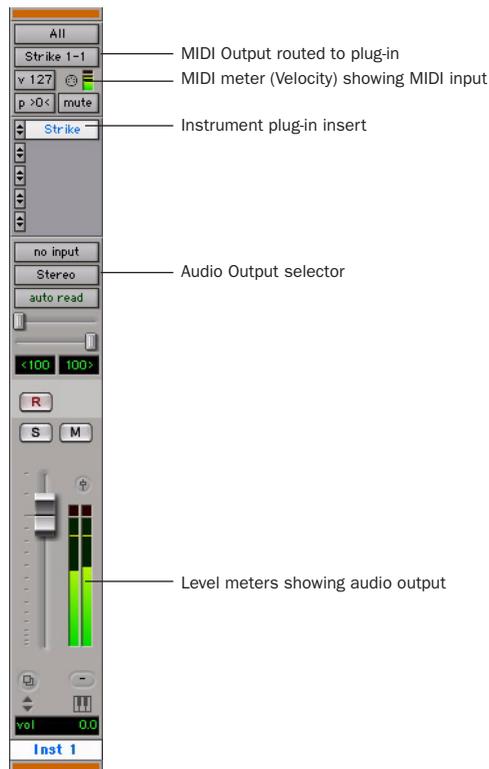
*Instrument plug-in inserted on an Instrument track*

Instrument plug-ins are inserted on tracks in the same way as other plug-ins. Instrument plug-ins can be moved and duplicated, their controls can be bypassed, safed and automated, and their settings can be saved in the same way as other plug-ins.

📖 *For information on using Pro Tools with ReWire client applications, see the Digi-Rack Plug-ins Guide.*

# Using Hardware Inserts

You can connect external devices, such as reverb or effects processors, to your Pro Tools system and use them as hardware inserts on individual tracks or on submixes.

Pro Tools inserts utilize corresponding hardware input and output channels to send and return the audio. Inserts can be defined, and their channels mapped to audio interface channels, in the I/O Setup dialog.

If you plan to use a device as an insert, be sure to connect the device to matching inputs and outputs on your system. For example, a hardware insert being supplied by outputs 7–8 needs to be returned to hardware inputs 7–8.

📄 *Delay Compensation can be applied to Hardware Inserts. See "H/W Insert Delay Compensation" on page 70.*

**To define a hardware insert:**

**1** Choose Setup > I/O, then click the Inserts tab.

**2** Select an insert path, or click New Path to create a new Insert path.

**3** Double-click the Path Name to enter a custom path name for the insert.

**4** Make sure the insert path is set to the correct format (mono, stereo, or other).

**5** Map inserts in the Channel Grid as needed. Insert and Output paths have special rules regarding channel mapping (see "Valid Paths and Requirements" on page 63).

# Assigning Hardware Inserts

**To assign an external hardware insert to a track:**

- Select an insert from the track Insert selector.
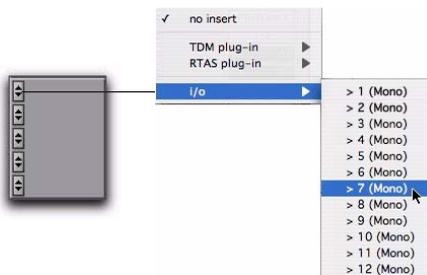


*Selecting a hardware I/O insert*

# Bypassing Hardware Inserts

Hardware inserts do not provide a bypass control. To monitor playback without a hardware insert, either set it to Inactive, remove it by reassigning it to No Insert, or use a bypass switch on the hardware device itself. (See "Making Inserts Inactive" on page 755 for more information.)

# Connecting and Integrating External Devices

Pro Tools can create dedicated connections to external analog or digital devices. The number and type of connections depends on what kind of system you have.

**To connect an external device to a Pro Tools system:**

**1** Connect an unused output (or pair of outputs for a stereo device) of your Pro Tools system to an input of the external signal processor.

**2** Connect the output of the external signal processor to an unused input (or pair of inputs for a stereo device) of your Pro Tools system.

**3** Define what physical ports are routed to Pro Tools input and output ports, as appropriate, in either the Hardware Setup dialog or I/O Setup dialog.

**4** Define output, input, or insert paths as appropriate in the I/O Setup dialog.

If you plan to use a device as an insert, be sure to connect the device to matching inputs and outputs on your system. For example, to use outputs 7–8, the insert has to use inputs 7–8 also.

📄 *For additional information on connecting external devices, refer to your Pro Tools Getting Started Guide.*

## Connecting Effects Units Digitally

If you want to use the digital inputs and outputs on your Pro Tools system as effects sends and returns to a digital effects device, Pro Tools should be the clock master in most cases. Set your digital effects device to accept an external digital clock so that it synchronizes to Pro Tools.

**To set up a digital send to an external device from a Pro Tools|HD system:**

**1** Do one of the following:

- On a 192 I/O, 192 Digital I/O, 96 I/O, 96i I/O, or 888|24 I/O, choose Setup > Hardware, choose the peripheral, format, and clock format, and set the channel pair to Digital.
- On an 882|20 I/O or 1622 I/O, choose Setup > Hardware, choose the peripheral, and set Channel 1–2 input to Digital.

**2** Choose Internal from the Clock Source pop-up menu.

**3** Click OK.

**To set up a digital send to an external device from a 003, 003 Rack, Digi 002 or Digi 002 Rack system:**

**1** Choose Setup > Playback Engine and choose the peripheral.

**2** Do one of the following:

- If the external device is connected to the S/PDIF RCA jacks, deselect S/PDIF Mirroring. (When S/PDIF Mirroring is on, digital output at the S/PDIF RCA jacks exactly mirrors the output of analog Channels 1–2.)
- If the external device is connected to the Optical ports, choose a format (most likely S/PDIF for an effects device) from the Optical Format pop-up menu.

**3** Choose Internal from the Clock Source pop-up menu.

**4** Click OK.

**5** Optionally, configure the I/O Setup dialog with new path names for effects routing.

⚠ *If you set the Optical Format to S/PDIF, Pro Tools will watch the Optical port for any audio input, and ignore any audio input on the S/PDIF RCA jacks.*

## Using External Clock Sources (for Recording and Monitoring)

When recording or monitoring, Pro Tools can synchronize to an external clock source. Options for external clock vary according to the type of Pro Tools system you are using.

### Pro Tools|HD Systems

Pro Tools|HD systems can receive external clock through any of the digital inputs on any Pro Tools|HD I/O (including AES/EBU, S/PDIF, and Optical).

With an expanded Pro Tools|HD system that includes Legacy interfaces (such as the 888|24 I/O), connect to the digital input on Channels 1–2 of the Legacy audio interface in order to clock from them. Legacy I/Os only support 44.1 kHz and 48 kHz sample rates.

📄 *To determine correct card order and audio interface connections, refer to the Pro Tools|HD Getting Started Guide.*

**To select an external clock source for a Pro Tools|HD system:**

**1** Choose Setup > Hardware.

**2** Select the appropriate Pro Tools|HD I/O in order to display its settings in the Main page.

**3** If necessary, enable the appropriate Digital Format (if you have not already done so, according to the instructions in your *Getting Started Guide* or *I/O Guide*).

**4** Set the Clock Source to match the type of input.

**5** Configure input routing of the digital source, using the Input and Output pop-up menus, if necessary.

**6** Click OK to close the Hardware Setup dialog.

### 003, 003 Rack, Digi 002, or Digi 002 Rack Systems

Pro Tools can receive external clock from the Optical input or S/PDIF input.

**To select an external clock source for 003, 003 Rack, Digi 002, or Digi 002 Rack system:**

**1** Choose Setup > Hardware.

**2** Set the Clock Source to match the type of input.

**3** If you choose Optical, make sure the Optical Format matches the type of optical input you are sending to your Pro Tools system.

⚠️ *If you set the Optical Format to S/PDIF, Pro Tools will watch the Optical port for external clock, and ignore any clock input on the S/PDIF RCA jacks.*

### Mbox 2, Mbox 2 Pro, and Mbox Systems

Pro Tools can receive external clock from the S/PDIF input on these interfaces.

**To select an external clock source for an Mbox 2, Mbox 2 Pro, or Mbox system:**

**1** Choose Setup > Hardware.

**2** Choose the SPDIF (Windows) or SPDIF/RCA (Mac) from the Clock Source pop-up menu.

**3** Click OK.

⚠️ *Your digital input device must be connected and powered on for Pro Tools to synchronize to it. If your input device is not powered on, leave the Clock Source set to Internal.*

# Chapter 37: Automation

Pro Tools features dynamic automation of mixing controls on each of the track types. You can write automation moves and view them in real time during playback of your session. You can also edit automation data with the same techniques you use to edit audio and MIDI data.

## Automation Accuracy with Control Surfaces

**Digidesign Control Surfaces** Digidesign's D-Control, D-Command, ProControl, Control|24, and Command|8 control surfaces support the automation features in Pro Tools. Digidesign control surfaces provide 10-bit resolution, or 1,024 steps of fader resolution. Pro Tools interpolates this input to 24-bit resolution on playback, resulting in extremely accurate and smooth fader automation.

*For details on using Digidesign control surfaces to create mix automation, refer to your Digidesign control surface guide.*

**MIDI Control Surfaces** Most MIDI control surfaces have 7-bit resolution, or 128 steps. Pro Tools interpolates this input to 24-bit resolution on playback, resulting in accurate and smooth fader automation.

## Automation QuickStart

Pro Tools provides many options for recording, replacing, and editing automation data.

The basic steps for automation recording are:

• Enable the automation type that you want to record (volume, pan, mute, send level, send pan, send mute, or plug-in automation).

• Put the appropriate tracks in an automation writing mode (Write, Touch, or Latch, or a Trim mode).

• If you are automating a plug-in, enable the individual plug-in controls to be automated.

• Automation Safe any plug-ins, outputs, or sends that have existing automation data that you want to protect from being overwritten.

• Begin playback to begin automation recording, and adjust controls as needed. Pro Tools remembers all moves performed on enabled controls.

To edit automation once it has been recorded, you can:

• Repeat the above steps to write new automation over the previous data.

• Graphically edit the automation data in the Edit window.

• Cut, copy, paste, or delete automation data (certain restrictions apply).

# Automation Playlists

Each Pro Tools track contains a single automation playlist for each automatable parameter.

On audio tracks, these parameters include:

- Volume
- Volume Trim (Pro Tools|HD only)
- Pan
- Mute
- Send Level
- Send Level Trim (Pro Tools|HD only)
- Send Pan
- Send Mute
- Plug-in controls

On Auxiliary Input tracks, these parameters include:

- Volume
- Volume Trim (Pro Tools|HD only)
- Mute
- Pan

On Master Faders, these parameters include:

- Volume
- Volume Trim (Pro Tools|HD only)

On MIDI tracks, these parameters include:

- Volume (MIDI)
- Pan (MIDI)
- Mute

On Instrument tracks, these parameters include:

- Volume (audio)
- Volume Trim (audio) (Pro Tools|HD only)
- Mute (audio)
- Pan (audio)

On VCA Master tracks (Pro Tools HD only), these parameters include:

- Volume
- Volume Trim
- Mute

You can display and edit each of these automatable playlists individually from Pro Tools, even during playback.

In addition, on MIDI and Instrument tracks you can display and edit other continuous MIDI controller data (such as mod wheel, breath controller, foot controller, or sustain) in a similar manner. For more information on editing MIDI data, see "Continuous Controller Events" on page 539.

## Automation Playlists with Audio and MIDI Regions

Pro Tools handles audio regions and their automation playlists differently from MIDI regions and their automation playlists.

### Audio Tracks

On audio tracks, automation data resides on a separate playlist from audio data and regions. Each edit playlist on an audio track shares the same automation data.

### MIDI and Instrument Tracks

On MIDI tracks and Instrument tracks, all controller automation data except for MIDI Mute data, or audio mute (Instrument tracks only), is stored in the MIDI region that contains it. Each edit playlist on the track is separate, and represents a distinct performance, complete with controller automation.

⚠ *MIDI Mute data is independent of the MIDI data in a MIDI region. This lets you mute playback of individual MIDI or Instrument tracks in Pro Tools without altering the controller data.*

## Trim Automation Playlists

Separate Trim automation playlists are available for Volume trim and Send Level trim. Volume trim is available on all track types except MIDI tracks. Send Level trim is available on audio tracks only.

Each Trim automation playlist shows the position of the Trim fader with yellow breakpoint automation that can be edited. For more information on Trim playlists, see "Trim Mode" on page 782 and "Viewing Automation" on page 786.

## Multiple Edit Playlists and Audio Track Automation

All edit playlists on a single audio track share the same automation data. When you record or edit automation data in an audio track, the automation data is stored in the track's corresponding automation playlist so it can be edited with, or independently from, its associated audio regions.

📄 *MIDI continuous controller data always follows region editing, with the exception of mute. See "MIDI and Instrument Tracks" on page 779 for more information.*

◆ When you copy or cut audio data from a track while it is in Waveform View, the underlying automation data is cut or copied with it.

◆ If you paste audio data from other locations or tracks into an edit playlist, you may change the underlying automation data on the track.

◆ When you trim regions using Edit > Trim, the underlying automation data remains unchanged.

📄 *For more information, see "Editing Automation" on page 803.*

### Duplicating Tracks for Playlist Editing

The Duplicate Track command provides a convenient way to make a working copy of a track to experiment with routing, plug-ins, and automation. This protects the original track and its automation data from being edited or overwritten.

📄 *For more information on duplicating tracks command, see "Duplicating Tracks" on page 147.*

# Automation Modes

Automation modes control how a track's automation data is written and played back. Each track provides an Automation Mode selector for selecting the track's Automation mode.

## Off Mode

Off mode turns off automation for all automatable parameters:

- Volume
- Pan
- Mute
- Send volume, pan, and mute
- Plug-in controls
- MIDI volume, pan, and mute

In Off mode, automation data for these parameters is ignored during playback. All other MIDI controller data is sent.

Automation can be switched from Off to another Automation mode during playback or record.

## Read Mode

Read mode plays any automation that was previously written for a track.

## Write Mode

Write mode writes automation from the time playback starts to the time it stops, erasing any previously written automation for the duration of the automation pass.

AutoMatch can be applied to a Write automation pass. See "AutoMatch Time" on page 785.

### "After Write Pass, Switch To" Option

You can set Pro Tools to automatically change to Touch mode or Latch mode, or remain in Write mode after the completion of an automation pass in Write mode.

**To set the Automation mode after a Write pass:**

**1** Choose Setup > Preferences and click Mixing.

**2** Under Automation, select an "After Write Pass, Switch To" option (Touch, Latch, or No Change).

**3** Click OK to close the Preferences window.

## Touch Mode

Touch mode writes automation only while a fader or switch is touched or clicked with the mouse. When the fader is released, the writing of automation stops and the fader returns to any previously automated position, at a rate determined by the AutoMatch and Touch Timeout settings. See "Automation Preferences" on page 784.

In Touch mode, certain control surfaces start writing automation as soon as you touch them. These include touch-sensitive fader controllers, such as Digidesign's D-Control, D-Command, ProControl, Control|24, 003, Digi 002, Command|8, or the Mackie HUI.

With other control surfaces in Touch mode, writing of automation does not begin until the fader hits the *pass-through point*, or the previously automated position. Once you reach the pass-through point with the fader, or a non-touch sensitive rotary control, writing of automation begins and continues until you stop moving the fader.

## Latch Mode

Latch mode works in the same way as Touch mode, writing automation only if you touch or move a control. However, unlike Touch, writing of automation continues until you stop playback or "punch out" of the automation pass by changing the Automation mode to Read or Touch.

AutoMatch can be applied to a Latch automation pass. See "AutoMatch Time" on page 785.

Latch mode is particularly useful for automating Pan controls and plug-ins on non-touch sensitive rotary controls, since it does not time out and revert to its previous position when you release a control.

📖 *See also "Writing Automation to the Start, End, or All of a Track or Selection" on page 813.*

### AutoJoin with Latch Mode

#### (Pro Tools HD Only)

Pro Tools provides two different methods to resume writing automation on controls that were active at the point where the transport stopped:

**AutoJoin** Lets you automatically resume writing automation in Latch mode.

**Join** Lets you manually resume writing automation in Latch mode. Join is available only with Digidesign-supported control surfaces.

**To enable AutoJoin from Pro Tools:**

**1** Choose Window > Automation.

**2** Click the AutoJoin button.
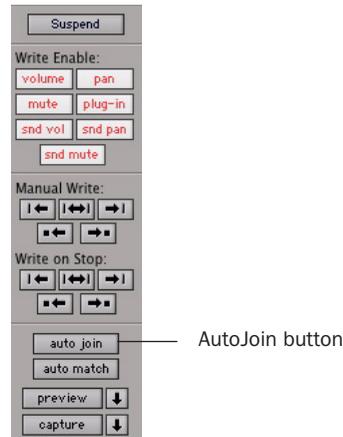


*AutoJoin Enable button in the Automation window*

📖 *See your control surface guide for details on using Join and AutoJoin with a control surface.*

### AutoJoin Indicator

After a Latch automation pass with AutoJoin enabled, the AutoJoin indicator appears in the Pro Tools Edit window.
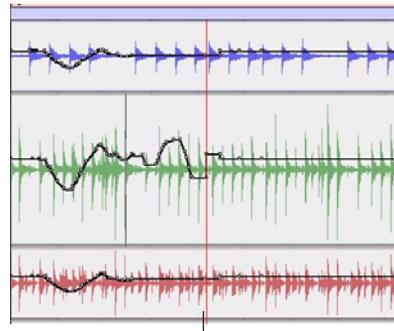


AutoJoin indicator

*AutoJoin indicator in the Edit window*

The AutoJoin indicator is a vertical line that signifies the point where the last automation pass was stopped, and the point where the "join" will automatically occur on all tracks that were writing during that previous pass. When automation writing is resumed from this point, the line disappears.

⚠ *To use Join or AutoJoin to resume writing on controls that were writing when the transport stopped, restart the transport before the AutoJoin indicator.*

## Touch/Latch Mode

### (Pro Tools HD Only)

Touch/Latch Automation mode places a track's Volume control in Touch mode and all other automatable controls in Latch mode.

In Touch/Latch mode, the Volume control follows Touch behavior, writing automation when touched and returning to previously written levels when released.

All other controls follow Latch behavior, writing automation when touched and continuing until playback stops, or until you punch out of writing automation.



*Selecting Touch/Latch mode*

## Trim Mode

### (Pro Tools HD Only)

Pro Tools HD can adjust (or *trim*) existing track volume and send level automation data in real time. Pan, mute and plug-in automation cannot be trimmed in this manner. Trim mode works in combination with the other Automation modes (Read, Touch, Latch, Touch/Latch, and Write) and is useful when you want to preserve all of your volume automation moves, but need to make levels a bit louder or softer to balance a mix.

When writing automation in Trim mode, fader moves write *relative* rather than *absolute* values. The existing automation data is changed by the amount of increase or decrease (or the *delta* value) indicated by the faders.

When Trim mode is enabled, non-trimmable controls behave in the same manner as in the standard Automation modes, with the exception of Write/Trim mode, where non-trimmable controls operate as in Touch mode.

### Trim Automation Modes

When a track is in a Trim automation mode (except for Trim Off) its main Volume faders and all Send level faders are displayed in yellow. When trimming, a track's Volume indicator or Send Level indicator shows the delta value being written rather than the absolute value.

Behavior of the Trim Automation modes also depends on the Coalesce Trim Automation preference setting. See "Coalescing Trim Automation" on page 812.

### Trim Off

Trim Off turns off reading and writing of all automation (main and trim) for a track. All automation moves are ignored during playback. Trim faders are temporarily set to zero when a track is set to Trim Off mode.

Depending on the Coalesce Trim Automation preference setting, changing a track to Trim Off can coalesce Trim automation on that track. See "Coalescing Trim Automation" on page 812.

Automation can be switched from Trim Off to another Automation mode during playback or record.

### Read Trim

In Read Trim mode, Volume and Send level Trim faders are disengaged from the main automation playlist and follow any existing Trim automation. You can move a Trim fader during playback to audition new trim values, but no automation is written. When the Trim fader is released, it returns to any previously written Trim automation values.

If a track does not contain Trim automation, you can move a Trim fader during playback to audition new trim values, but no automation is written. The Trim fader retains its position until the track is removed from Trim mode, or if you manually coalesce the Trim level.

When this mode is enabled, non-trimmable controls (all controls other than track volume and send level) behave as if they are in regular Read mode—no automation data is written.

### Touch Trim

In Touch Trim mode, Volume and Send level Trim faders are disengaged from the main automation playlist and follow any existing Trim automation. When a Trim fader is touched, writing of Trim automation begins. When the fader is released, writing stops and the fader returns to any previously written Trim automation values.

The rate of the fader's return to previous trim values is determined by the AutoMatch Time specified in the Automation Preferences page. See "AutoMatch Time" on page 785 for more information.

When this mode is enabled, non-trimmable controls (all controls other than track volume and send level) behave as if they are in regular Touch mode—they follow the previously written automation until touched. When they are touched, their absolute positions are written until the control is released or until playback stops.

### Latch Trim

In Latch Trim mode, Volume and Send level Trim faders are disengaged from the main automation playlist and follow any existing Trim automation. When a Trim fader is touched, writing of Trim automation begins. Writing of Trim automation continues until playback stops, or until you punch out of writing automation.

When this mode is enabled, non-trimmable controls (all controls other than track volume and send level) behave as if they are in regular Latch mode—they follow the previously written automation until touched. When they are touched, their absolute positions are written until playback is stopped.

### Touch/Latch Trim

In Touch/Latch Trim mode, Volume and Send level faders are disengaged from the main automation playlist and follow any existing Trim automation. The main Volume Trim fader follows Touch Trim behavior, and Send level Trim faders follow Latch Trim behavior.

### Write Trim

In Write Trim mode, as soon as playback begins, writing of Trim automation begins for Volume and Send levels, and continues until playback stops, or until you punch out of writing automation.

When Write Trim mode is enabled, non-trimmable controls (all controls other than track volume and send level) are not in Write mode, but behave as if they are in *regular Touch mode* (no automation is written unless a control is touched). This is to prevent the controls from overwriting all of their automation data on every pass in Write Trim mode.

⚠ *The "After Write Pass, Switch To" preference affects Write Trim mode. After an automation pass in Write/Trim mode, tracks automatically switch to the Trim mode version of the setting specified by this preference.*

## Automation Preferences

Pro Tools gives you several options for controlling the writing and playback of automation data.

**To display Automation preferences:**

■ Choose Setup > Preferences and click Mixing.
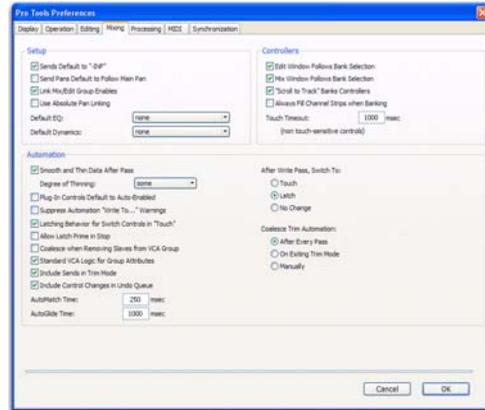


*Mixing Preferences page*

📄 *For detailed information on Pro Tools Automation preferences, see "Mixing Preferences" on page 83.*

## Send Levels and Trim Mode
### (Pro Tools HD Only)

You can set Pro Tools to exclude Send levels from Trim mode, so that only the Main Volume goes into Trim when a track is put into Trim mode. This gives you more flexibility in setting Send levels while in Trim mode.

**To exclude Send levels from Trim mode:**

**1** Choose Setup > Preferences and click Mixing.

**2** Under Automation, deselect Include Sends in Trim Mode.

⚠ *Any uncoalesced automation on a Send will still coalesce when the other automation on its track is coalesced, even if "Include Sends in Trim Mode" is deselected.*

**3** Click OK.

## Smoothing

When you perform automation moves (including Trim moves) with a continuous control, Pro Tools records the move as a series of very small steps, resulting in a staircase pattern with many breakpoints. Smoothing intelligently resolves this staircase pattern into a single, smooth ramp from one breakpoint to the next. (Smoothing does not apply to switched controls such as mutes or plug-in bypasses.) With smoothing enabled, the resulting automation data is often a more accurate representation of actual automation moves.

## Thinning

Thinning automatically reduces the overall number of breakpoints in an automation playlist (including Trim playlists) in order to improve system performance. The amount of thinning applied is determined by the Degree of Thinning setting in the Automation Preferences page. When using high amounts of thinning, the resulting automation may differ noticeably from the original automation moves. Thinning only applies to audio tracks, and does not affect MIDI tracks. For instructions, see "Thinning Automation" on page 800.

## AutoMatch Time

AutoMatch Time is the amount of time it takes for a fader to return (by ramping up or down) to the level of automation still on the track as the automation pass ends. This time value is set in the Automation Preferences page (see "Automation Preferences" on page 784).

AutoMatch is automatically applied to all Touch mode passes, and can be applied to Latch or Write passes.

The AutoMatch Time also determines the rate at which delta values written with the Trim will return to 0 dB (delta value of zero).

The AutoMatch feature works with continuous controls (such as Volume or Pan) by ramping their values back to previously automated levels. There are some stepped controls (for example, the EQ type in the 1-band EQ plug-in) that provide more than two discrete steps over their operational range. AutoMatch has no effect on these controls.

## Automation Follows Edit Option

When disabled, automation events are not affected by edits to audio or MIDI notes. When enabled, automation events are affected by edits to audio or MIDI notes.

**To disable Automation Follows Edit:**

▪ Choose Options > Automation Follows Edit.

## Automation Safe

Outputs, sends, and plug-ins can be placed in Automation Safe mode. In Automation Safe mode, any automation associated with an Output window (such as track or send level, panning, or mute), or plug-in on that track, is protected from being overwritten while automating other items on that track.



Automation Safe enabled
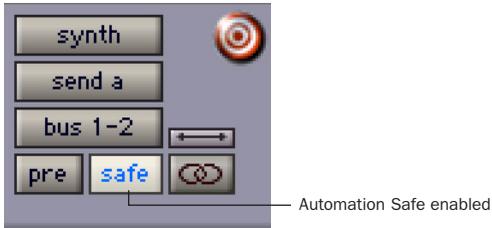
*Automation Safe enabled send*

Automation Safe mode suspends automation recording for the selected track output, send, or plug-in that is enabled. You can also suspend automation recording and playback session-wide from the Automation window. See "Enabling and Suspending Automation" on page 797.

## Viewing Automation

Pro Tools creates a separate playlist in the Edit window for each type of automation in a track, including a playlist for each type of Trim automation. This data can be viewed and edited in the same way as audio and MIDI data.

*You can easily toggle between different Track Views. See "Changing Track Views" on page 151.*

**To display an automation playlist:**

■ Click the Track View selector and select from the pop-up menu the automation type you want to view.
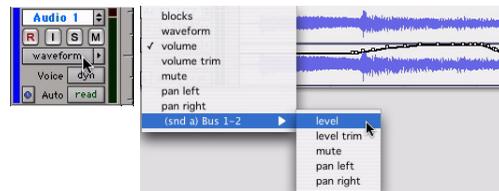


*Displaying a standard automation playlist*
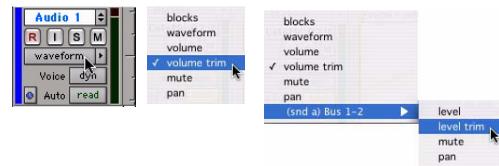


*Displaying Trim automation playlists*



Volume Trim data
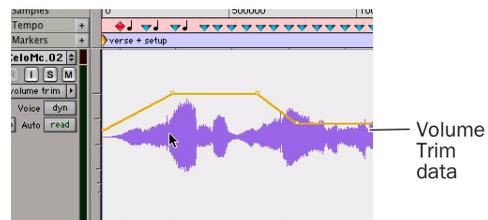
*Trim automation playlist*

## Displaying Trim Automation Along with the Main Playlist

**(Pro Tools HD Only)**

The appearance of Trim automation depends on how it is set to be coalesced. See "Coalescing Trim Automation" on page 812.

If automation is not set to coalesce after every automation pass, you can display Trim automation data along with the main Volume or Send level automation data in the same automation view. This Trim automation display cannot be directly edited.

**To display the Trim automation playlist along with main automation playlist on tracks:**

■ Choose View > Automation > Trim Playlist.
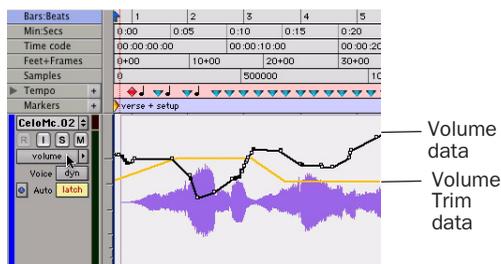


*Display of Trim automation in a main Volume playlist*

## Displaying the Composite Automation Playlist

**(Pro Tools HD Only)**

If automation is not set to coalesce after every automation pass, you can display a composite automation playlist that shows the contribution of the Trim automation to the main Volume or Send Level automation data. This composite playlist display cannot be directly edited.

The composite playlist is shown in both the main automation playlist and the Trim automation playlist.

**To display the composite playlist:**

■ Choose View > Automation > Composite Playlist.
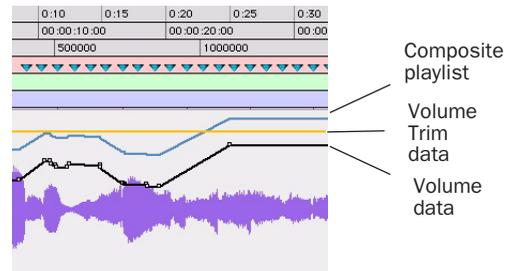


*Display of Trim automation and the composite playlist in a main Volume playlist*

## AutoMatch Indicators

There are triangular AutoMatch indicators at the bottom left of each channel strip in the Mix window. When lit, these indicate the direction the fader will automatically move when Auto-Matching.
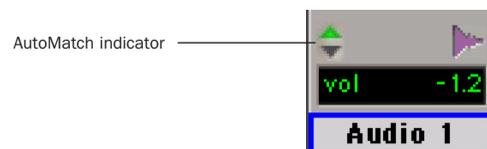


*Triangular AutoMatch indicators on a channel strip*

# Writing Automation

You can write automation for all automatable controls by moving those controls during playback.

**To write automation on tracks:**

**1** Choose Window > Automation.

**2** Make sure the automation type is write-enabled.



*Automation window*

**3** In the Mix or Edit window, click the Automation Mode selector on each of the tracks you want to automate, and set the Automation mode. For the initial automation pass, choose Write mode.
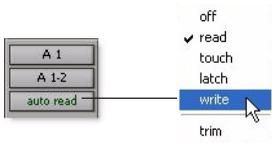


*Setting the Automation mode of a track*

**4** Click Play to begin writing automation.

**5** Move the controls you want to automate.

**6** When you have finished, click Stop.

After the first automation pass, you can write additional automation to the track without completely erasing the previous pass by choosing Touch mode or Latch mode. These modes add new automation only when you actually move a control. (See "Automation Modes" on page 780.)

**To write additional automation to a previous pass:**

**1** Enable Options > Link Timeline and Edit Selection.

**2** In the Edit window, make a selection or place the cursor in the location where you want to start writing automation.

**3** In the Mix or Edit window, click the Automation Mode selector on each of the tracks you want to automate, and set the Automation mode to Touch or Latch mode.

**4** Click Play to begin writing automation.

**5** Move the controls you want to automate.

**6** When you have finished, click Stop.

*If you write automation in Touch mode with Loop Playback enabled, writing of automation will automatically stop at the end of the looped selection. At the beginning of each successive loop, you can then touch or move the control again to write new data.*

## Storing an Initial Control Position

When you create a new audio, Auxiliary Input, VCA Master, MIDI, or Instrument track, it is automatically placed in Read mode. Even though the track is in Read mode, you can set the initial position of any automatable control, and it is saved with your session.

In this initial state, only a single automation breakpoint appears at the beginning of each automation playlist. If you move the control without writing automation, this breakpoint will move to the new value.

You can permanently store the initial position of an automatable control by doing any of the following:

- Place the track in Write mode and press Play to write a few seconds of automation data to the track

- Manually place a breakpoint on the automation playlist somewhere after the initial breakpoint. (See "Graphical Editing of Automation Data" on page 803 for more information.)

## Automating Switched Controls

When automating switched controls (such as mutes, plug-in bypasses, or switched controls on plug-ins) Pro Tool s treats them as touch sensitive controls. Automation data is written for as long as the switch or button for that control is pressed or touched.

For example, if you have just written a series of mute on/off states on a track in quick succession, the manual method for clearing this automation data would require you to move to the Edit window, choose automation playlist for Mute, select the mute automation data, and delete it. In Pro Tools, this can be done automatically.

**To automate a switched control (such as the Mute button):**

**1** Perform another automation pass on the track.

**2** When you reach the location of the mute state you want to remove, press and hold down the switched control (such as the Mute button).

*When playback gets to the first muted section, the Mute button becomes highlighted.*

**3** As long as the button is held down, Pro Tools overwrites the underlying data on the track with the *current state* of the switch (on or off) until playback is stopped.

## Automating Switched Controls in Touch Mode

When automating switched controls (including mute, plug-in bypass, and any switched control on a plug-in) in Touch mode, these controls will latch in their current state after they are touched.

However, to preserve any automation for that switched control later in the Timeline, this latched behavior ends if either of the following occurs:

- If an existing automation breakpoint is encountered, Pro Tools stops writing automation at that point.

- If you stop playback or punch out of writing automation before reaching an existing automation breakpoint, Pro Tools AutoMatches to the underlying automation state.

### Setting Switched Controls for Momentary Behavior

In some cases, such as when overwriting or extending Mute automation, you may want to momentarily write automation for a control by holding it down, and not have the control latch.

**To set switched controls for momentary behavior:**

**1** Choose Options > Preferences and click Mixing.

**2** Deselect Latching Behavior for Switch Controls in Touch.

**3** Click OK to close the Preferences window.

## Automating Sends

Pro Tools provides automation of send level, send mute, and send pan (for stereo and multichannel sends only). This makes it easy to control effect levels and placement during mixdown with great precision.

Send level and mute can also be configured to follow groups.

**To automate a send level, mute or pan:**

**1** In the Automation window, make sure the automation type is write-enabled (send level, send mute, send pan).

**2** In the Mix or Edit window, set the Automation mode for each track containing sends you want to automate. For each track, click the Automation Mode selector and set the Automation mode. For the initial automation pass, choose Write mode.

**3** If sends are not currently visible on your tracks, select View > Mix Window (or Edit Window) > Sends A–E (or Sends F–J).

**4** To display send controls, do one of the following:

- Click the send to open the Output window for the send that you want to automate.

– or –

- Choose View > Sends A–E (or Sends F–J) and select one of the individual views (such as Send A).

**5** Click Play to begin writing automation.

**6** Move the controls you want to automate.

**7** When you have finished, click Stop.

📖 *Send level, mute, and pan can also be configured to follow Mix Groups. See "Automation Preferences" on page 784 for information.*

### Copying Track Automation to Sends

#### (Pro Tools HD Only)

There may be times where you want a track's send settings or automation to mirror the settings or automation in the track itself, for example, when creating a headphone mix based on the main mix, or when an effect level needs to follow the levels in a main mix. You can copy the current settings or the entire automation playlist for the selected controls to the corresponding playlist for the send.

## To copy a track's settings or automation to one of its sends:

**1** Select the tracks you want to edit by clicking on the track names to highlight them.

**2** Choose Edit > Automation > Copy to Send.
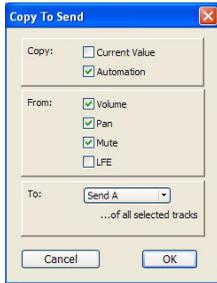


*Copy To Send dialog*

**3** In the Copy to Send dialog, do any of the following:

- Select Current Value to copy the current settings of the corresponding controls.
- Select Automation to copy the entire automation playlist for the corresponding controls.

**4** Select the controls you want to copy.

**5** Select the sends to which to copy the automation, and click OK.

*When overwriting automation, Pro Tools presents a confirmation dialog. To suppress this dialog, press Alt (Windows) or Option (Mac) while clicking OK.*

You can undo the results of the Copy to Send command.

# Automating Plug-ins

You can automate changes to virtually all plug-in controls. Automating a plug-in is slightly different from other automation procedures, because you must enable individual plug-in controls for automation.

## To enable plug-in controls for automation:

**1** Open the Plug-in window for the plug-in you want to automate.

**2** Do one of the following:

- Click the Automation Enable button in the Plug-in window.



Automation Enable button

*Accessing the Plug-in Automation dialog*

– or –

- Control-Alt-Start-click (Windows) or Command-Option-Control-click the Track View selector in the Edit window.

**3** In the plug-in automation dialog, choose the controls to automate and click Add. If there are multiple plug-ins on the same track, you can select from among them by clicking their buttons in the Inserts section of this dialog.
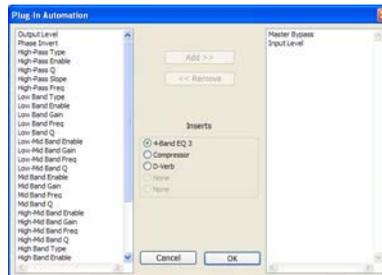


*Plug-in automation dialog*

**4** Click OK to close the Plug-in Automation dialog.

**To automate a plug-in:**

**1** In the Plug-in Automation Enable window, make sure plug-in automation is enabled.

**2** In the Mix or Edit window, for each track containing plug-ins you want to automate, click the Automation Mode selector and set the Automation mode. For the initial automation pass, choose Write mode.

**3** Click Play to begin writing automation, and move the controls you want to automate.

**4** When you have finished, click Stop.

## Enabling Automation for Individual Plug-in Parameters

You can enable individual plug-in controls directly from the Plug-in window.

**To enable a plug-in parameter from the plug-in window:**

**1** Make sure the plug-in window is open for the plug-in you want to automate.

**2** Control-Alt-Start-click (Windows) or Command-Option-Control-click (Mac) the control for the parameter.



*Enabling plug-in automation for individual parameters*

## Enabling Automation for All Plug-in Parameters

**To enable all plug-in parameters:**

**1** Make sure the plug-in window is open for the plug-in you want to automate.

**2** Control+Alt+Start-click (Windows) or Command+Option+Control-click (Mac) on the Auto button at the top of the plug-in window.

## Automatically Enabling Plug-ins for Automation

You can set Pro Tools to automatically enable all controls of a plug-in for automation when you first add the plug-in to your session.

**To automatically enable all plug-in controls for automation:**

**1** Choose Setup > Preferences and click Mixing.

**2** Select "Plug-in Controls Default to Auto-Enabled."

**3** Click OK to close the Preferences window.

## Color Indication of Automation Mode for Plug-in Parameters

In the Plug-in window, the controls for plug-in parameters highlight in different colors to indicate whether or not a control is automated in what automation mode. The color also is different depending on whether or not a parameter is being controlled by a control surface (such as D-Command or Command|8).

The following table shows the color coding for automated plug-in parameters, with and without a control surface.

*Color coding for automated plug-in parameters*

| Automation Mode: | Off | Read | Touch, Latch, Write |
|---|---|---|---|
| No Control Surface | none | Green | Red |
| Control Surface | none | Blue | Yellow |

## Record Safing Plug-in Automation

You can protect plug-in automation from being overwritten by using Automation Safe mode.

### To enable plug-in safe mode:

**1** Open a plug-in.

**2** Click the Safe button so that it is highlighted.



*Automation Safe enabled plug-in*

## AutoMatching Controls

### (Pro Tools HD Only)
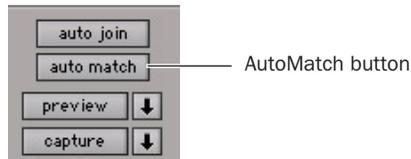


*AutoMatch button in the Automation window*

## AutoMatching All Controls

You can AutoMatch all currently writing controls to their existing automation levels.

### To AutoMatch all currently writing controls:

**1** Choose Window > Automation.

**2** Make sure the automation types you want to AutoMatch are write-enabled.

**3** Start playback.

**4** When you reach a point in the track where you want to return control to their previously written values, click the AutoMatch button in the Automation window.

All currently writing controls stop writing automation and return to any previously written values according to the AutoMatch Time setting in the Mixing preferences.

## AutoMatching Individual Tracks

You can invoke AutoMatch on individual tracks. All controls currently writing automation on the track stop writing and return to existing automation levels.

**To AutoMatch all controls on a track:**

■ Control-click (Windows) or Command-click (Mac) the Automation Mode selector on the track.

## AutoMatching Individual Automation Types

You can invoke AutoMatch on individual automation types across a session.

**To AutoMatch all controls of one automation type:**

■ In the Automation window, Control-click (Windows) or Command-click (Mac) the button for the automation type (Volume, Pan, Mute, Plug-in, Send level, Send pan, or Send mute).

## AutoMatching Individual Controls

### (D-Control and D-Command Only)

On ICON worksurfaces, you can invoke Auto-Match on individual controls or control types on single channels.

**To AutoMatch all controls of a type on a channel:**

■ Hold Control (Windows) or Command (Mac) and press any of the following in the Channel Strip Mode controls for the track whose controls you want to AutoMatch:

- Inserts
- Sends
- Pan
- Dyn (D-Control only)
- EQ (D-Control only)

**To AutoMatch a pan control or the controls for an individual insert or send:**

**1** Press the switch in the Channel Strip Mode controls to display the Pan controls or the top level of Inserts or Sends for the channel.

**2** Hold Control (Windows) or Command (Mac) and press the Rotary Encoder Select switch for the control you want to AutoMatch:

- For Sends, the Send level, pan, and mute will AutoMatch.
- For Inserts, all automated controls will AutoMatch.
- For Pan, all pan sliders on the channel will AutoMatch.

**To AutoMatch all controls for a plug-in displayed in the Dynamics or EQ section:**

■ Hold Control (Windows) or Command (Mac) and press the Auto switch in the Dyn or EQ section of the console.

# Priming Controls for Writing Automation in Latch Mode

## (Pro Tools HD Only)

If a track is in Latch or Touch/Latch automation mode, you can prime individual controls for writing automation while the transport is stopped. This *Latch Prime* capability lets you prepare for an automation pass before starting playback.

**To prime controls for writing automation in Latch mode while the transport is stopped:**

**1** Choose Setup > Preferences and click Mixing.

**2** Under Automation, select Allow Latch Prime in Stop.

**3** Click OK to close the Preferences window.

**4** In the Automation window, make sure the controls you want to automate are write-enabled.

**5** Click the Automation Mode selector on the track where you want to write automation and do one of the following:

- Choose Latch mode to allow priming of all automation-enabled controls on the track.

– or –

- Choose Touch/Latch mode to leave the main Volume fader in Touch mode and allow priming of all other automation-enabled controls.

**6** While the transport is stopped, touch or move the controls you want to start writing at the beginning of the automation pass. When at least one control on a track is primed, the Automation Mode selector displays in bold.
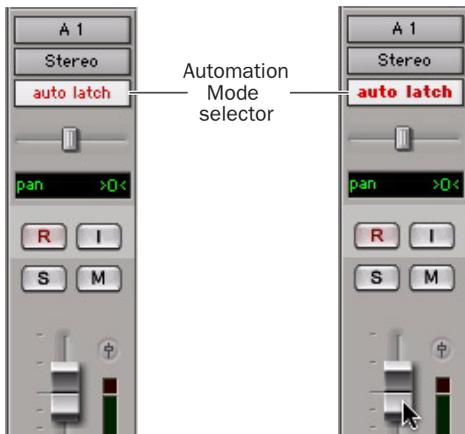


*Automation mode indicator before (left) and after priming of latched controls (right)*

**7** Start playback. All primed controls begin writing automation at their primed values.

**8** Stop playback to finish the automation pass. All tracks are taken out of their Latch Prime state.

☼ *You can use the Write to Punch command at the end of your automation pass to write the current value back to the start of the pass.*

### Taking Tracks and Controls Out of Latch Prime

You can take individual tracks or automation types out of their Latch Prime state before or during an automation pass.

◆ When you take a track or automation type out of Latch Prime before starting playback, it stays in Latch mode but the corresponding controls are not primed to write when playback starts.

◆ When you take a track or automation type out of Latch Prime during an automation pass, the corresponding controls AutoMatch to their currently written values.

◆ If you AutoMatch a control that is in a Latch Prime state, the control will no longer be primed.

#### To take a track out of Latch Prime:

■ Control-click (Windows) or Command-click (Mac) the Automation Mode selector on the track.

The selector button unbolds to indicate that the track is no longer primed.

**To take all tracks out of Latch Prime, do one of the following:**

■ Alt-Control-click (Windows) or Option-Command-click (Mac) the Automation Mode selector on a track.

– or –

■ Click the AutoMatch button in the Automation window.
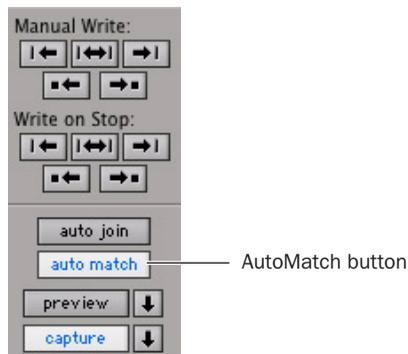


*AutoMatch button in the Automation window*

**To take all selected tracks out of Latch Prime, do one of the following:**

■ Alt-Control-Shift-click (Windows) or Option-Command-Shift-click (Mac) the Automation Mode selector on a track.

– or –

■ Alt-Shift-click (Windows) Option-Shift-click (Mac) the AutoMatch button in the Automation window.

**To take an automation type out of Latch Prime on all tracks, do one of the following:**

■ In the Automation window, Control-click (Windows) or Command-click (Mac) the button for the automation type (Volume, Pan, Mute, Plug-in, Send level, Send pan, or Send mute).
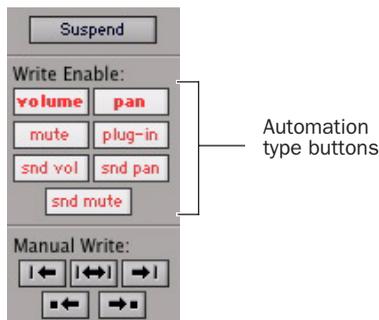


*Automation types in the Automation window*

## Rolling Through Automation Punch Points in Latch Prime

After you prime controls for writing automation while the transport is stopped, you can set Pro Tools to automatically punch in at that point after issuing a back and play command, or after rolling back and locking to time code.

**To set Pro Tools to automatically punch in automation writing on a track:**

**1** Locate the cursor where you want to punch in automation.

**2** Prime controls for writing while the transport is stopped. (See "Priming Controls for Writing Automation in Latch Mode" on page 794.)

**3** In the Automation window, click the AutoJoin button.

**4** In the Automation window, click the Capture button and then click the Punch Capture button. The AutoJoin marker (a vertical red line) appears on-screen at the punch point.

**5** Issue a Back and Play command, roll back the external machine to before the punch in point, or enable pre-roll.

**6** Start playback. When the transport reaches the punch-in point, automation writing begins.

# Enabling and Suspending Automation

From the Automation window, you can enable or suspend writing for the following types of automation across all tracks:

- Volume
- Volume trim
- Pan
- Mute
- Plug-in
- Send level
- Send level trim
- Send pan
- Send mute

Automation can be suspended or enabled during playback (without having to stop the Transport).

## Suspending Automation on All Tracks

**To suspend automation on all tracks:**

**1** Choose Window > Automation.

**2** Do one of the following:

- To suspend writing of all automation on all tracks, click the Auto Suspend button.

– or –

- To suspend writing of a specific type of automation on all tracks, click the button for that automation type (volume, mute, pan, plug-in, send level, send mute, or send pan).



*Automation window*

**To suspend Trim automation on all tracks (Pro Tools HD only):**

■ In the Automation window, Command-click (Mac) or Control-click (Windows) the Suspend button.



*Suspending Trim automation*

The Suspend button highlights yellow to indicate that Trim automation is suspended.

## Suspending Automation for Individual Controls

You can suspend automation for one or more controls. When a control is suspended, its control name is italicized in the Track View selector.

⚠ *Suspending automation from the Edit window obeys Edit groups. To suppress grouped behavior, hold Start (Windows) or Control (Mac) while suspending a control.*

**To suspend automation for individual controls on a track:**

**1** In the Edit window, set the Track View selector to show the automation playlist for the control you want to suspend.

**2** Do one of the following:

- To suspend writing and playback of automation for only the displayed control, Control-click (Windows) or Command-click (Mac) the control name in the Track View selector.
- To suspend writing and playback of automation for all controls, Control-Shift-click (Windows) or Command-Shift-click (Mac) the name of any control in the Track View selector.
- To suspend writing and playback of automation for a specific control on all tracks, Control-Alt-click (Windows) or Command-Option-click (Mac) the name of the control in the Track View selector.

**To suspend Trim automation for individual controls on a track (Pro Tools HD only):**

**1** In the Edit window, set the Track View selector to show the automation playlist for the Trim control you want to suspend (Volume Trim or Send level Trim).

**2** Do one of the following:

- To suspend only the displayed Trim control on a single track, Control-click (Windows) or Command-click (Mac) the control name in the Track View selector.

– or –

- To suspend the displayed Trim control on all tracks, Control-Alt-click (Windows) or Command-Option-click (Mac) the control name in the Track View selector.

## Viewing Automation Enable Status

### Track Automation Mode Selectors

◆ When a track is enabled for automation but not writing automation, the Automation mode selector shows the mode in normal red text.

◆ When any control on a track is writing automation, the Automation mode selector shows the mode in bold red text.



*Automation Mode selector showing enabled state (left) and writing state (right)*

### Automation Window Buttons

◆ When an automation type is writing automation on any track in the session, the corresponding button in the Automation window displays bold red text.

◆ When an automation type is enabled but is not writing anywhere in the session, the corresponding button in the Automation window displays normal red text.
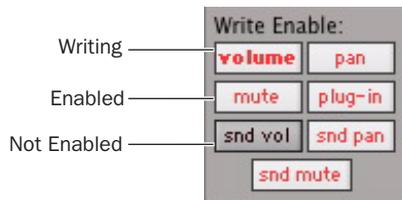


*Automation window showing possible automation states*

## Automation Enable Guidelines

The following rules determine whether automation is enabled for a track:

◆ Although Pro Tools shows a single Automation mode for each track, all automatable controls associated with that track are not necessarily in the same Automation mode.

◆ If automation is globally suspended in the Automation window, all automatable controls behave as if they were in Off mode, regardless of the track's current Automation mode.

◆ If automation for a control is suspended by Control-clicking (Windows) or Command-clicking (Mac) its name in the Track View selector, that control behaves as if it were in Off mode, regardless of the track's current Automation mode.

◆ If automation for a control is suspended in the Automation window, that control behaves as if it is in Read mode when the track is in a recordable Automation mode (Touch, Latch, or Write mode).

## Deleting Automation

Automation data takes the form of a line graph with editable breakpoints. The easiest way to remove automation in a track or selection is to manually delete breakpoints from the automation playlist.

Removing data in this manner is different from using the Cut command, which creates anchor breakpoints at the boundaries of the remaining data. For details, see "Cutting, Copying, and Pasting Automation" on page 806.

To remove automation data, display the automation playlist you want to edit by selecting it from the Track View selector, and do one of the following:

**To remove a single breakpoint:**

■ With the Pencil tool or any Grabber tool, Alt-click (Windows) or Option-click (Mac) the breakpoint.

**To remove several breakpoints at once:**

■ Use the Selector tool to select a range that contains the breakpoints, and press Backspace (Windows) or Delete (Mac).

**To remove all automation data of the displayed type:**

■ Click with the Selector tool in the track and choose Edit > Select All, then press Backspace (Windows) or Delete (Mac).

**To remove all automation for all automation playlists on a track:**

**1** Use the Selector tool to select a range of data to be removed.

**2** Press Start+Backspace (Windows) or Control+Delete (Mac).

All automation data within the selection is removed for *all* automation playlists on that track, regardless of whether automation is write-enabled for those controls.

## Clearing Trim Automation

### (Pro Tools HD Only)

If Trim automation has not been coalesced on a track, you can clear it. When you clear Trim automation, automation breakpoints on all Trim playlists are deleted and all Trim faders are reset to zero.

**To clear Trim automation:**

**1** Select the track where you want to clear the Trim automation.

**2** Do one of the following:
- Choose Track > Clear Trim Automation.

– or –
- Right-click the track name and choose Clear Trim Automation from the pop-up menu.

## Thinning Automation

Pro Tools writes a maximum density of automation data during an automation pass in the form of breakpoints. Since Pro Tools creates ramps between breakpoints, it may not need all of the captured points to create a sonically accurate representation of the automation moves that you have made. Each breakpoint takes up space in memory allocated for automation, so thinning data can maximize system efficiency and performance.

Pro Tools provides two different ways to thin automation data and remove unneeded breakpoints: the Smooth and Thin Data After Pass option and the Thin Automation command.

### Using Smooth and Thin Data After Pass

When this option is selected in the Mixing Preferences page, Pro Tools automatically thins the automation breakpoint data after each automation pass.



*The Smooth and Thin Data After Pass Option*

In the default settings for new sessions, the Smooth and Thin Data After Pass option is selected, with the "Some" setting chosen. In most cases, this setting yields optimum performance while providing an accurate reproduction of your automation moves.

If you choose None, Pro Tools writes the maximum possible number of breakpoints. You can still perform thinning at any time with the Thin command. For more information on smoothing automation data, see "Smoothing" on page 785.

### Using the Thin Automation Command

The Thin Automation command lets you selectively thin areas in a track where automation data is too dense. You can use the Undo command to audition the results of thinning (comparing thinning and not thinning) before you apply it permanently.

**To use the Thin Automation command:**

**1** In the Edit window, click the Track View selector to display the automation type you want to thin.

**2** With the Selector tool, highlight the automation data you want to thin. To thin all automation of the selected type in the track, click with the Selector tool in the track and choose the Select All command.

**3** Choose Edit > Automation > Thin (Pro Tools HD) or Edit > Thin Automation (Pro Tools LE) to thin the selected automation by the amount you have selected in the Mixing Preferences page.

# Drawing Automation

Use the Pencil tool to create automation events for audio and MIDI tracks by drawing in any automation or MIDI controller playlist, including Trim automation if it has not been coalesced.

The Pencil tool can be set to draw a series of automation events with the following shapes:
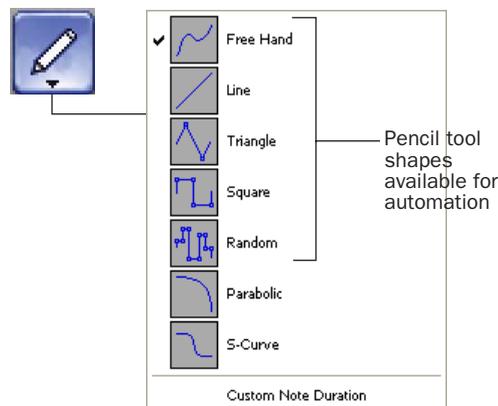


*Choosing a Pencil tool shape*

**Free Hand** Draws freely according to the movement of the mouse. In audio tracks, the shape has the number of breakpoints needed to smoothly interpolate and reproduce the automation shape. In MIDI tracks, the shape is reproduced as a series of steps, according to the resolution setting in the MIDI Preferences page.

**Line** Draws a straight line. In audio tracks, the line has a single breakpoint at either end. In MIDI tracks, the controller value changes in steps according to the resolution setting in the MIDI Preferences page.

**Triangle** Draws a sawtooth pattern that repeats at a rate based on the current Grid value. In audio tracks, the pattern has a single breakpoint at each extreme. In MIDI tracks, the controller

value changes in steps according to the resolution setting in the MIDI Preferences page. Amplitude is controlled by vertical movement of the Pencil tool.

**Square** Draws a square pattern that repeats at a rate based on the current Grid value. Amplitude is controlled by vertical movement of the Pencil tool.

**Random** Draws a random pattern of levels that change at a rate based on the current Grid value. Amplitude is controlled by vertical movement of the Pencil tool.

## Using Pencil Tool Shapes

You can draw automation for audio as well as MIDI tracks. For example, use the Triangle pattern to control continuous functions, or the Square pattern to control switched functions such as Mute or Bypass.

Since the Pencil tool draws these shapes using the current Grid value, you can use it to perform panning in tempo with a music track, or on frame scene changes when working in post production.

📑 *For more information on MIDI continuous controller data, see "Continuous Controller Events" on page 539.*

## Resolution of MIDI Controller Data

When using the Pencil tool to draw MIDI automation, the data is drawn as a series of discrete steps. You can control the resolution (or density) of these steps to help manage the amount of MIDI data sent for a given MIDI controller move.

**To set the resolution for the Pencil tool:**

**1** Choose Setup > Preferences and click MIDI.

**2** Enter a value for "Pencil Tool Resolution When Drawing Controller Data." The value can range from 1 to 100 milliseconds.

**3** Click OK to close the Preferences window.

The illustrations below show the same MIDI controller automation drawn with different Pencil tool resolution settings.
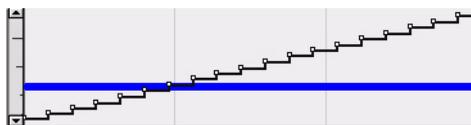


*MIDI Data drawn with resolution of 10 ms*
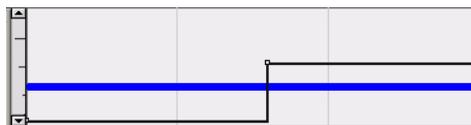


*MIDI Data drawn with resolution of 100 ms*

For better performance, consider selecting a smaller value for MIDI controls that need higher resolution (such as MIDI volume), and a larger value for controls that may not require a high resolution (such as Pan).

# Editing Automation

Pro Tools provides several ways to edit automation data, including Trim automation if it has not been coalesced., for any track in your session. You can edit automation data graphically by adjusting breakpoints in any automation playlist. You can also cut, copy, and paste automation data in the same manner as audio and MIDI data.

## Graphical Editing of Automation Data

Automation data takes the form of a line graph with editable breakpoints. By dragging these breakpoints, you can modify the automation data directly in the Edit window. When you drag an automation breakpoint up or down, the change in value is numerically or textually indicated. Dragging an automation breakpoint to the left or right adjusts the timing of the automation event.

### Using the Grabber Tools

The Grabber tools lets you create new breakpoints by clicking on the graph line, or adjust existing breakpoints by dragging them. Alt-click (Windows) or Option-click (Mac) breakpoints with a Grabber tool to remove them.
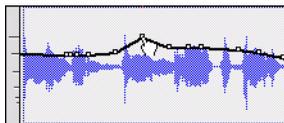


*Using the Grabber tool to create a new breakpoint*

### Using the Pencil Tool

The Pencil tool lets you create new breakpoints by clicking once on the graph line. Alt-click (Windows) or Option-click (Mac) breakpoints with the Pencil tool to remove them.
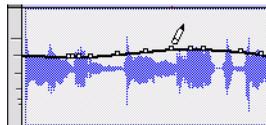


*Using the Pencil tool to delete a breakpoint*

### Using the Trimmer Tools

The Trimmer tools let you adjust all selected breakpoints up or down by dragging anywhere within that selection.
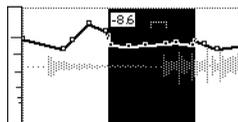


*Using the Trimmer tool to move breakpoints*

## Editing Automation Types

Each automatable control has its own automation playlist, that can be displayed by choosing it from the Track View selector.

### Editing Volume Automation

Drag a breakpoint up or down to change the volume (dB value). Drag a breakpoint to the left or right to adjust the timing of the volume change.
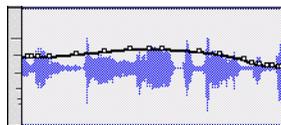


*Track volume automation*

## Editing Pan Automation

Drag a breakpoint down to pan right, and up to pan left. Drag a breakpoint to the left or right to adjust the timing of the panning moves.
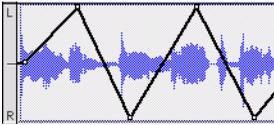


*Track Pan automation*

## Editing Mute Automation

Drag the breakpoint down to mute a section. Drag a breakpoint up to unmute the section. Drag a breakpoint to the left or right to adjust the timing of the mute.
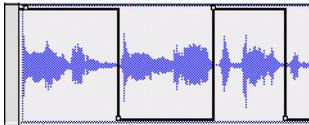


*Track mute automation*

## Editing Stepped Control Automation

Automation for certain controls (such as MIDI controller values or plug-in settings) appears as a stepped pattern on the breakpoint line. Drag a breakpoint up or down to a different step to change to a new control value. Drag a breakpoint to the left or right to adjust the timing of the stepped control change.
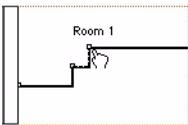


*Stepped control automation*

# Editing Automation Breakpoints

To edit automation breakpoints, display the automation playlist for the control you want to edit by selecting it from the Track View selector, then do one of the following:

**To create a new breakpoint:**

■ Click with the Pencil tool or any Grabber tool on the line graph.

**To edit one breakpoint:**

■ Click an existing point on the line graph with the any Grabber tool and drag it to a new position.

**To clear one breakpoint:**

■ Alt-click (Windows) or Option-click (Mac) with any Grabber tool.

**To edit several breakpoints at once:**

■ Use the Selector tool to select a range in the automation playlist that contains the breakpoints, and do one of the following:

• To move the breakpoints earlier or later in the track, press the Plus key (+) to nudge them later (to the right) or the Minus key (–) to move them earlier (to the left). The breakpoints move by the current Nudge value.

• To adjust the breakpoint values, click with any of the Trimmer tools in the selection and drag the breakpoints up or down.

*When you use a Trimmer tool to edit a selection containing breakpoints, new anchor breakpoints are created before and after the selected area. To suppress creation of anchor breakpoints, press Alt (Windows) or Option (Mac) while using a Trimmer tool.*

**To edit all breakpoint values in a region:**

■ Click in the region with any of the Trimmer tools and drag the breakpoints up or down.

## Constrain New Breakpoints to Next or Previous Automation Value

New automation breakpoints can be constrained and written to the same value as the next or previous breakpoint.



Original automation

After write to next breakpoint

After write to previous breakpoint
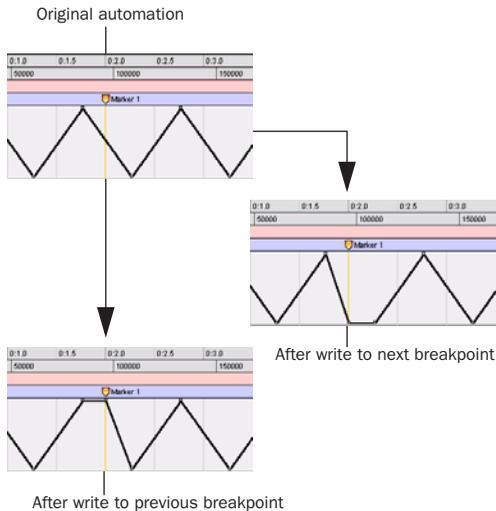
*Constraining and writing new breakpoints (at Marker 1)*

⚠ *Writing a new breakpoint to the next or previous automation value is accomplished using any Grabber tool, but is not supported with the Smart Tool.*

**To write a new breakpoint to the next automation value:**

■ Press and hold Alt+Shift (Windows) or Option+Shift (Mac) while writing a breakpoint (by clicking with any Grabber tool in a track's automation playlist).

**To write a new breakpoint to the previous automation value:**

■ Press and hold Control+Alt (Windows) or Command+Option (Mac) while writing a breakpoint (by clicking with any Grabber tool in a track's automation playlist).

## Editing Automation on Stereo and Multichannel Tracks

Stereo and multichannel tracks display a single automation playlist per track. Only one playlist for volume and mute is available for the stereo or multichannel track.

For multi-mono plug-ins, automation playlists for each individual channel can be displayed and edited when the plug-in is unlinked, and the track is in Expanded Track Display.

### Expanded Track View

By default, a single automation playlist is displayed on stereo and multichannel tracks. The playlist occupies the entire height of the track (similar to mono automation playlists).

Optionally, you can display an expanded view of the track whereby the same automation playlist is displayed across each channel.

### Plug-in Automation Playlists on Stereo and Multichannel Tracks

Some multichannel plug-ins provide a single set of automatable controls for all channels in a track. Other multichannel plug-ins and all multi-mono plug-ins provide a single set of controls for all channels when linked, or discrete controls for each channel when unlinked. Refer to your plug-in guide for more information.

**To view and edit the individual playlists of a multi-mono plug-in:**

**1** Unlink the plug-in.

**2** Select the required playlist from the Track View selector.
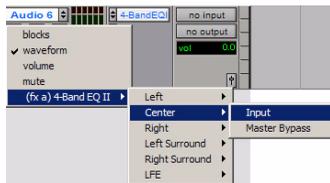


multi-mono
plug-in unlinked

*Selecting an automation playlist for an unlinked multi-mono plug-in*

## Editing Automation on Grouped Tracks

When you edit automation on an audio track that is a member of an active Edit Group, the same type of automation is also edited on all tracks that are part of that group. This occurs even if the playlist for that type of automation is not currently displayed on the other grouped tracks.

### Examples

◆ If you create new automation breakpoints on a grouped track (with the Pencil tool or any Grabber tool), other members of the group have breakpoints placed relative to that track.

◆ If you move automation on a grouped track (with any of the Trimmer tools), other members of the group have their breakpoints trimmed relative to that track. This lets you trim entire sections of a mix.
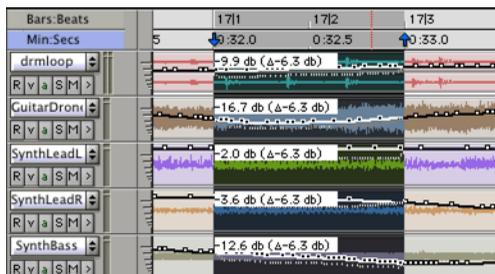


*Trimming automation on an active grouped track*

**To individually edit a automation for a member of a group without affecting the other members, do one of the following:**

■ Press the Start key (Windows) or Control (Mac) while you perform the edit.

## Cutting, Copying, and Pasting Automation

*Cutting* automation data is different from *deleting* it, and yields different results (although both change the existing automation data). *Copying* automation leaves the original automation data intact.

You *delete* automation data by selecting a range of breakpoints and pressing Backspace (Windows) or Delete (Mac). See "Deleting Automation" on page 799 for details.

You *cut* automation data by selecting a range of breakpoints from an automation playlist and selecting the Cut command.

When you cut automation data and when you paste it into a new location, anchor breakpoints are added to the beginning and end points of the data. This is done to preserve the true slope (of continuous controls, such as Volume faders or pans) or state (of switched or stepped controls, such as Mutes) of the automation data both inside and outside the selection.

The following illustrations show the difference between cutting and deleting automation data. In Figure 19, a track is set to display volume automation, and a range of automation data is selected.
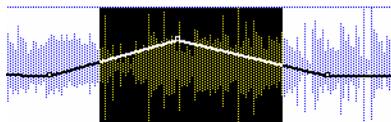


*Figure 19. Selecting automation data*

If the Cut command is chosen, anchor breakpoints are created at each end of the selection, and the automation slope on either side of the cut data is preserved, as shown in Figure 20.
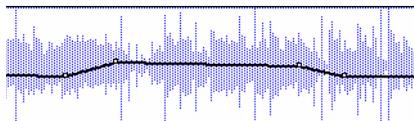


*Figure 20. After cutting the automation data*

If the data is deleted by pressing Backspace (Windows) or Delete (Mac), the automation data is removed, and automation values span the gap between pre-existing breakpoints, as in Figure 21.
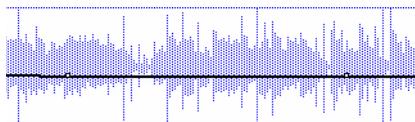


*Figure 21. After deleting the automation data*

In addition, if cut or copied data is pasted elsewhere in a track, breakpoints are created at the end points of the pasted data to preserve its "neighboring" (incoming and outgoing) automation value and slope, as shown in Figure 22.
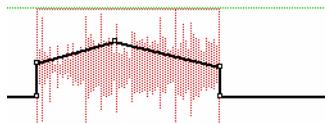


*Figure 22. After pasting the automation data in another location*

## Editing and Track Views

Audio, MIDI, and Instrument tracks each have a Track View that acts as the Master View for purposes of editing. When the Master View is displayed, any edits performed on the track apply to all data in the track.

The Master Views are:

- Audio tracks: Blocks and Waveform
- MIDI and Instrument tracks: Blocks, Regions, and Notes

For example, when an audio track is set to Waveform or Blocks, cutting, copying and pasting affects the audio data and all types of automation data on that track. If the track is set to show Pan automation, only the Pan data is affected.

When a selection includes multiple tracks, if any of those tracks is in its Master View, *all* data on all selected tracks is affected.

**To edit all automation types on an Auxiliary Input or Master Fader track, do one of the following:**

■ Make an Edit selection that includes at least one audio or MIDI track that is displayed in its main format.

– or –

■ Press Control while cutting or copying the automation data.

*For additional flexibility, you can use play-lists or the Duplicate Track command to work nondestructively on a copy of the edit data.*

### Tips for Cutting, Copying and Pasting

◆ On audio tracks, when you are in Waveform View and cut or copy a section of the waveform, any automation data associated with the waveform is also cut or copied.

◆ On audio tracks, when you are in Waveform View and cut audio data from a track also containing automation data, breakpoints are automatically created at the boundaries of the remaining automation data.

◆ On audio tracks, pasting waveform data also pastes any associated automation data.

◆ On Auxiliary Input, Master Fader, or Instrument tracks, only the displayed automation data is cut or copied. To cut or copy all automation data on these types of tracks, press Control while cutting or copying.

◆ In tracks where an automation playlist contains no data (when there is only a single breakpoint at the very beginning of the track), if you cut data, no new breakpoints are created.

◆ In cases where regions overlap (such as when moving regions in Slip mode) and an overlapping region is removed, any overlapped automation breakpoints are lost.

◆ If cut or copied data contains a type of automation not currently on the target track, Pro Tools prompts you before allowing you to paste the data.

◆ Cut or copied automation data for plug-ins or sends that do not exist on the target track is ignored when pasted.

## Cut, Copy, Clear, and Paste Special Commands

The four "special" commands (Cut Special, Copy Special, Paste Special, and Clear Special) simplify the tasks involved with moving or clearing different types of automation data and MIDI controller data between tracks, sends, and plug-ins. These commands let you

• Edit automation and MIDI controller data only (without associated audio or MIDI notes).

• Edit automation and MIDI controller data without having to change Track Views

In addition, the Paste Special command lets you copy one data type to another (for example, Left Pan data into the Right Pan playlist)

⚠ *You cannot paste MIDI controller data to automation data nor automation to MIDI.*

### Cut Special

The Cut Special commands lets you cut just automation data from the current selection (without associated audio or MIDI notes) and place it in memory to paste elsewhere, as follows. Choices include:

**All Automation** Cuts all automation or MIDI controller data whether it is shown or not.

**Pan Automation** Cuts only pan automation or MIDI pan data whether it is shown or not.

**Plug-in Automation** Cuts only the plug-in automation that is shown.

## Copy Special

The Copy Special commands let you copy just automation data from the current selection (without associated audio or MIDI notes) and place a copy of it in memory to paste elsewhere, as follows:

**All Automation** Copies all automation or MIDI controller data whether it is shown or not.

**Pan Automation** Copies only pan automation or MIDI pan data whether it is shown or not.

**Plug-in Automation** Copies only the plug-in automation that is shown.

## Paste Special

The Paste Special commands let you paste automation data into another region (without affecting associated audio or MIDI notes) in the following ways:

**Merge** Lets you add the pasted data to any existing automation data of the same type in the destination selection. This can be useful for consolidating MIDI data from several tracks into a single MIDI track. For example, you like the pitch bend on the synth trombones and want to apply it to the synth guitar.

**Repeat to Fill Selection** Pastes multiple iterations of the automation data to the entire selection range. If you select an area that is not an exact multiple of the copied region size, the remaining selection area is filled with a trimmed version of the original selection. This lets you easily create drum loops and other repetitive effects. Before the data is pasted, Pro Tools prompts you to specify a crossfade to smooth transitions between regions.

**To Current Automation Type** Pastes the automation data or MIDI controller data from the clipboard to the selection as current automation type or MIDI controller. This lets you copy automation from any type to any other type. For example, you can copy a Left Pan automation to Plug-in automation. Or, you can copy MIDI volume data and paste it to MIDI pan.

## Clear Special

The Clear Special commands let you clear just automation data from the current region, as follows:

**All Automation** Clears all automation or MIDI controller data whether it is shown or not.

**Pan Automation** Clears only pan automation or MIDI pan whether it is shown or not.

**Plug-in Automation** Clears only the plug-in automation that is shown.

## Special Paste Function for Automation Data

Normally, when you copy and paste automation data, it is pasted in an automation playlist of the exact same type (for example, Left Pan data is pasted into the Left Pan playlist).

However, there may be times when you want to paste from one data type to another (for example, Left Pan data into the Right Pan playlist).

The Special Paste function lets you copy one data type to another.

If you want to paste automation or MIDI controller data only (without its associated audio or MIDI notes), use the Paste Special command.

For this special paste mode to function, the following must be true:

• Every track selected for pasting must be currently displayed as automation data.

   – and –

• There must be only one automation playlist on the Clipboard for each target track. (The Special Paste function cannot copy multiple automation playlists for each track.)

⚠️ *You cannot interchange automation data between audio and MIDI tracks, or between continuous controls (such as faders or pans) and switched or stepped controls (such as mute or MIDI controllers).*

**To paste data into a different automation playlist:**

■ Press the Start key (Windows) or Control (Mac) when choosing Edit > Paste.

## Glide Automation
### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

The Glide Automation commands let you manually create an automation transition (or glide) from an existing automation value to a new one, over a selected area.

💡 *When gliding multiple parameters at the same time, such as with the Surround Panner or plug-ins, use the Edit > Automation > Glide to All Enabled option.*

**To apply a Glide Automation to the current automation parameter type:**

**1** In the Automation window, make sure the automation type is write-enabled.

**2** Click the Track View selector to choose the automation type you want to automate.

**3** Drag with the Selector tool in the track to select the area you want to write the glide to.

**4** Change the automation parameter to the value you want at the end of the selection. For example, to glide automation volume to –Infinity, move the Volume fader to –Infinity.

**5** Choose Edit > Automation > Glide to Current.

⌨️ *You can also press Alt+Forward Slash (/) (Windows) or Option+Forward Slash (/) (Mac).*

**To do a Glide Automation to all current enabled parameters:**

**1** In the Automation window, make sure the automation types are write-enabled.

**2** In each track you want to automate, click the Track View selector and select from the pop-up menu the automation type you want to automate.

**3** With the Selector tool, drag horizontally to include all the tracks you want to automate in a selection (drag vertically to define the time range).

**4** In each track you want to automate, change the automation parameter to the value you want at the end of the selection.

**5** Choose Edit > Automation > Glide to All Enabled.

⌨️ *You can also press Alt+Shift+Forward Slash (/) (Windows) or Option+Shift+Forward Slash (/) (Mac).*

### Glide Automation Considerations

When Glide Automation is applied to automation data, it behaves as follows:

- When a selection is made, automation breakpoints are written at the start and end points of the Glide Automation. The automation value at the start of the selection is the start point of the Glide Automation and the end of the selection is the end point of the Glide Automation. The Glide Automation that is created between the two is based on the length of the selection and the end value that is selected.

- If automation breakpoints follow the selection, they are not changed, but the value selected for the end of the selection is written from the end point up until the next breakpoint.

- If no automation breakpoints follow the selection, the value selected for the end of the selection is written to the end of the track.

- If no selection is made, a breakpoint is written to the current location, and the value selected for the Glide Automation is written to the next breakpoint.

# Trimming Automation

## (Pro Tools HD Only)

If you have already written automation, you can modify automation data for track volume and send levels in real time by using Trim mode. When a track is trim-enabled, you are not recording absolute fader positions, but relative changes in the existing automation. See "Trim Mode" on page 782 for more information.

### To enable Trim mode:

- In the Mix or Edit window, click the Automation Mode selector of the track where you want to trim automation, and select Trim.
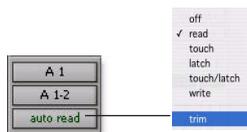


*Enabling Trim mode*

When a track's Trim mode is enabled, its Volume and Send Level faders turn yellow, and its Automation Mode selector is outlined in yellow. This outline appears solid if the track is trim-enabled, and flashes whenever trimming is occurring on the track's volume or send levels.

## Writing Trim Automation

The writing of Trim automation depends on how it is set to be coalesced. See "Coalescing Trim Automation" on page 812. If automation is not set to coalesce after every automation pass, Trim automation moves are written to a separate Trim playlist.

### To trim track Volume or Send levels:

**1** In the Automation window, make sure the automation type (Volume or Send level) is write-enabled.

**2** Click the Automation Mode selector of the track where you want to write automation and choose the automation mode (Touch, Latch, Touch/Latch, or Write).

**3** Click the Automation Mode selector and choose Trim.

**4** Start playback, and adjust the Volume or Send levels.

**5** Stop playback to finish the Trim pass.

# Coalescing Trim Automation

You can set Pro Tools to commit, or *coalesce*, Trim automation to the main automation playlist by the following methods:

**After Every Pass** Trim moves are automatically applied when the transport is stopped at the end of an automation pass. Trim automation playlists are cleared, and Trim faders are returned to zero.

**On Exiting Trim Mode** Trim moves are stored separately in the Trim automation playlist until they are coalesced. Trim automation is automatically coalesced on a track only when you take the track out of Trim mode. You can repeat an automation pass, edit Trim automation manually on any of the Trim playlists, or clear Trim automation before coalescing with this method.

☼ *Even when automation is set to coalesce on exiting Trim mode, you can use the Coalesce Trim Automation command to commit Trim moves at any time.*

**Manually** Trim moves are stored separately in the Trim automation playlist until they are coalesced. With this setting, the only way to coalesce Trim moves is with the Coalesce Trim Automation command. You can repeat an automation pass, edit Trim automation manually on any of the Trim playlists, or clear Trim automation before coalescing with this method.

**To set the method by which Trim Automation is coalesced:**

**1** Choose Setup > Preferences and click Mixing.

**2** Under Coalesce Trim Automation, select one of the following:

- After Every Pass
- On Exiting Trim Mode
- Manually

**To coalesce Trim automation on a track when exiting Trim mode:**

**1** Choose Setup > Preferences and click Mixing.

**2** Under Coalesce Trim Automation, select On Exiting Trim Mode.

**3** Click OK to close the Preferences window.

**4** Make sure the Pro Tools transport is stopped.

**5** On the track where you want to coalesce Trim automation, click the Automation Mode selector and deselect Trim.

The Trim automation is applied to the main automation playlist, Trim automation playlists are cleared, and Trim faders are returned to zero.

⚠ *If transport is playing and you are writing automation, you cannot directly enter or exit Trim mode. You must AutoMatch before exiting Trim mode. This prevents any abrupt jumps in automation values.*

**To manually coalesce Trim automation on a track:**

**1** Select the track where you want to coalesce the Trim automation.

**2** Do one of the following:

- Choose Track > Coalesce Trim Automation.

– or –

- Right-click the track name and choose Coalesce Trim Automation from the pop-up menu.

The Trim automation is applied to the main automation playlist, Trim automation playlists are cleared, and Trim faders are returned to zero.

# Writing Automation to the Start, End, or All of a Track or Selection

## (Pro Tools HD Only)

Pro Tools lets you write current automation values from any insertion point forward (or backward) to the end (or beginning) of a track or Edit selection in a track, or to an entire track or Edit selection, while performing an automation pass.



*Write Automation to Start, End, and All buttons in the Automation window*

The standard Write Automation to Start, All, or End commands do not operate when the Pro Tools transport is stopped. It only affects automation for those parameters that are currently write-enabled and currently writing automation data.

Optionally, Write Automation to Start, All, and End can be configured to always be applied automatically. See "Writing Automation to the Start, End or All of a Track or Selection on Stop" on page 814.

## Requirements for Standard Write Automation Commands

For automation data to be written for a specific parameter, the associated track must be in one of the following Automation modes and meet the following conditions:

**Latch Mode** The control for the parameter must be changed (touched) during the automation pass.

**Touch Mode** The control for the parameter must be changed (touched).

**Write Mode** All controls on that track must be in Write mode.

This command can be undone.

**To write current automation values to the start, end, or all of a track or Edit selection:**

**1** Choose Window > Automation.

**2** Make sure that the automation type is write-enabled.

**3** Do one of the following:
- Click in a track at an insertion point.

– or –

- Drag with the Selector tool to select a portion of the track.

**4** Click Play to begin playback.

**5** Make sure you are actively writing on the appropriate track if you are in Latch or Touch mode.

**6** When you reach a point in the track or selection that contains the automation data you want to apply, click the Write Automation to Start, All, or End button in the Automation window.

**7** Stop playback.

The current values of all write-enabled automation at that point are written to the corresponding area of the track/selection.

### Write to Start, End or All and Trim Mode

While in Trim mode, it is also possible to write trim delta values for track volume and send levels to the start, end or all of a track or Edit selection.

**To write current trim delta values to the start, end, or all of a track or selection:**

**1** Choose Window > Automation.

**2** Make sure the automation type (track volume or send level) is write-enabled.

**3** In the Mix or Edit window, click the Automation Mode selector of the track you want to trim automation, and select Trim. The track Volume and Send Level faders turn yellow.

**4** Do one of the following:

- Click in a track at an insertion point.

– or –

- Drag with the Selector tool to select a portion of the track.

**5** Click Play to begin playback.

**6** When you reach a point in the track or selection that contains the trim setting (delta value) you want to apply, click the Write Automation to Start, All, or End button in the Automation window.

**7** Stop playback.

The relative changes to the track volume and send levels at that point are written to the corresponding area of the track/selection.

## Writing Automation to the Start, End or All of a Track or Selection on Stop

The Automation window provides options for writing automation on any automation playlist (including Trim playlists) after a valid automation pass has been performed.

The Write Automation to Start, End or All modes can be configured to disable or remain enabled after a valid automation pass.

See "Requirements for Standard Write Automation Commands" on page 813.



*Write On Stop controls in the Automation window*

**To configure Write on Stop modes to disable after an automation pass:**

**1** Choose Window > Automation.

**2** Click to enable one of the Write On Stop modes (Start, All, End).

The enabled Write on Stop arrow appears in blue.

**To configure Write on Stop modes to remain enabled after an automation pass:**

**1** Choose Window > Automation.

**2** Alt-click (Windows) or Option-click (Mac) one of the Write On Stop buttons (Start, All or End) to enable the Write On Stop mode.

The enabled Write on Stop arrow appears in red.

# Writing Automation to the Next Breakpoint or to the Punch Point

**(Pro Tools HD Only)**

While performing an automation pass, Pro Tools lets you write current automation values from the current insertion point forward to the next automation breakpoint, or back to the punch point (the location in the track where automation writing started).

◆ Write Automation to Next Breakpoint lets you update automation within a track without overwriting automation located earlier or later in the Timeline, and without having to define a selection before editing automation.

◆ Write Automation to Punch Point lets you fill back an automation value within a track after finding the right level or setting during an automation pass, without having to go back and repeat the pass.

Like the standard Write Automation to Start, End and All commands, the Write Automation to Next Breakpoint and Write Automation to Punch Point commands do not operate when the Pro Tools transport is stopped. They only affect automation for those parameters that are currently write-enabled and currently writing automation data.

Optionally, the Write Automation to Next Breakpoint and Write Automation to Punch Point commands can be configured to be applied automatically after a valid automation pass has been performed. See"Writing Automation to the Next Breakpoint or to the Punch Point on Stop" on page 817.

📓 *Write Automation to Next Breakpoint and Write Automation to Punch Point have the same requirements as Write Automation to Start, End and All commands. See "Writing Automation to the Start, End, or All of a Track or Selection" on page 813.*

**To write current automation values to the next breakpoint:**

**1** Choose Window > Automation.

**2** Make sure that the automation type is write-enabled.

**3** Click in a track to define an insertion point.

**4** Click Play to begin playback.

**5** Make sure you are actively writing on the appropriate track if you are in Touch, Latch, or Touch/Latch mode.
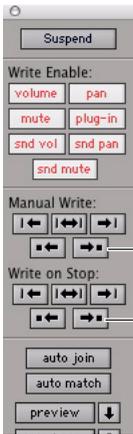
**6** When you reach a point in the track where you want to apply the current settings, click the Write Automation to Next Breakpoint button.

*Write To Next Breakpoint buttons in the Automation window*

**7** Stop Playback.

The current values of all controls being written at that point are written up to the next breakpoint.

⚠️ *Write Automation to Next Breakpoint remains enabled after a valid automation pass. Unlike standard Write Automation commands, it cannot be configured to disable after an automation pass.*

**To write current automation values back to the automation punch point:**

**1** Choose Window > Automation.

**2** Make sure the automation type is write enabled.

**3** Click in a track to define an insertion point.

**4** Click Play to being playback.

**5** Make sure you are actively writing on the appropriate track if you are in Touch, Latch, or Touch/Latch mode.
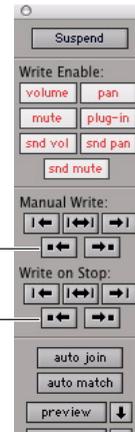
**6** When you reach a point in the track where you want to apply the current settings, click the Write Automation to Punch Point button.



*Write To Punch Point buttons in the Automation window*

The current values of all write-enabled parameters are written back to the point where the first control began writing automation.

## Write To Next Breakpoint or Punch Point and Trim Mode

While in Trim mode, it is also possible to write trim values for track volume and send levels to the next written breakpoint or back to the automation punch-in point.

**To write current trim values to the next breakpoint or to the punch point:**

**1** Choose Window > Automation.

**2** Make sure that the automation type (track volume or send level) is write-enabled.

**3** In the Mix or Edit window, click the Automation Mode selector and select Trim. The track Volume and Send Level faders turn yellow.

**4** Click in a track to define an insertion point.

**5** Click Play to begin playback.

**6** When you reach a point in the track where you want to apply the current trim values, click the Write Automation to Next Breakpoint button in the Automation window.

**To write current trim values to the punch point:**

**1** Choose Window > Automation.

**2** Make sure that the automation type (track volume or send level) is write-enabled.

**3** In the Mix or Edit window, click the Automation Mode selector and select Trim. The track Volume and Send Level faders turn yellow.

**4** Click in a track to define an insertion point.

**5** Click Play to begin playback.

**6** When you reach a point in the track where you want to apply the current trim values, click the Write Automation to Punch Point button in the Automation window.

## Writing Automation to the Next Breakpoint or to the Punch Point on Stop

The Automation window provides an option for automatic Write Automation to Next Breakpoint on Stop or Write Automation to Punch Point on Stop.

⚠ *Write Automation to Next Breakpoint remains enabled after a valid automation pass. Unlike standard Write Automation commands, it cannot be configured to disable after an automation pass.*

**To configure Write Automation to Next Breakpoint on Stop:**

**1** Choose Window > Automation.

**2** Click the Write Automation to Next Breakpoint on Stop button or the Write Automation to Punch Point button.

When this option is enabled, automation writing will be performed automatically forward to the next breakpoint after a valid automation pass has been performed.

**To configure Write Automation to Punch Point on Stop:**

**1** Choose Window > Automation.

**2** Click the Write Automation to Punch Point on Stop button.

When this option is enabled, automation writing will be performed automatically back to the automation punch-in point after a valid automation pass has been performed.

# Guidelines for "Write To" Commands

**(Pro Tools HD Only)**

## Using "Write To" Commands During Playback

You can carry out any of the "Write Automation To" commands without stopping the Pro Tools transport. On supported control surfaces, the corresponding "Write To" button flashes until you stop the transport.

While the Pro Tools transport is moving, issuing "Write Automation To" commands affects writing of automation in the following ways:

- Write to Start/Selection Start: Currently writing controls continue writing automation
- Write to All/Selection: Currently writing controls (except controls in Write mode) punch out of writing automation
- Write to End/Selection End: Currently writing controls (except controls in Write mode) punch out of writing automation
- Write to Next Breakpoint: Currently writing controls (except controls in Write mode) punch out of writing automation
- Write to Punch point: Currently writing controls continue writing automation

## Applying "Write To" Commands to Selected Tracks

The "Write Automation To" commands normally apply to all tracks currently writing automation. It is possible to apply these commands to selected tracks only.

**To apply any of the "Write Automation To" commands to currently selected tracks:**

**1** Select the tracks where you want to apply the "Write To" commands.

**2** Alt-Shift-click (Windows) or Option-Shift-click the corresponding "Write Automation To" button.

## Supressing Warnings when Using "Write To" Commands

When you carry out any of the "Write Automation To" commands (except Write to Next Breakpoint), Pro Tools posts a dialog warning that automation values will be changed in the session. You can suppress these warnings.

**To suppress "Write To" warning dialogs:**

**1** Choose Setup > Preferences and click Mixing.

**2** Under Automation, select Suppress Automation "Write To" Warnings.

# Overwriting or Extending Mute Automation

## (Pro Tools HD Only)

Pro Tools lets you overwrite or extend an existing mute event in real time, without changing the current mute state.

A mute event can be overwritten when the automation pass begins before the first mute event and ends after the second event. In this case, the current on/off state of the mute is maintained.



Original mute automation
(mute off, mute on, mute off)



Mute on event overwritten
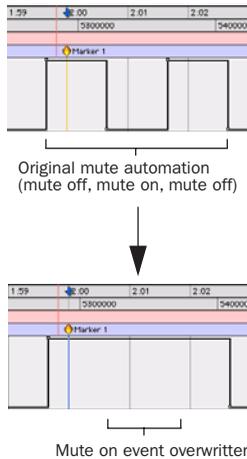
*Overwriting a mute automation event*

A mute event can be extended when the automation pass begins before an on or off event and stops before the end of the second event.



Original mute automation
(mute off, mute on, mute off)



Mute off event extended (up to automation pass end)
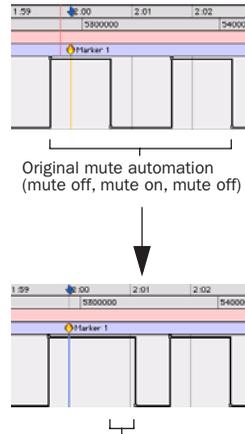
*Extending a mute automation event*

Mute Overwrite/Extend is supported in Touch and Latch mode, as follows:

**Touch Mode** Writes the current state as long as the Mute button is held.

**Latch Mode** Writes the current state until you stop or AutoMatch out.

### To overwrite a mute state on one or more tracks:

**1** Choose Window > Automation.

**2** Make sure Mute is write-enabled.



Mute automation enabled
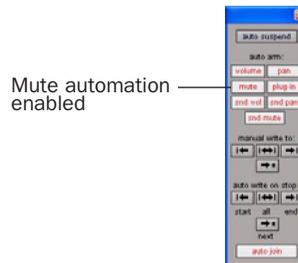
*Mute enable button in the Automation window*

**3** In the Mix or Edit window, click the Automation Mode selector of the track where you want to overwrite the mute state, and set the Automation mode to Touch or Latch mode.

*To overwrite mute states on multiple tracks, set all tracks to the same Automation mode.*

**4** In each track you want to automate, click the Track View selector and select mute.

**5** Place the cursor before the start of the mute event you want to overwrite.



Example: Place cursor here, before start of mute event

*Placing the cursor before the start of a mute event*

**6** Begin playback.

**7** Press Control (Windows) or Command (Mac) and the track Mute button before the start of the mute event you want to overwrite.

*To overwrite mute states on multiple tracks, press Alt+Control (Windows) or Option+Command (Mac) and the Mute button on one of the tracks to be automated.*

**8** After the end of the second mute event, release the key and the Mute button.

*With Touch mode, you have to hold the Mute button for the duration of the write.*



Example: Stop automation pass here, after end of mute event

*Stopping automation after the end of a mute event*

**9** When you have finished the automation pass, click Stop.
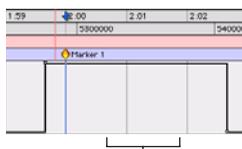


Mute on state overwritten

*Example of mute state overwritten*

**To extend a mute state on a track:**

**1** Choose Window > Automation.

**2** Make sure mute is write-enabled.

**3** In the Mix or Edit window, click the Automation Mode selector of the track you want to automate, and select Touch or Latch mode.

*To extend mute states on multiple tracks, set all the tracks to the same Automation mode.*

**4** In each track you want to automate, click the Track View selector and select mute.

**5** Place the cursor before the start of the mute event you want to extend.
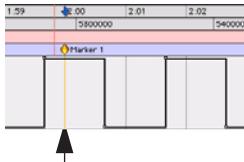


Example: Place cursor here, before start of mute event

*Placing the cursor before the start of a mute event*

**6** Begin playback.

**7** Press Control (Windows) or Command (Mac) and the track Mute button before the start of the mute event you want to extend.

*To extend mute states on multiple tracks, press Alt+Control (Windows) or Option+Command (Mac) and the Mute button on the track.*

**8** Before the end of the second mute event, release the key and the Mute button.

*If you extend past the subsequent on or off event, the entire event will be changed.*
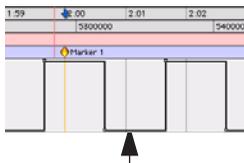


Example: Stop automation pass here, before end of mute event

*Stopping automation before the end of a mute event*

**9** When you have finished the automation pass, click Stop.
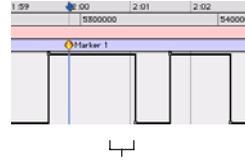


mute off state extended (up to automation pass end)

*Example of mute state extended*

# Creating Snapshot Automation

## (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

Pro Tools lets you write automation data values for multiple parameters in a single step. You can write snapshot automation in two ways:

**To a Selection** Automation data is written to the Timeline selection (as well as the Edit selection if linked). Anchor breakpoints are placed just before and after the selection so that data outside the selection is not affected.

**To a Cursor Location** Automation data is written at the insertion point. After the insertion point, the automation ramps to the next breakpoint value, or if no breakpoints exist, remains at the newly written value for the remainder of the session.

For more information on cutting, copying, and pasting automation data within a session, see "Writing Automation to the Start, End, or All of a Track or Selection" on page 813.

**To write snapshot automation:**

**1** In the Automation window, make sure that the parameters you want to edit are write-enabled. Deselect any parameters whose automation you want to preserve.

**2** In the Edit window, click the Track View selector to show the automation you want to edit.

**3** Write a breakpoint in the playlist if none currently exists, as follows:

- Place the cursor in the playlist (or make an Edit selection), then choose Control+Forward Slash (/) (Windows) or Command+Forward Slash (/) (Mac).

– or –

- Select the Grabber tool and click anywhere in the playlist.

**4** Do one of the following:

- Select an area in the track's playlist (or within multiple tracks) where you want to apply the automation.

– or –

- Place the cursor at an Edit insertion point.

**5** Adjust the controls you want to automate. You can also change a plug-in preset.

**6** Choose Edit > Automation and do one of the following:

- To write the current value to only the currently displayed automation parameter, choose Write to Current.

– or –

- To write the current settings for all automation parameters enabled in the Automation window, choose Write to All Enabled.

## Adding Snapshot Automation to Empty Automation Playlists

When you use a Write Automation command on an automation playlist with no previously written automation data, the selected value is written to the entire playlist and not just the selected area.

This is because a playlist with no automation data contains only a single automation breakpoint that corresponds to the current position of the control for the parameter. The position of the breakpoint is updated whenever the parameter value is changed.

If you do not want the Write Automation command to write the selected automation value to the entire playlist, you can:

- Anchor the automation data by placing the cursor at the end of the session (or any other end point) and choosing Write to Current.

  – or –

- Click with any Grabber tool on each side of the selection.

This lets the Write Automation command write only to the selected area.

## Writing Snapshot Automation over Existing Automation Data

When you move the playback cursor, the automated controls in Pro Tools update to reflect the automation data that is already on the track. To keep the settings you have made for a snapshot, you can suspend automation parameters to prevent them from updating.

**To write snapshot automation over existing data:**

**1** In the Automation window, make sure that the automation parameters you want to edit are write-enabled. Deselect any parameters whose automation you want to preserve.

**2** Adjust the controls for the parameters you want to automate.

**3** Click the Automation Mode selector and select Off mode for the tracks where you want to apply the automation.

**4** With the Selector, select the range where you want to apply the automation.

**5** Choose Edit > Automation and select one of the following from the submenu:

- To write the current value to only the automation parameter currently displayed in the Edit window, choose Write to Current.

– or –

- To write the current settings for all automation parameters enabled in the Automation window, choose Write to All Enabled.

**6** Click the Automation Mode selector and select Read mode for the tracks you want to play back with automation.

## Capturing Automation and Applying it Elsewhere

The Write Automation commands can also be used to capture automation states at specific locations in a track and apply them to other locations in the track.

**To capture and apply automation:**

**1** In the Automation window, make sure that the automation parameters you want to edit are write-enabled. Deselect any parameters whose automation you want to preserve.

**2** Click the Automation Mode selector and select Read mode for the tracks that have automation you want to capture.

**3** Make sure to select Options > Link Timeline and Edit Selection.

**4** With the Selector tool, select the location where you want to capture automation. All automated controls update to reflect the automation at that location. (If you make a selection, the controls update to reflect the automation at the beginning of the selection.)

**5** In each track you want to apply the captured automation, click the track's Automation Mode selector and set the Automation mode to Off.

**6** With the Selector tool, select the location where you want to apply the automation.

**7** Enable the automation parameters previously suspended.

**8** Choose Edit > Automation and select one of the following from the submenu:

- To write the current value to only the automation parameter currently displayed in the Edit window, choose Write To Current.

– or –

- To write the current settings for all automation parameters enabled in the Automation Enable window, choose Write To All Enabled.

**9** Click the Automation Mode selector and select Read mode for the tracks you want to play back with automation.

## Snapshot Automation and Trimming of Automation Data

Pro Tools lets you use trim values as snapshots and apply the *relative* changes (delta values) to the selected automation by using the Trim Automation command. This works in much the same way as the Write Automation command, except that it writes delta values instead of absolute values to automation data.

You can use trim values in writing snapshot automation to any automatable parameter.

**To create a snapshot of relative changes in automation data:**

**1** In the Automation window, make sure that the automation parameters you want to edit are write-enabled. Deselect any parameters whose automation you want to preserve.

**2** Select the area of the track you want to edit. All automated controls update to reflect the automation at the beginning of the selection.

**3** Move the controls for the parameter up or down by the amount you want to change the data.

**4** Choose Edit > Automation and do one of the following:

- To write the current delta value to only the currently displayed automation parameter, choose Trim to Current.

  – or –

- To write the current delta value for all automation parameters enabled in the Automation window, choose Trim to All Enabled.

# Previewing Automation

**(Pro Tools HD Only)**

Automation Preview mode lets you audition changes to a mix and compare them to existing automation values without committing them to the automation playlist.

When you put Pro Tools in Automation Preview mode, you can preview values for automation-enabled controls on any track that is in a writable automation mode.

While in Automation Preview mode, when you touch or move a control, it *isolates* the control, disengaging it from its automation playlist. The control stops reading or writing automation, allowing you to freely audition changes.

When you have found a level or state that you want to use, you can then commit or *punch* the previewed value to the automation playlist for the isolated controls.

◆ If you punch during playback, the automation mode is set to Latch and writing begins at the preview value.

◆ If you punch while the transport is stopped, the automation mode is set to Latch and the control is primed at the preview value.

💡 *It is not necessary for the Allow Latch Prime in Stop preference to be enabled for Preview to put a control into Latch Prime.*

## Previewing New Automation Values

**To preview a new automation value for a control:**

**1** Make sure the track where you want to preview the value is enabled for automation (Touch, Latch, Touch/Latch or their corresponding Trim modes).

**2** Make sure the automation type you want to preview is enabled in the Automation window (Volume, Pan, Mute, Send level, Send pan, Send mute, or Plug-in).

**3** Click the Preview button in the Automation window. The button lights green to indicate that Preview mode is active.
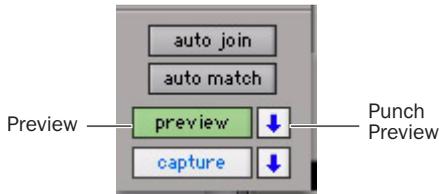


*Preview controls in the Automation window*

**4** To isolate a control, touch or move an automation-enabled control. You can isolate controls during playback or while the transport is stopped.

The Automation Mode indicator on the track lights green to indicate that at least one of its controls is isolated, and the Punch Preview button in the Automation window lights to indicate a preview value is available to punch.

**5** Start playback and adjust the isolated control to audition the changes.

## Taking Controls Out of Isolated State

You can take controls out of their isolated state without leaving Preview mode.

**To take all controls on a track out of their isolated state, do one of the following:**

■ Control-click (Windows) or Command-click (Mac) the automation mode selector on the track.

– or –

■ Change the track automation mode to Read or Off.

**To take all controls of an automation type out of their isolated state:**

■ In the Automation window, disable the automation type.

## Isolating Multiple Controls

In some cases, such as when starting a new mix, you may want to isolate multiple controls at the same time.

**To isolate all currently write-enabled controls:**

■ Alt-click (Windows) or Option-click (Mac) the Preview button.

**To isolate all write-enabled controls on all selected tracks:**

■ Alt-Shift-click (Windows) or Option-Shift click (Mac) the Preview button.

## Suspending Preview Mode

You can temporarily suspend Preview mode, allowing you to toggle between preview values and existing automation.

**To suspend Preview mode:**

■ Control-click (Windows) or Command-click (Mac) the Preview button.

## Punching Preview Values

After you have isolated a control and auditioned a new value, you can punch (write) the value to the automation playlist.

**To punch a preview value to the automation playlist:**

■ Click the lit Punch Preview button.

## Preview Mode and "Write To" Commands

The "Write Automation To" commands work as follows with Preview mode:

**Before punching preview values** The "Write Automation To" commands (except Write to Next Breakpoint) can be used to extend previewed values. The "Write Automation To" command will only apply to isolated controls. Pro Tools remains in Preview mode.

**After punching preview values** The "Write Automation To" commands (except Write to Next Breakpoint) can be used to extend the punched value in the same manner as other automation.

## Capturing Automation

### (Pro Tools HD Only)

You can capture current automation values at one location in a session and quickly apply them in another location with the Capture and Punch Capture commands. The Capture command temporarily stores the value of all controls currently writing automation, and the Punch Capture commands writes those stored values to all enabled automation types.

◆ ICON Systems allow for the capture of up to 48 different values, or *snapshots*.

◆ All other systems allow for the capture of a single value.
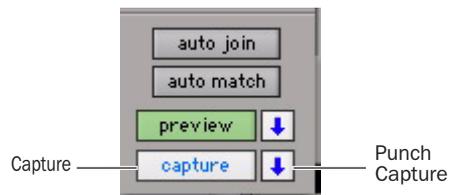


*Capture controls in the Automation window*

## Capturing Automation Values

You can capture the current automation values of actively writing controls.

**To capture automation values:**

**1** Make sure all tracks whose automation values you want to capture are in a write-enabled state (Write, Touch, Latch, Touch/Latch or Latch).

**2** Make sure the automation types you want to capture are enabled in the Automation window (Volume, Pan, Mute, Send level, Send pan, Send mute, or Plug-in).

**3** Start playback. When you reach a location where you want to capture the current automation states, click the Capture button in the Automation window.

The Punch Capture button in the Automation window lights to indicate a captured value is available to punch.

## Punching Captured Automation Values

After automation values are captured, they can be punched (written) to another location in the track. Any tracks set to Read or Off are unaffected.

◆ If you punch during playback, the automation mode of any track set to Touch is set to Latch and writing begins at the captured value.

◆ If you punch while the transport is stopped, the automation mode of any track set to Touch is set to Latch and the control is primed at the captured value.

**To punch captured automation values:**

**1** Move to a location where you want to apply the captured automation states. You can do this during playback or while the transport is stopped.

**2** Click the Punch Capture button in the Automation window to apply the captured automation states. The captured states are applied to all automation types that are currently enabled in the Automation window.

## Capturing Automation Values for All Controls

You can capture the state of all automatable controls (except on tracks with their Automation Mode set to Off) in a session, regardless of whether they are currently writing automation.

**To capture the automation values of all controls:**

■ When you reach a location where you want to capture the current automation states, Alt-click (Windows) or Option-click (Mac) the Capture button.

**To capture the automation values of all controls on selected tracks only:**

■ When you reach a location where you want to capture the current automation states, Alt-Shift-click (Windows) or Option-Shift-click (Mac) the Capture button.

## Punching Automation Values for All Controls

You can punch all captured automation values to another location on their corresponding tracks (except those tracks with their Automation Mode set to Off).

**To punch the automation values of all controls:**

■ When you reach a location where you want to apply the captured automation states, Alt-click (Windows) or Option-click (Mac) the Punch Capture button. Any track set to Read or Touch are set to Latch. Any tracks set to Off are unaffected.

**To punch the automation values of all controls on selected tracks only:**

■ When you reach a location where you want to apply the captured automation states, Alt-Shift-click (Windows) or Option-Shift-click (Mac) the Punch Capture button. Any selected tracks set to Read or Touch are set to Latch. Any selected tracks set to Off are unaffected.

## Capture and Trim Mode

The Capture and Punch Capture commands work with Trim automation in the same way as regular automation. Pro Tools saves Trim status when capturing, so if you attempt to punch captured Trim values while displaying a non-Trim automation playlist, Pro Tools will automatically apply the values to the corresponding Trim playlist.

## Punch Capture and "Write To" Commands

After issuing a Punch Capture command, the affected controls are writing automation (in Latch mode), so any of the "Write Automation To" commands can be used to extend the punched value in the same manner as other automation.

## Capture and Preview Mode

### Loading Captured Values into Preview

You can preview and modify captured automation values in Preview mode before punching the values to the automation playlist.

**To capture an automation value and use it to preview:**

**1** Make sure the track where you want to preview the value is enabled for automation (Touch, Latch, Touch/Latch or their corresponding Trim modes).

**2** Make sure the automation type you want to preview is enabled in the Automation window (Volume, Pan, Mute, Send level, Send pan, Send mute, or Plug-in).

**3** Capture an automation value that you want to preview in another location on a track. (See "Capturing Automation Values" on page 826.)

**4** Go to a location where you want to preview the captured automation states, and click the Preview button in the Automation window.

**5** Click the Punch Capture button.

The affected controls are isolated and updated to the captured values. The Punch Preview button in the Automation window lights to indicate the preview value is available to punch.

**6** Start playback and adjust the isolated control to audition the changes.

**7** When you are ready to punch the preview value to the automation playlist, click the lit Punch Preview button.

## Capturing Values While in Preview Mode

When you are in Preview mode, you can capture the values of isolated controls and apply them elsewhere on a track. By capturing preview values, you can leave the underlying automation unchanged at the place where you capture.

On ICON systems, you can use preview mode to capture multiple snapshots without changing automation.

**To capture a preview value:**

**1** Activate Preview mode and isolate a control. (See "Previewing New Automation Values" on page 825).

**2** Start playback and adjust the isolated control to audition the changes.

**3** When you are ready to capture preview value, click the Capture button in the Automation window.

The Punch Capture button in the Automation window lights to indicate a captured value is available to punch.

## VCA Master Track Automation

**(Pro Tools HD Only)**

### Displaying Automation on VCA Master Tracks

The following controls on VCA Master tracks can be automated and have separate automation playlists:

- Volume
- Volume trim
- Mute

These automation playlists follow the same behavior as automation playlists on other track types. For more information on Volume trim automation, see "Trimming Automation" on page 811.

## Displaying the Composite Automation Playlist on Slave Tracks

When a track is a VCA slave, you can display a composite automation playlist that shows the contribution of the VCA Master to the Volume or Mute automation data on the slave track. This composite playlist reflects the actual position of the Volume fader on the slave track. The composite playlist display cannot be directly edited.

**To display the composite playlist on VCA slave tracks:**

■ Choose View > Automation > Composite Playlist.
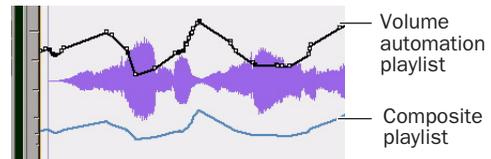


*Viewing composite automation on a VCA slave track*

## Excluding VCA Slave Tracks from VCA Master Automation

When you are writing automation on a VCA Master track, the corresponding moves will appear on the composite automation playlist of each of its slave tracks. If you want to exclude a slave track from an automation pass, write-enable the slave track for automation.

**To exclude a slave track from VCA Master track automation pass:**

**1** Write-enable the VCA Master track for automation (Write, Touch or Latch mode).

**2** Write-enable the slave track you want to exclude for automation (Write mode).

**3** Make sure other slave tracks that you want to include in the pass are not write-enabled for automation.

**4** Start playback.

**5** Move the fader on the VCA Master track.

**6** Stop playback.

Automation is written on the excluded slave track such that the fader moves on the VCA Master track are canceled out, and the fader on the excluded slave track does not move on subsequent playback.
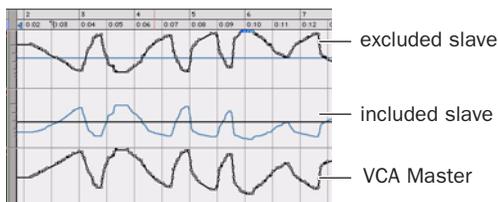


*Automation for excluded VCA slave track, canceling VCA Master automation*

## Coalescing VCA Automation

There are several ways to commit, or *coalesce*, the contribution of a selected VCA Master track's Volume and Mute automation to the automation playlists of its slave tracks.

### Clearing the VCA Master

You can use a VCA Master to write grouped automation, coalesce the VCA automation to all of the slave tracks, and clear the automation on the VCA Master. The coalesced tracks will play back exactly as they did when they were in the VCA group.

**To coalesce automation from a VCA Master to all of its slave tracks and retain the VCA Master:**

**1** Select the VCA Master track whose automation you want to coalesce.

**2** Do one of the following:
• Choose Track > Coalesce VCA Master Automation.

– or –

• Right-click the VCA Master track name and choose Coalesce VCA Master Automation from the pop-up menu.

The composite Volume level and Mute state are coalesced to each of the slave tracks. The VCA Master Volume fader is reset to zero, the VCA Mute is set to unmuted, and any automation on the VCA Master is cleared.

## Deleting the VCA Master

You can temporarily use a VCA Master to write grouped automation, then coalesce the VCA automation to all of the slave tracks by deleting the VCA Master. The coalesced tracks will play back exactly as they did when they were in the VCA group.

**To coalesce automation from a VCA Master to all of its slave tracks and delete the VCA Master track:**

**1** Select the VCA Master track whose automation you want to coalesce.

**2** Choose Track > Delete.

The composite Volume level and Mute state are committed to each of the slave tracks.

⚠ *This action cannot be undone.*

## Removing a Slave Track from a VCA Group

You can remove an individual slave track from a VCA group, which commits the VCA automation to that track, leaving the VCA Master and the other slave tracks untouched. The coalesced slave track plays back exactly as it did when it was in the VCA group.

**To coalesce automation from a VCA Master to an individual slave track:**

**1** Do one of the following:
- Choose Modify Groups from the Group List pop-up menu.
- Click the Group ID indicator on the track and choose Modify from the pop-up menu.
- Right-click the Group name in the Group List and choose Modify from the pop-up menu.

**2** In the Groups dialog, select the VCA-controlled group that includes the slave track.

**3** In the Groups dialog, click Tracks and remove the slave track from the group.

**4** Click OK.

The slave track is removed from the VCA group, and the composite Volume level and Mute state are coalesced to the track.

## Duplicating a Slave Track

When you duplicate a slave track without duplicating its group assignments, the VCA automation is coalesced to the duplicate track. The coalesced duplicate plays back exactly as if it were in the VCA group.

**To coalesce automation from a VCA Master to a single slave track by duplicating the track:**

**1** Select the slave track whose automation you want to coalesce.

**2** Choose Track > Duplicate.

**3** In the Duplicate Track dialog, deselect Group Assignments.

**4** Click OK.

The composite Volume level and Mute state are coalesced to the duplicate track. The original slave track is preserved, and the VCA group is unchanged.

## Coalescing Automation Across an Edit Selection

You can commit VCA automation across an Edit selection in a VCA Master track, without committing the automation on the entire length of the track.

**To coalesce automation in an Edit selection on a VCA Master track:**

**1** Select the VCA Master track whose automation you want to coalesce.

**2** Make an Edit selection in the VCA Master track that includes the range of automation you want to coalesce.

**3** Do one of the following:

- Hold Start (Windows) or Control (Mac) and choose Track > Coalesce VCA Master Automation.

  – or –

- Hold Start (Windows) or Control (Mac) and Right-click the VCA Master track name and choose Coalesce VCA Master Automation from the pop-up menu.

The composite Volume level and Mute state are committed to each of the slave tracks over the Edit selection. The VCA Master Volume is set to zero, the VCA Mute state is set to unmuted, and any automation on the VCA Master is cleared for the selected area only.

# Chapter 38: Mixdown

Pro Tools lets you mix down by *recording* a mix to new audio tracks or by *bouncing* a mix to disk.

**Recording to Tracks** This is the process of submixing and recording the submix to new audio tracks, as you would any input signals. This method requires available tracks, voices, and bus paths to accommodate the submix and the new tracks. While recording to tracks, you can manually adjust mixer or other controls.

Record to new tracks if you want to adjust mixer controls during the mixdown.

**Bouncing to Disk** The Bounce to Disk command lets you write a final mix, create a new loop, print effects, or consolidate any submix to new audio files on disk. This method lets you write all available voices to disk without holding any in reserve.

Any available output or bus path can be selected as the bounce source. Sample rate, bit depth, and other conversion processes can be applied during or after the bounce. Though you can hear the bounce being created in real time, you cannot adjust mixer or other controls during a Bounce to Disk.

Use Bounce to Disk if you need to convert the bounced files, or if you do not want to manually adjust mixer controls during the mixdown.

## Selecting Audio for Loops, Submixes, and Effects

Both Bounce to Disk and recording to tracks operate on the current Timeline or Edit selection, if one exists. This makes it easy to turn multitrack selections into mono, stereo, or multichannel loops. Submixes, stems, and other specialized types of mixes can also be printed to disk using either method, or played out to another recording, transfer, or archiving medium.

Printing effects to disk is the technique of permanently adding real-time effects, such as EQ or reverb, to an audio track by bussing and recording it to new tracks with the effects added. The original audio is preserved, so you can return to the source track at any time. This can be useful when you have a limited number of tracks or effects devices.

*AudioSuite plug-ins provide another option for printing a plug-in effect to disk. See the DigiRack Plug-ins Guide for details.*

## Dithering

Dither can significantly improve audio quality when reducing the bit depth of digital audio.

### When to Use a Dither Plug-in

You should use a dither plug-in in any situation where you are reducing bit depth, for example, when mixing down to a 16-bit file with the Bounce to Disk command, or when sending your final mix to an external digital device that records at 16-bit resolution.

A dither plug-in is necessary even when mixing down to 16-bit from a 16-bit session. Even though 16-bit sessions use 16-bit files, they are still being processed at higher internal bit depths.

- Pro Tools|HD systems use 24-bit audio input and output signal paths, and internal 48-bit mixing and processing

- Pro Tools LE and M-Powered systems use 24-bit audio input and output signal paths, and internal 32-bit floating point processing for mixing and audio processing

For this reason, whether you are working with a 24-bit session or a 16-bit session, the following are recommended:

- When mixing down to a 16-bit destination, use a dither plug-in on the main output.

- When mixing down to a 24-bit destination, *do not* use a dither plug-in on the main output.

- When mixing down to an analog destination with any 24-bit capable interface, *do not* use a dither plug-in on the main output.

- During normal recording and playback, bypass any dither plug-in on the main output.

### Bounce to Disk

The Bounce to Disk process does *not* apply dither when reducing bit depth. To apply dither when bouncing to disk, you should insert a dither plug-in as the last processor in the signal path on a Master Fader assigned to the bounce source path.

Using a dither plug-in on a Master Fader is preferable to an Auxiliary Input because Master Fader inserts are post-fader. As a post-fader insert, the dither plug-in can process changes in Master Fader level.

If you do not use a dither plug-in on your bounce source path, and you choose to convert to a lower resolution during or after a Bounce to Disk operation, the resulting file will be converted by truncation.

## Using Dither on an Output Mix

Pro Tools includes real-time dither plug-ins that improve 16-, 18-, or 20-bit performance and reduce quantization artifacts when reducing the bit depth of an output mix.

**To use a dither plug-in on an output mix:**

**1** Choose Track > New create a Master Fader track.

**2** Set the output of the Master Fader to the output or bus path you want to bounce.

**3** Assign the outputs of all audio tracks in the session to the same path you selected in step 2. The Master Fader now controls the output levels of all tracks routed to it.

**4** On the Master Fader, insert a dither plug-in as the last processor in the signal chain.

**5** In the dither plug-in window, choose an output Bit Resolution and Noise Shaping setting.

**6** Do one of the following:

- Play back the session to record (or "layback") Pro Tools output to lower bit-rate media (such as a DAT).

– or –

- Bounce to Disk and select the appropriate bit depth (such as 16-bit for CD audio). Before being converted by the Bounce to Disk command, the signal is processed according to the resolution and noise shaping settings in the dither plug-in inserted on the Master Fader.

📖 *For information about Digidesign dither plug-ins, refer to the DigiRack Plug-ins Guide.*

### Sample Rate Conversion and Bit Depth Reduction

If you want to do both a sample rate conversion and a bit depth reduction when mixing down, first convert the sample rate while maintaining the higher bit depth, and then reduce the sample rate-converted file to the lower bit depth, using a dither. By keeping the higher bit depth when performing the sample rate conversion, you ensure the highest possible audio quality.

# Recording to Tracks

You can create a submix in your Pro Tools session and record it to available tracks in the same session. This technique lets you add live input to the mix, as well as adjust volume, pan, mute, and other controls during the recording process. You can also use this technique instead of Bounce to Disk to create mixed tracks directly in your Pro Tools session.

### Voice Requirements

Recording a submix to new tracks requires an available voice for each track that you want to record. Make sure you have enough voices available to play back all tracks that you want to record and enough voices available to record the destination tracks.

In contrast, the Bounce to Disk command lets you bounce all available voices to disk without holding any in reserve, but you cannot manually change any controls during the bounce. See "Bounce to Disk" on page 836 for more information.

📖 *For information about voice management, see "Track Priority and Voice Assignment" on page 161.*

⚠️ *With Pro Tools HD, RTAS plug-ins placed on Auxiliary Input, Master Fader, and Instrument tracks will use additional voices and may introduce extra latency based on the HW Buffer Size. For more information, see "Voice Usage and Total Latency for RTAS Plug-ins" on page 753.*

### To record a submix to a track:

**1** Apply any plug-ins or external processors you want to add to your audio tracks or Auxiliary Inputs before you record.

**2** Set the main channel output of the tracks you want to include in the submix to a bus path. If you are using stereo or multichannel tracks, set the panning of each track.

**3** Make sure Loop Playback is not enabled.

**4** Choose Track > New and create one or more mono, stereo, or multichannel audio tracks.

**5** If you are recording in stereo, pan the new stereo track (or two mono tracks) hard left and right.

**6** Set the input of each destination track to match the bus path from which you are recording.

**7** Set the output of your new tracks to your main output path.

**8** Select Options > Link Timeline and Edit Selection.

**9** Select audio to record. The start, end, and length of the recording can be based on the cursor location or Timeline and Edit selections.

- Selection-based recording automatically punches in and out of recording at the selection start and end. Be sure to include time at the end of a selection for reverb tails, delays, and other effects.

- If you do not make a selection, recording will begin from the location of the playback cursor. Recording will continue until you press Stop.

**10** Record enable the new tracks and click Record in the Transport window.

**11** Click Play in the Transport window to begin recording the submix.

**12** If recording a selection of audio, recording will stop automatically. If performing an open-ended recording, click Stop, or punch out of recording.

# Bounce to Disk

The Bounce to Disk command lets you mix down with all available voices on your system. Since it records to separate audio files, you do not have to reserve any tracks for a bounce.

Pro Tools bounces are done in real time, so you hear audio playback of your mix during the bounce process (though you cannot adjust it).

You can use the Bounce to Disk command to create and automatically import loops, submixes, or any audio into your session. You can use it to create a final mono, stereo, or multichannel master, in any of several audio file formats. Bounce to Disk provides conversion options for sample rate, bit resolution, and format.

When you bounce a track to disk, the bounced mix includes the following:

**Audible Tracks** All audible tracks that are routed to the output which is selected as the source of the bounce are included in the bounce. Any muted tracks are not included in the bounce. If you solo one or more tracks, only the soloed tracks are included in the bounced mix.

**Automation** All read-enabled automation is played back and incorporated in the bounced mix.

**Inserts and Sends** All active inserts, including real-time plug-ins and hardware inserts, are applied to the bounced mix.

**Selection or Track Length** If you make a selection in a track, the bounced mix will be the length of the selection. If there is no selection in any track, the bounce will be the length of the longest audible track in the session.

**Time Stamp Information** Bounced material is automatically time stamped so that you can drag it into a track and place it at the same location as the original material. For more information about time stamping, see "Time Stamping" on page 903.

### Bounced Files Are Delay-Compensated

Pro Tools compensates for any bus and plug-in delays due to a bounce. This means that if a bounced file is imported back into a session, and placed directly in time against the source mix, it is time-aligned with the original source mix.

### Record-Enabled Tracks and TrackInput-Enabled Tracks Cannot Be Bounced

Pro Tools does not allow you to bounce tracks that are either record-enabled or in Input Only monitoring mode.

### To Bounce to Disk:

**1** Make a Timeline selection to define the range to be bounced.

**2** Choose File > Bounce to > Disk.

**3** Configure the Bounce options (see "Bounce Options" on page 837).

**4** Click Bounce.

### Bouncing with Mute Frees Assigned Voice (Pro Tools HD Only)

When bouncing sessions that include muted tracks, enabling "Mute Frees Assigned Voice" can, in some instances, increase the number of tracks that can be successfully bounced. See "Mute Frees Assigned Voice" on page 171.

# Bounce Options

When you use the Bounce to Disk command, you can configure several file options.
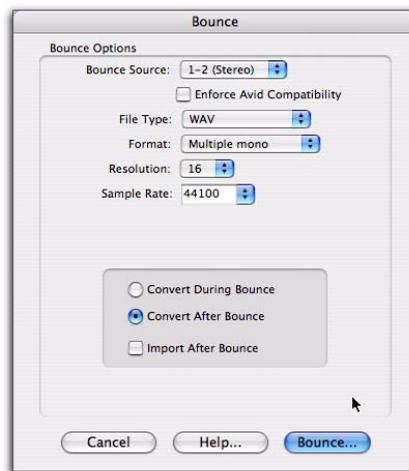


*Bounce to Disk dialog, with conversion and options enabled*

## Bounce Source

Select any mono, stereo, or multichannel output or bus path as the source for the bounce. All currently active output or bus paths as defined in the I/O Setup dialog are available as the Bounce Source.

### To set the bounce source:

■ Select an output or bus path from the Bounce Source selector.
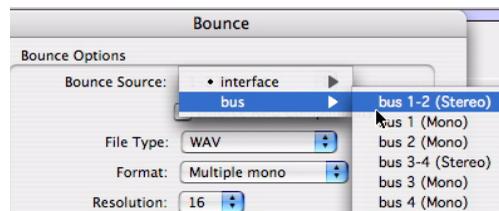


*Select a bounce source*

## Enforce Avid Compatibility

Creates frame-accurate edits, wraps the files as OMFI (unless File Type is MXF), and limits the sample rate options to 44.1 kHz or 48 kHz. Dither without noise shaping will be applied to files being exported from 24-bit to 16-bit.

## File Type

Selects the (creator) type for the bounced files.
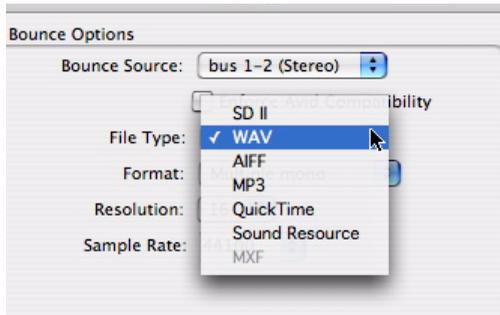


*Selecting a file type*

### Sound Designer II

#### (Mac Only)

This was the native format for older Mac-based Pro Tools systems. Select this to use the bounced audio with any Digidesign application for Mac.

### BWF (Broadcast .WAV Format)

This was the native format for older Windows-based Pro Tools systems, but is now supported on Windows and Mac. To use a BWF (.WAV) file in Pro Tools, you can drag and drop from the DigiBase browser, Windows Explorer or Mac Finder, or a folder, or you can use the Import Audio command. Files in this format do not have to be converted to be used in Pro Tools.

### AIFF (Audio Interchange File Format)

To use an AIFF file in Pro Tools, you can drag and drop from the DigiBase browser, Windows Explorer or Mac Finder, or you can use the Import Audio command. Files in this format do not have to be converted to be used in Pro Tools.

### QuickTime

QuickTime is Apple's multimedia audio file format. Pro Tools does not directly support this type of file in its sessions. To use a QuickTime audio file within Pro Tools, use the Import Audio command. The QuickTime format is popular for attaching to emails, to simplify long-distance project review and approval. Many popular multimedia applications also support QuickTime.

### Sound Resource

#### (Mac Only)

This file type is supported by some Mac software applications. Pro Tools does not directly support this type of file in its sessions. To use a SND file within Pro Tools, use the Import Audio command. The SND format is useful if you plan to use your audio with other Mac applications that do not support Sound Designer II or AIFF formats.

### Windows Media

#### (Windows Only)

Windows Media formatted files can contain audio, video, or script data stored in Windows Media Format. A Windows Media Format file may have an .asf, .wma, or .wmv file name extension.

## MXF (Material Exchange Format)

### (Pro Tools with DigiTranslator 2.0 Only)

MXF is a media file format that includes both video and audio files, and is designed for the interchange of audio-visual material with associated data and metadata. It was designed for improving file-based interoperability between servers, workstations, and other content creation devices.

AAF and OMF sequence format files can refer to MXF media files, or have MXF media files embedded within them. Pro Tools with DigiTranslator 2.0 supports AAF embedded sequences.

📖 *See the DigiTranslator Guide for more information.*

## MPEG-1 Layer 3 (MP3)

The MPEG-1 Layer 3 compression format (MP3) is used for streaming and downloading audio over the Internet, and for playback on portable devices. The MP3 Option is required to use this file type.

💡 *The MP3 Export Option is available for purchase from the online DigiStore at the Digidesign website (www.digidesign.com).*
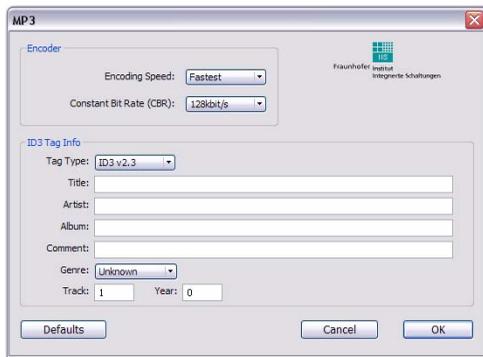


*MP3 Export Options*

The MP3 encoder provided as an install option with Pro Tools is a fully functional 30-day demo version. To purchase the full version of the MP3 encoder, visit Digidesign's website (www.digidesign.com).

When you select this format, the Resolution pop-up menu in the Pro Tools Output Options dialog is unavailable. The resolution is set by the encoder.

The sample rate chosen is given to the codec as a base sample rate for operations. The actual sample rate of the resulting file is determined in the MP3 Encoder Options dialog. For example, if a base sample rate of 48000 Hz is chosen, the MP3 Encoder Options dialog will allow output streams in 48, 24, or 12 kHz, depending on encoding quality.

When you export or bounce to MP3 format, you can set the following options:

### Encoder Settings

**Encoder Speed** Determines the audio quality of the bounced file. There are two options: Highest Quality and Fastest Encoding Time.

The Highest Quality setting can take up to five times longer to process audio than the Fastest Encoding setting, so you should use it only when the highest fidelity is essential and you have a considerable amount of time to devote to the encoding process.

**Constant Bit Rate (CBR)** Encodes the file at a single bit rate that you choose from the CBR pop-up menu. Because the bit rate is fixed, the quality of the encoded audio will vary depending on the nature of the material being compressed. This option is best for streaming over the Internet, since it has predictable bandwidth requirements.

### ID3 Tag Info Settings

**ID3 Tag Type** The ID3 tag stores data about the encoded audio file that is used by MP3 players to display information about the file. Pro Tools supports three versions of this tag, in order to provide backward compatibility with older MP3 players:

- ID3 v1.0: Appears at the end of a streaming MP3 file, so that tag information is only displayed after software streaming is finished.

- ID3 v1.1: Same as version 1.0, but adds track number information to the tag.

- ID3 v2.3: Appears at the front of a streaming MP3 file, so that tag information is displayed when streaming begins.

⚠ *While ID3 v2.3 is becoming the standard MP3 format, not all MP3 players currently support ID3 v2.3. Contact the developer of your player software for compatibility information.*

**Title/Artist/Album/Comment** Type the title, artist, and other information for the MP3 file. This information is displayed by many MP3 players.

**Genre** Choose a genre for the file. This information is displayed by many MP3 players, and can appear in searchable catalogs and databases.

**Track Number** If you select ID3 tag type v1.1 or v2.3, you can enter a CD track number for the file. This information is displayed by many MP3 players.

**Year** Enter a year for the file. This information is displayed by many MP3 players.

### Mac File Settings

**Mac File Type and Creator** If you expect your file to be used on a Mac, you can enter the Mac file type and creator. This will allow users to double-click the file to open their MP3 player.

### Default Button

To restore all settings in this dialog to their default values, click Defaults.

## Format

This is the format for the bounced result. Choices are Mono (Summed), Multiple Mono, and Stereo Interleaved.

### To set the format of the bounced file:

- Select a file format from the Format selector.
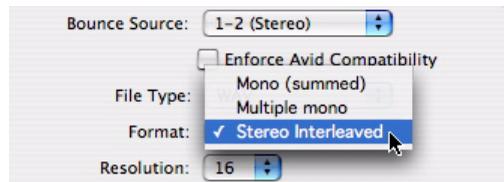


*Bounce dialog (file Format type)*

**Mono (Summed)** Creates a single disk file that is a summed mono mix of the current sources being monitored.

Before bouncing to disk, make sure your levels are below –3 dB to avoid clipping that occurs when left and right signals exceed –3 dB below maximum, or full code (0 dBFS).

**Multiple Mono** Creates multiple mono files with the same number of channels as the source path.

- If the source output or bus path is stereo, two mono files will be created, and appended with ".L" and ".R" suffixes on bounce.

- If a multichannel format is used (for example, six-channel, 5.1), individual mono files will be created for each member of the path. Files will be appended with path suffixes according to the path definition in the I/O Setup dialog.

- If the source output or bus path is mono, the pop-up menu will switch from multiple mono to mono, and will create one mono file (no summing of multiple sources).

**Stereo Interleaved** Creates a single, interleaved file that contains all of the bounced streams from the chosen output path. In an interleaved stereo bounce, tracks assigned to odd-numbered outputs are sent to the left channel, and tracks assigned to even-numbered outputs are sent to the right channel.

Pro Tools also lets you bounce multichannel interleaved files of any supported file type. This can simplify file management of mixes and projects for backup and archiving.

Pro Tools does not support interleaved files natively. This means that they must be split into multi-mono files on import (requiring additional disk space).

## Resolution

This option lets you select between three different bit resolutions for the bounce conversion.

Bounce to Disk does not apply dither when converting during or after a bounce to a lower resolution (including when bouncing to 16-bit). When you need to create a lower resolution file, use a dither plug-in, on a Master Fader assigned to the bounce source path. This dithers the bounced file, before the Bounce to Disk conversion truncates down to the final file resolution. (See "Dithering" on page 834.)

Resolution choices include the following:

**8-bit** This resolution is often used in multimedia applications. If the material you are working with is relatively simple, you can use the Pro Tools "Squeezer" feature for optimal results. See "Use Squeezer" on page 842 for details.

**16-bit** This is the Compact Disc standard bit resolution.

*If your session is 16-bit, you should still use dither plug-in on the output mix, because all Pro Tools systems process audio internally at higher bit depths.*

**24-bit** This setting provides the highest resolution. It is useful when you want to create a final mix without losing any resolution (for example, if you are delivering a final mix that will be ready to master).

**To set the resolution of the bounced file:**

■ Select a bit depth from the Resolution selector.

## Sample Rate

This option lets you save to any of several sample rates. Choices are dependent on your Pro Tools system and Digidesign audio interfaces.

### Sample Rate Conversion Quality

If you choose a sample rate that differs from the original sample rate of the session, the conversion options become available. You can configure the conversion quality, and schedule conversion to occur during, or after, the bounce. See "Sample Rate Conversion Quality Option" on page 842 for more information.

The following are the more common sample rates, and their applications. Higher sampling rates will provide better audio fidelity for recording and playback, and also for processing with dynamics, dither (with noise shaping), and analog emulation plug-ins.

**192000** This is a supported sample rate for some audio DVDs, and provides the highest quality audio fidelity with compatible audio interfaces (such as the 192 I/O).

**176400** You may want to work at a sample rate of 176.4 kHz if the final delivery will be at 44.1 kHz (such as compact disc). This will provide a slightly faster sample rate conversion to 44.1 kHz than from 192 kHz.

**96000** This is a supported sample rate for DVD audio and provides high-quality audio fidelity with compatible audio interfaces (such as the 192 I/O, 96 I/O, 96i I/O, 003, and Digi 002).

**88200** You may want to work at a sample rate of 88.2 kHz if the final delivery will be at 44.1 kHz (such as compact disc). This will provide a slightly faster sample rate conversion to 44.1 kHz than from 96 kHz.

**48000** This is a standard sample rate for Professional and DVD video, as well as some broadcast and recording label archiving, and is supported by DA-88/98, DAT, and ADAT decks.

**44100** This is the standard sample rate for compact discs (CD), and is supported by DA-88/98, DAT, and ADAT decks.

**Custom** For a custom sample rate, click in the sample rate window and manually enter in a value.

**Pull-Up and Pull-Down Rates** All available sample rates support pull-up and pull-down rates, or other specialized rates.

## Sample Rate Conversion Quality Option

When you specify a different sample rate for a bounced file (for example, when mixing a session recorded at 96 kHz to 44.1 kHz for release on an audio CD), Pro Tools uses the Conversion Quality option to determine the quality of sample rate conversion used.

There are five possible settings, ranging from Low (lowest quality) to Tweak Head (highest quality). The higher the quality of sample rate conversion, the longer it takes to convert the bounced file.

## Use Squeezer
### (8-Bit Resolution Only)

The Use Squeezer option uses a proprietary DSP algorithm specifically designed for performing 8-bit conversion of simple source files such as voice-overs. It optimizes the dynamics of the audio by preprocessing it using compression, limiting, and gating before conversion to 8-bit resolution. This results in greater apparent

loudness in the signal, and improved intelligibility. If you are converting a more complex 16-bit audio file to 8-bit resolution, test this option before converting all of your material.

## Convert During or After Bounce

The Bounce to Disk dialog can perform any conversion options, including sample rate and bit depth conversion, during a bounce or post-bounce.

The following options are only available when bouncing to a different file type, format, resolution, or sample rate.

**Convert During Bounce** This option may take less time than Convert After Bounce, but does so at the expense of plug-in automation playback accuracy.

**Convert After Bounce** The Convert After Bounce option, though it takes more time, offers the highest level of plug-in automation accuracy possible.

## Import Into Session After Bounce

The Import After Bounce option automatically imports the newly bounced files into the Region List so you can place them in tracks. If your newly bounced files are split stereo files (Multiple Mono), they are listed together in the Region List.

⚠ *The Import After Bounce option is only available if the target file type and sample rate for the bounce is the same as the file type and sample rate of the current session, and the target resolution (bit rate) is the same or lower than the resolution of the session. In addition, tracks bounced to a Stereo Interleaved file cannot be automatically imported after a bounce.*

## Help

The Help button opens a display-only dialog that describes the Bounce to Disk features.

## Recording a Submix (with Bounce to Disk)

You can create a submix with the Bounce to Disk command by muting tracks or bypassing inserts that are not part of the submix, and selecting the part of the session you want to bounce. Or, you could solo only the audio you want to bounce.

You can also create a submix by recording to new tracks. For details, see "Sample Rate Conversion and Bit Depth Reduction" on page 835.

**To bounce a submix to disk and bring it into the session:**

**1** Configure your submix using sends, Auxiliary Inputs, and Master Faders. (See "Signal Routing for Monitoring and Submixing" on page 735.)

**2** Do one of the following:
- To bounce the entire session, click Return to Zero in the Transport window to go to the beginning of the session.

– or –

- To bounce a portion of the session, enable Options > Link Timeline and Edit Selection, and make a selection in the Edit window.

**3** Choose File > Bounce to > Disk.

**4** Configure bounce options and settings.

**5** Verify the bit resolution for the bounced file matches the bit resolution of the session.

**6** Verify the sample rate for the bounced file is supported by the session and the audio interface.

**7** If required, verify the file type and format for the bounced file matches the file type and format of the session.

**8** Select the Import After Bounce option.

**9** Click Bounce.

**10** Select a destination for the new audio file, enter a name, and click Save.

Pro Tools bounces are done in real time, so you hear audio playback of your mix during the bounce process. You cannot adjust controls during a Bounce to Disk.

**To bring bounced files back into tracks:**

**1** Do one of the following:

- If the newly bounced audio was automatically imported into the session, drag the new files from the Region List to existing tracks in your session.

💡 *If you bounced from a selection point, you can snap the file to the bounce point: Start-drag (Windows) or Control-drag (Mac) the region from the Region List to the destination track.*

- If the bounced files are not available in the Region List, import them into the session with the Import Audio command, or drag and drop the bounced files from a DigiBase browser.
- If you are placing multiple files, keep channels time-aligned with each other by Shift-selecting them in the Region List, and dragging them simultaneously into existing tracks of the right format.

**2** When working with stereo tracks, set the Pan controls hard left and hard right.

**3** Solo the track with the bounce on it.

**4** Click Play in the Transport window to hear the results of the bounce.

# Final Mixdown

In final mixdown, you create a mix that includes all your edits, automation, and effects processing.

**To bounce a final mix to disk:**

**1** Adjust track output levels, and finalize any mix automation for each track in the session.

**2** Adjust any real-time plug-in and effects settings and their automation for each track in the session.

**3** Make sure that all of the tracks you want to include in the bounce are audible (not muted or inactive).

**4** Assign the output of each of the tracks you want to include in your bounce to the same output or bus path.

**5** Add dither. See "Dithering" on page 834.

**6** Do one of the following:

- To bounce the entire session, click Return to Zero in the Transport window to go to the beginning of the session.

*By default, the bounce will end at the last audio waveform or MIDI note. To end the bounce sooner, make an Edit or Timeline selection to define the end (and start) of the bounce.*

– or –

- To bounce a portion of the session, enable Options > Link Timeline and Edit Selection, and make a selection in the Edit window.

**7** Choose File > Bounce to > Disk.

**8** Choose the source path you want to bounce.

**9** Configure other Bounce to Disk settings as appropriate. See "Bounce Options" on page 837.

**10** Click Bounce.

**11** Select a destination for the new audio file, enter a name, and click Save.

# Mastering

In the final mastering process, you might record directly to disk, DAT, DVD, CD, stereo mastering recorder, or a multitrack recorder (for surround mixes).

Once you have created a master of your session, you can transfer it to a portable medium for duplication. You can transfer the master file to CD or DAT to be used as a master for pressing compact discs.

## Mastering to a Digital Recorder

Although it is usually best to master sessions directly to hard disk, Pro Tools also lets you master digitally, direct to any AES/EBU-equipped or S/PDIF-equipped digital recorder such as a DAT deck.

### 24-Bit Input and Output

Pro Tools|HD systems support full 24-bit audio input and output signal paths, with 48-bit internal mixing and processing, providing an additional 16 bits of headroom at the top of a channel's dynamic range, and 8 bits at the bottom. You can exchange files with other 24-bit recording systems without any bit-depth conversion (as long as they are in a compatible file format).

Pro Tools LE systems support 24-bit input and output, and uses 32-bit floating point mixing and processing internally. You can exchange files with other 24-bit recording systems without any bit-depth conversion (as long as they are in a compatible file format).

## Mastering and Audio Compression

Although audio compression is often an indispensable tool in analog recording, it can present problems in the digital domain. If you compress an input signal at a very high ratio, you create a signal that contains a much higher overall power level compared to its transients. By recording a number of such signals at the highest possible level on multiple tracks, you create a scenario that is more likely to clip the mixed output signal.

High-power compressed signals, when mixed together, create an extremely high-level output. This output may rise above the full-code level, resulting in clipping.

To avoid this problem, watch the overall level of your program material—use a meter on a Master Fader, or use an external mastering deck's meters to help identify clipping. If you are mastering to hard disk, avoid mixing full-code audio signals together at unity or "0" level, as this invariably causes clipping.

## Mastering and Error-Correcting Media

Random access media (such as hard disks, optical cartridges, Bernoulli cartridges or WORM drives) can produce a true digital copy of your data, because every bit value is maintained. Sequential media (such as DAT tapes) use error correction schemes to fix the occasional bad data that is received in a digital transfer. These corrections are deviations from the actual data, and with successive reproductions, represent a subtle form of generation loss.

You can avoid this loss by creating and maintaining masters on random-access digital media (such as a hard drive) and transferring them to sequential digital media (such as DAT tapes) only as needed.

**To configure Pro Tools for direct digital stereo mastering:**

**1** Connect your digital recorder to your system's digital outputs. If your system has multiple digital outputs, use channel 1 and 2 of the audio interface.

**2** In Pro Tools, set the appropriate digital format and output from the Hardware Setup dialog or I/O Setup dialog. (See "Configuring Pro Tools Hardware Settings" on page 43.)

**3** Set the clock on the master device to slave to Pro Tools digital clock, or to provide master clock to Pro Tools. (See "Configuring Pro Tools Hardware Settings" on page 43.)

**4** On your digital recorder, choose the appropriate digital format for the connections.

**5** In Pro Tools, set all audio tracks you want to your master outputs 1–2 path.

**6** Click Return to Zero in the Transport window to go to the beginning of the session.

**7** Press Record on your digital recorder.

**8** Start playback of your session.

**9** When your session has finished playing, stop the digital recorder.

# Part VIII: Video, Sync, Surround

# Chapter 39: Pro Tools Setup for Surround (Pro Tools HD Only)

This chapter explains how to set up and configure Pro Tools sessions for multichannel mixing.

Multichannel mixing is supported on Pro Tools|HD systems only. In this chapter, all references to Pro Tools refer to Pro Tools|HD systems.

📖 *For information on fundamental surround concepts, see the Pro Tools Sync & Surround Concepts Guide.*

## Pro Tools Audio Connections for 5.1 Mixing

While all 5.1 mixing formats provide the same speaker arrangement, there are three primary standards in use for the track layout of the individual channels that comprise the 5.1-format multichannel mix.

In the following table, it is assumed that surround channels are mapped to outputs 1–6 of a Pro Tools audio interface. Use channels 7–8 to monitor a stereo mix for a stereo version, or for cue mixes and monitoring.

*Table 40. Track Layouts for 5.1 Formats*

| Formats | Track Layout | | | | | |
|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** |
| Film (Pro Tools default) | L | C | R | Ls | Rs | LFE |
| SMPTE/ITU for Dolby Digital (AC3) and Control\|24 | L | R | C | LFE | Ls | Rs |
| DTS with ProControl | L | R | Ls | Rs | C | LFE |

**To connect your audio interfaces for 5.1 format mixing and monitoring:**

**1** Determine the 5.1 format and track layout you want to use.

**2** Connect the output channels of your audio interface to the corresponding input channels of your monitoring system according to the assignments listed in Table 40 on page 849.

📖 *If you use a Digidesign control surface, see its guide for more information.*

# Configuring Pro Tools for Multichannel Sessions

Configuring Pro Tools and sessions for multi-channel mixing can be done in any (or all) of the ways described in this section.

### New Sessions

You can create a new session and choose a surround mix I/O Settings file as the *default* I/O Setup. See "New Sessions and I/O Settings" on page 850.

### Remixing Sessions in Surround (Importing Multichannel I/O Setups)

By creating or importing a surround mix I/O Settings file in the I/O Setup dialog, multichannel paths can be made available in any stereo (or other format) session. You can then reassign track routing from the original stereo paths to multichannel paths. Inactive and active paths simplify reassignment. See "Importing Multichannel I/O Setups" on page 851.

### Custom Multichannel Paths

You can customize and redefine existing paths in the I/O Setup dialog. For more information, see "Custom Multichannel Paths" on page 852.

### Importing Session Data

By using the Import Session Data command (File > Import > Session Data), you can import tracks and media from other sessions plus their associated paths and track assignments. After importing session data, you can use the I/O Setup dialog to configure main and sub-paths for the requirements of the session. For more information, see Chapter 6, "I/O Setup."

# New Sessions and I/O Settings

When you create a new session, you can specify a surround format that you want to use as your I/O Setup. Default path configurations are provided as I/O Settings files, for stereo and surround mixing.

⚠ *In order to see multichannel options in Pro Tools, the Surround Mixer plug-in must be installed in the Plug-ins folder. This plug-in can be installed with Pro Tools (see the Getting Started Guide). If it is not installed, you can move it from the Plug-ins (Unused) folder to the Plug-ins folder.*

Once you create the new session, you can create and import tracks, import audio, and assign signal routing to set up your mix.

**To create a new session for multichannel mixing:**

**1** Choose File > New Session.

**2** Select one of the available 5.1 settings from the I/O Settings menu (Film, SMPTE/ITU, or DTS/ProControl Monitoring).



*Configuring a new session for a 5.1 mix*

**3** If needed, change other parameters in the Session Parameters section.

**4** Name the session.

**5** Click Save.

The surround presets preconfigure the I/O Setup dialog for the new session with default 5.1 format main and sub-paths for outputs and busses.
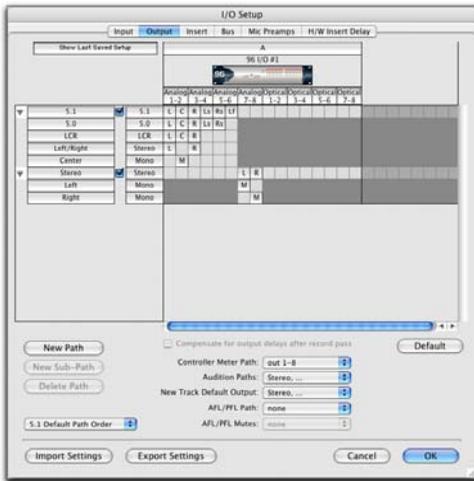


*Standard 5.1 format (film) output paths*

## Surround Mix Settings Files

The surround mix I/O Settings provide output and bus paths for three specific track layout standards in the new session. (For information on inputs and insert paths, see "Default Input and Insert Paths with 5.1 Settings" on page 851.)

*Settings Files and Track Layouts*

| 5.1 Settings | Track Layout |
|---|---|
| Film (Pro Tools Standard) | L C R Ls Rs LFE |
| SMPTE/ITU (Control\|24 Monitoring) | L R C LFE Ls Rs |
| DTS (ProControl Monitoring) | L R Ls Rs C LFE |

All three 5.1 format I/O Settings (Film, SMPTE/ITU, or DTS/ProControl Monitoring) provide the following default output and bus paths for the new session:

### Default 5.1 Output Paths

- One 5.1 main output path, with sub-paths for 5.0 (no LFR), LCR, Left/Right (stereo), and Center (mono).

– and –

- One stereo main path with two mono sub-paths.

### Default 5.1 Bus Paths

- One 5.1 main bus path, with sub-paths for 5.0 (no LFE), left/right (stereo), LCR, and center (mono).

– and –

- One stereo main path with two mono sub-paths.

### Default Input and Insert Paths with 5.1 Settings

The 5.1 Mix settings files provide default stereo main paths and mono sub-paths for inputs and inserts. If you need multichannel input paths or inserts, you can create them in the I/O Setup dialog (see "Custom Multichannel Paths" on page 852).

## Importing Multichannel I/O Setups

The I/O Setup dialog can import and export settings files. Importing I/O Setup settings files is useful when you want to remix a stereo session in surround. You can also use this feature to prepare a session for transfer to a different Pro Tools system, or to simply save and exchange I/O Settings.

**To import a multichannel I/O Setup settings file:**

**1** Choose Setup > I/O.

**2** Click Import Settings.

**3** Select the settings file to import and click Open.

**4** If the current session has existing path definitions that do not match those in the imported settings file, Pro Tools asks whether you want to delete the existing paths or retain them and add the imported settings to your session.

- Click No to add new paths to your current I/O Setup configuration.

- Click Yes to replace your current I/O Setup configuration with the imported settings.

**5** Click OK to close the I/O Setup.

## Exporting I/O Settings

Exporting I/O Setup settings files lets you build a library of multichannel setups for different projects.

**To export an I/O Setup settings file:**

**1** Choose Setup > I/O.

**2** Click Export Settings.

**3** Name and Save your current I/O Settings.

## Custom Multichannel Paths

The I/O Setup dialog lets you create and customize signal paths for any supported multichannel mixing format.

Multichannel paths and sub-paths are mapped to inputs, outputs or internal busses in the Channel Grid. When you select a preset 5.1 I/O Settings file, default layout for the corresponding multichannel format paths you create will match the selected format's track layout.

In addition, the I/O Setup dialog, like the Main page of the Hardware Setup dialog, provides controls for routing the physical inputs and outputs on your audio interface to available inputs and outputs in Pro Tools.

*When creating 5.1 format paths, you can specify the default track layout. See "Default Path Order for 5.1 Tracks" on page 854.*

## Remapping Channels

The I/O Setup dialog and its Channel Grid also let you remap channels. This is especially useful to route channels within a multichannel path, without having to repatch your audio interfaces.

You can remap paths to any required configuration, limited only by your systems resources, and the I/O Setup dialog requirements for channel overlapping and naming (see "Valid Paths and Requirements" on page 63 for more information).

*See also "Example Paths and Signal Routing for a Surround Mix" on page 863.*

### Example LCRS Setup

The following example shows one possible way to configure the I/O Setup dialog to mix in 4-channel LCRS format, with a 96 I/O.



*Example LCRS output main and sub-paths*

*For additional I/O Setup information, see "Creating New Paths" on page 57.*

**To define an LCRS path:**

**1** Choose Setup > I/O, and click the Output tab.

**2** Click New Path.

**3** Select LCRS from the Path Format selector.

**4** Name the path LCRS.

**5** In the Channel Grid, click in the box below the first (left-most) audio interface channel for the path. Pro Tools automatically fills up the adjacent units to the right. If you click in the LCRS row under channel 1, the LCRS path will be mapped across channels 1–4.

**6** Select the new LCRS path and click New Sub-Path.

**7** Name the new sub-path LCR and select LCR as the Path format. Click in channel 1 in the LCR row to map the path.

**8** Select the LCRS path, click New Sub-Path, and create a stereo sub-path for front Left and front Right.

**9** Select the LCRS path, click New Sub-Path, and create a mono sub-path for the Center channel.

**10** Select the LCRS path, click New Sub-Path, and create a mono sub-path for the Surround channel.

**11** Click OK to close the I/O Setup.

### 5.1 Tracks, Formats, Mapping, and Metering

Path definitions in I/O Setup determine how audio is routed through, and metered on, your audio interfaces.

Pro Tools internal (on-screen) metering of 5.1 format paths always follows the Film track layout:

L C R Ls Rs LFE

Pro Tools track layout of 5.1 format audio tracks in the Edit window also conforms to the Film layout (arranged top to bottom). See the illustration "5.1 Track Layouts, Routing, and Metering" on page 854.

In the I/O Setup dialog, you can route these signals out of your audio interfaces according to any track layout (such as DTS or SMPTE/ITU).

**To re-map channels in a path:**

■ Click and drag a channel to a new valid location in the Grid. Other channel assignments will move (shuffle) to accommodate dragged channels.

# Default I/O Selectors in I/O Setup

The Output tab of the I/O Setup dialog provides selectors for setting I/O defaults in your multi-channel sessions.
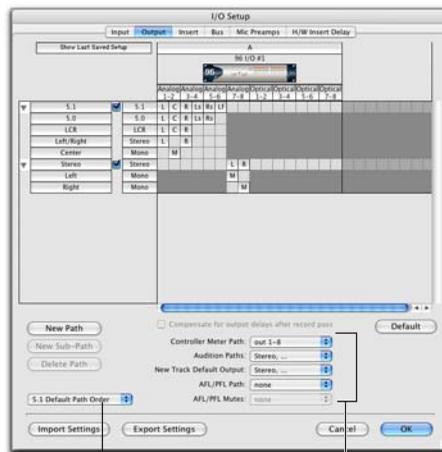


Default Path Order        I/O Setup Options

*Default selectors in the I/O Setup dialog*

**Default Path Order** Selects the default track layout (or, path order) for new 5.1 format (six-channel) paths.

**Controller Meter Path** Selects the path that will be shown in Digidesign control surface output meters. See "5.1 Tracks, Formats, Mapping, and Metering" on page 853 for more information.

**Audition Paths** Selects the monitoring path for previewing audio in the Region List, Import Audio dialogs, and DigiBase. Only outputs on your primary interface can be used as your Audition path.

**New Track Default Output** Selects the default output path for all new tracks, for each supported track format.

☼ *The New Track Default Output can be set to bus paths, as well as output paths.*

**AFL/PFL Path** Selects where tracks are routed to when they are soloed in AFL (After Fader Listen) or PFL (Pre Fader Listen) Solo mode.

**AFL/PFL Mutes (Output Path)** Selects which output is muted when AFL (After Fader Listen) or PFL (Pre Fader Listen) Solo mode is enabled, and a track is soloed.

## Default Path Order for 5.1 Tracks

You can specify the default track layout for all new 5.1 format paths you create.

**To choose a new default 5.1-format path order (track layout):**

**1** Choose Setup > I/O.

**2** Click the Output tab.

**3** Use the Default Path Order menu and submenus to choose the track layout you want.
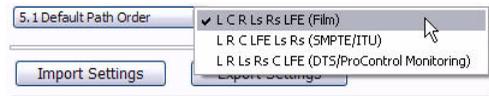


*Default Path Order selector in I/O Setup*

# 5.1 Track Layouts, Routing, and Metering



| 5.1 Format | Tracks | Track Meters | Channel Map in I/O Setup |
|---|---|---|---|
| Film<br>(Pro Tools Standard)<br>L C R Ls Rs LFE | | L C R Ls Rs LFE | L C R Ls Rs LFE |
| SMPTE/ITU<br>(Control\|24 Monitoring)<br>L R C LFE Ls Rs | same<br>L C R Ls Rs LFE<br>(top to bottom) | same<br>L C R Ls Rs LFE<br>(left to right) | L R C LFE Ls Rs |
| DTS<br>(ProControl Monitoring)<br>L R Ls Rs C LFE | same<br>L C R Ls Rs LFE | same<br>L C R Ls Rs LFE | L R Ls Rs C LFE |
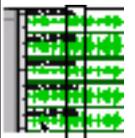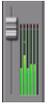
*Figure 23. Track layout of different 5.1 formats*

# Chapter 40: Multichannel Tracks and Signal Routing (Pro Tools HD Only)

Surround sessions typically include a combination of mono, stereo, and multichannel audio, Auxiliary Input, Master Fader, and Instrument tracks, and inserts and busses.

Once the appropriate I/O Setup has been imported or configured, audio, Auxiliary Input, Master Fader, and Instrument tracks can be mixed in multichannel for surround using Pro Tools mixing features.

Multichannel I/O and signal routing is determined by the paths defined in the I/O Setup dialog.

Multichannel mixing is supported on Pro Tools|HD systems only, and only when the Surround Mixer plug-in is installed in your plug-ins folder. In this chapter, all references to Pro Tools refer to Pro Tools|HD systems.

## Multichannel Audio Tracks

Multichannel audio tracks contain an individual channel for each signal in the track (for example, a 5.1 track would have six channels for left, center, right, left surround, right surround, and LFE).

Multichannel audio tracks can be:

• Recorded directly into Pro Tools, using multiple microphones or microphone arrays, or routed to appropriate multichannel Pro Tools Input paths

• Imported from other Pro Tools sessions

• Edited, processed, and mixed in combination with mono and stereo tracks



*5.1 format multichannel audio track*

5.1 format audio files and tracks conform to the Film track layout standard. Regardless of path mapping in the I/O Setup dialog, all 5.1 format audio tracks and meters follow the Film standard track layout:

    L C R Ls Rs LFE

Multichannel audio tracks are not required to mix in multichannel formats. Mono, stereo, and all supported track formats can be mixed using Pro Tools track outputs and sends. See "Multichannel Signal Routing" on page 858.

## Placing Audio in Multichannel Tracks

You can drag audio files and regions from DigiBase browsers, the Region List, Windows Explorer, or Mac Finder, or from other tracks, to place them in multichannel audio tracks.

To do so, the number of channels being dragged must match the destination track format. For example, you can only drag a stereo pair or two mono regions onto a stereo audio track. Similarly, you can only place audio into an LCR track when you have selected three regions. With 5.1 tracks, you must select six mono files or regions.

⚠ *When dragged into a multichannel track, audio files are placed from top to bottom in the exact order that they appear in the Region List or playlist from which they came. For this reason, you may want to rename audio files before dragging them, so that they are in a preferred order. Rename them so that sorting them By Region Name in the Region List results in the preferred order. (For example, with a 5.1-format track, you can rename the audio tracks, so that the arrangement of the tracks corresponds to L, C, R, Ls, Rs, and LFE.)*

## Solo, Mute, and Gain in Multichannel Tracks and Paths

Stereo and multichannel tracks consist of multiple audio signals, linked together. By default, multichannel tracks are linked and are controlled by a single channel fader, and solo and mute switches.

For discrete control of signals, multichannel tracks can be converted into individual mono tracks. For discrete level and phase adjustment, you can insert and unlink a multi-mono Trim plug-in. Both of these techniques are explained below.

⚠ *Once converted to mono, multichannel tracks cannot be relinked into their original multichannel format. However, a multichannel track can be reassembled by dragging the corresponding number of mono files (with the appropriate file suffixes) into a multichannel track, although some automation data may be lost. As an alternative, record the submix of the mono tracks to disk on a multichannel track.*

**To convert a multichannel track into discrete mono tracks:**

**1** Select the multichannel track.

**2** Choose Track > Split Into Mono.

**To have discrete control of gain on individual channels of a multichannel track:**

**1** Insert a multi-mono Trim plug-in on the multichannel track.

**2** Unlink the Trim plug-in by clicking the Link icon so that it is unlit.

**3** Use the Channel selector to display the controls for a channel, and adjust the gain.

📄 *See "Linking and Unlinking Controls on Multi-Mono Plug-ins" on page 860 for more information.*

## Track and Output Formats

When you create new tracks, you specify mono, stereo, or a supported multichannel format for the new tracks.

In the Mix and Edit windows, the track format of a track's output is always visible by the number of track meters contained in its fader strip (for example, a single meter for mono tracks, a pair of meters for stereo tracks, and six meters for 5.1 tracks).

Assigning track output determines the format of that output. For example, a mono track always has a single track meter, even when assigned to a stereo output path. If that same mono track is assigned to a 5.1 output path, it's output will be split among those six output channels, depending on the position of its panner.

### Changing Format

Changing the output format for a given track has several effects:

- The panner that appears in the track will change to reflect the new output format.
- It may be necessary for one or more pan related automation playlists to be created or deleted.

Because changing the output format has these effects, a warning dialog appears whenever you change the output format of a track to a format of fewer channels. Specifically, this will occur whenever automation playlists will have to be deleted.

### Multiple Output Assignments and Track Format

When a track is assigned to more than one path of differing formats, the main output for that track will match the format of the assigned path with the greatest number of channels.

### Multiple Outputs and Automation Playlists

When a track has multiple output assignments, Pro Tools sorts panning data appropriately for each assigned path. For example, if you assign a mono track to a stereo path and a 5.1 path simultaneously, that track will have a 5.1 panner in the Mix or Edit window. When you pan the track, Pro Tools interprets the 5.1 panning moves into stereo panning moves.

This provides a type of parallel mixing. You can create a variety of mixes of differing formats all at the same time by routing your elements to multiple paths.

☼ *Control-Start-click (Windows) or Command-Control-click (Mac) any control in an Output window to show its automation playlist in the Edit window and view any pan automation.*

## Multichannel Signal Routing

To mix in a multichannel format, tracks are assigned to multichannel paths.

Tracks can be mixed in surround using the following two methods:

- By setting a track main output to a multichannel path.

- By assigning a multichannel send to route audio to a multichannel path.



This channel's main output path is mono ("Center music"). It has a multichannel send providing a multichannel panner

This channel's output path is multichannel, so the track provides a multichannel panner
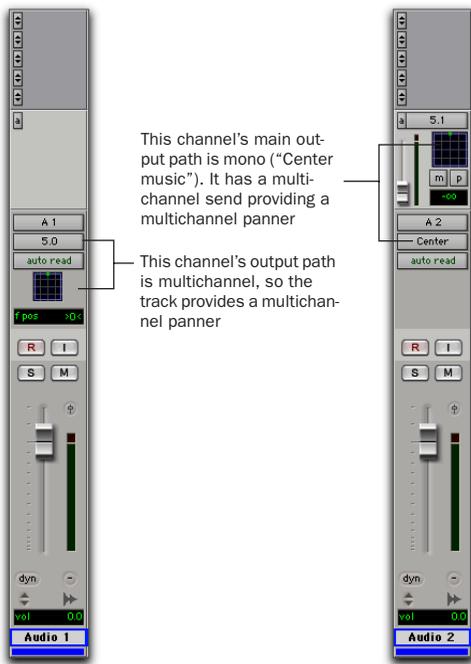
*Two different ways to configure tracks for multichannel mixing*

### Multichannel Track Outputs

Tracks can be routed to multichannel output or bus paths using the track's Output Path selector. This provides a multichannel panner and meter in the Mix and Edit window I/O View.

Additional output assignments can be added by Start-clicking (Windows) or Control-clicking (Mac) the Selector tool and assigning another path.

### Multichannel Sends

All track formats, including mono and stereo, let you assign one or more multichannel sends. This provides a multichannel panner in the Sends View. Sends are also useful to bus tracks for multichannel plug-in processing.

Figure 24 shows a mono audio track with a 5.1 (6-channel) send (View > Sends A–E > Send A).



Multichannel send panner

Mono output format

Mono meter
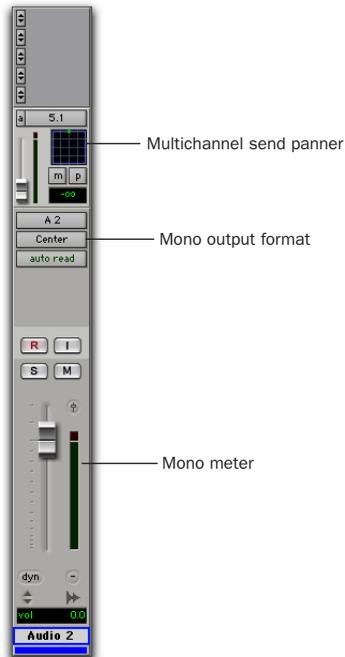
*Figure 24. A mono audio track with a mono output format and a multichannel send*

Pro Tools bussing and submixing features are available for all channel formats, from mono/stereo through 8-channel. For examples of multichannel monitoring, effects processing, and bussing, see "Mixing with Paths and Sub-Paths" on page 861. For mono and stereo mix examples, see Chapter 35, "Basic Mixing."

## Multichannel Auxiliary Inputs and Master Faders

A multichannel Auxiliary Input or Master Fader is used as a return for the multichannel bus. Sends are useful when you need to create an additional, independent mix simultaneously (perhaps of a distinct format), requiring dedicated fader, mute, solo, and automation controls.

You can assign Master Faders to main and sub-paths. Main paths must match the format of the Master Fader, and only one Master Fader can be active and assigned to any single (active) main or sub-path. A Master Fader cannot be assigned to a sub-path if its associated main path is already assigned on another Master Fader. See "Master Fader Tracks" on page 712.

## Multichannel Instrument Tracks

Multichannel tracks can be used to monitor and route multichannel instrument plug-ins or multichannel external MIDI instruments.

## Mono, Multi-Mono and Multichannel Plug-ins

Plug-ins can be used in mono, multi-mono, or multichannel formats.
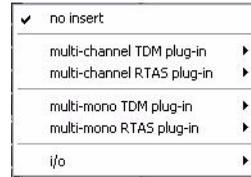


*Plug-in formats*

For information about mono, stereo, and mono-in/stereo-out plug-ins, see Chapter 36, "Plug-in and Hardware Inserts."

**Multi-Mono Plug-ins** Are designed for use on stereo or greater-than-stereo multichannel tracks. Multi-mono plug-ins are useful, or required, in the following situations:

• When a plug-in does not involve multichannel correlated processing (for example, when applying EQ to select sides of a multichannel signal)

• When you need to adjust signals within the multichannel track independently

• When a plug-in does not support multichannel formats

When a multi-mono plug-in is first inserted on a multichannel track, the plug-in controls are linked. You can unlink them for independent adjustment. See "Linking and Unlinking Controls on Multi-Mono Plug-ins" on page 860 for more information.

Multi-mono plugs-ins can also be inserted on stereo tracks, to apply unlinked plug-ins on the left and right channels.

**Multichannel Plug-ins** Are designed for use on stereo and multichannel tracks that require correlated processing, including stereo and multichannel limiting, compression, and similar effects.

## Linking and Unlinking Controls on Multi-Mono Plug-ins

When a multi-mono plug-in is used on a multichannel track of more than two channels, the controls are normally linked. Adjusting the Gain control on one channel, for example, will adjust it for all channels.

If necessary, you can unlink plug-in controls on specific channels of a track and edit them independently. You can also selectively link the controls of specific channels.

For example, to apply equal filter cutoffs to the Ls and Rs (surround) channels in a 5.1 mix, you could link enable just those channels in an unlinked, multi-mono EQ plug-in. Adjusting the controls in the plug-in window for either channel (Ls or Rs) adjusts the other, linked channel as well.
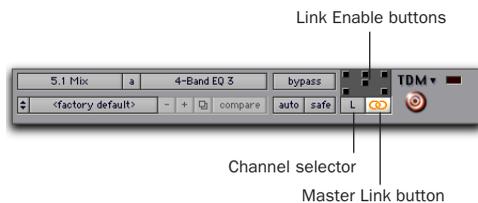


*Channel selector and Link controls*

**Channel Selector** Accesses a specific channel within a multichannel track for plug-in parameter editing. This menu appears only on multi-mono plug-ins inserted on tracks with more than two channels.

**Master Link Button** When enabled, links the controls on all channels of a multi-mono plug-in so that they can be adjusted in tandem.

**Link Enable Buttons** Let you selectively link the controls of specific channels of a multi-mono plug-in. Each square represents a speaker channel. The Master Link button must be disabled to use the Link Enable buttons.

**To unlink controls on a multi-mono plug-in:**

■ Deselect the Master Link button. It is lit when linked, unlit when unlinked.

**To access controls for a specific channel:**

■ Select the channel from the Channel selector.

**To open a plug-in window for all channels of a multi-mono plug-in:**

■ Alt-click (Windows) or Option-click (Mac) the Channel selector.

**To link the controls of specific channels:**

**1** Deselect the Master Link button if it is not already deselected.

**2** Click the Link Enable buttons for the channels whose controls you want to link.

📄 *For more information on using plug-ins, see the DigiRack Plug-ins Guide.*

# Paths in Surround Mixes

Because Pro Tools provides a flexible routing and submixing environment, you can maximize your system's available resources by first identifying the elements that you want to pan dynamically and those that can be placed in certain channels only (see "Mixing with Paths and Sub-Paths" on page 861).

Once you have identified these elements in your session, you can use a combination of main and sub-path assignments, and multichannel panning.

## Mixing with Paths and Sub-Paths

It is rare that every track needs to be "flown" (actively panned in between more than a pair of speakers). In most situations, certain elements are placed in certain speakers and remain there, providing the foundation for a mix.

Figure 25 on page 862 illustrates an example of how panning and signal routing can be combined in a multichannel mix. The following sections describe how to organize your session and signal routing to maximize the available resources.

*See "Extending Stereo Mixing Conventions to Surround Mixing" on page 862 for related information.*

### When to Assign Multichannel Outputs

■ Assign 5.1 paths only to those tracks that need to be panned to all six channels.

For example, a sound effects track with a jet fly-over should be assigned a 5.1 path to be able to fly the sound from front-to-back. In a music mix, you can fly a solo instrument or make a synth pad swirl around the room as a special effect.

Elements that need to be heard in all speakers simultaneously can also be assigned to the multichannel output, whether or not they need active panning in the sound field.

### When to Use Sub-Paths

■ To help simplify large sessions, use sub-paths to route *static* (or, stationary) elements directly to the output channel or channels.

For example, film dialog is often mixed to the center channel to anchor this essential sound element to the picture. Instead of assigning a six-channel panner to dialog tracks and panning the tracks to the center speaker only, you can route the dialog track's main output to a mono (Center) sub-path.
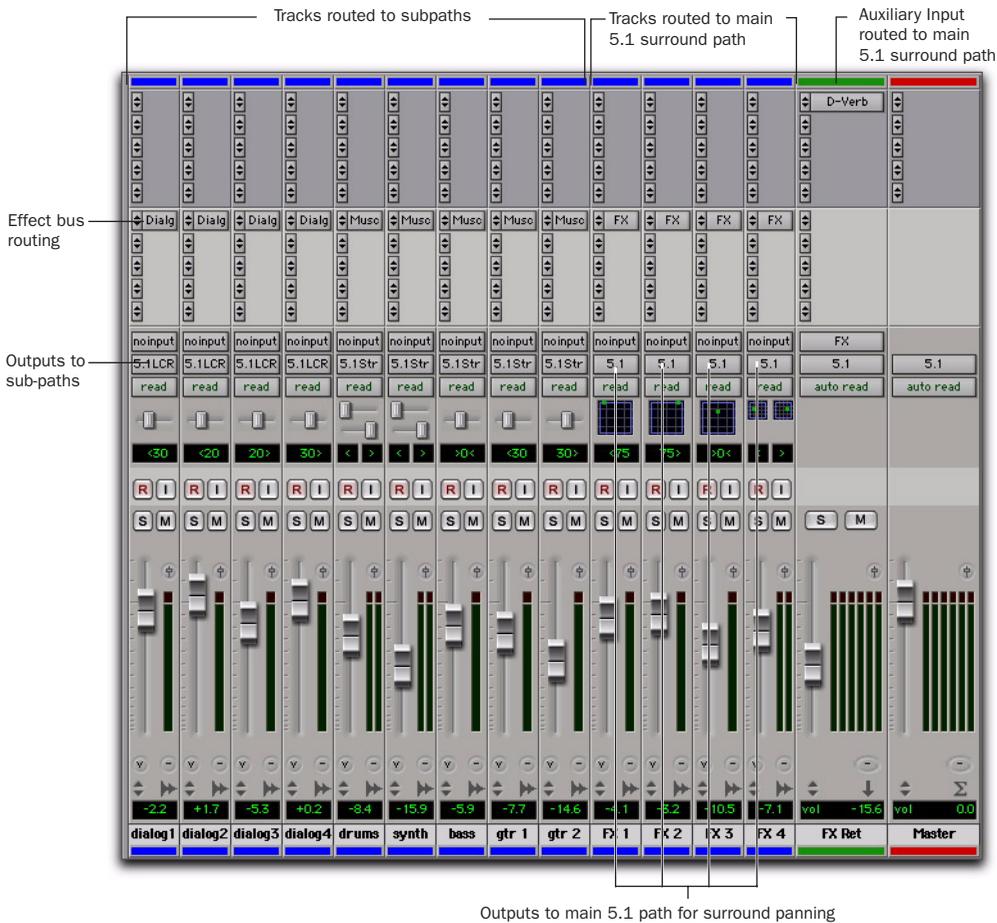
Figure 25. Using signal routing and sub-paths to mix in surround

### Extending Stereo Mixing Conventions to Surround Mixing

Stereo mixing sets the precedent for active and static panning, and surround mixing can benefit from the same basic principles.

Panning a sound back-and-forth between the left and right speakers is best used as a special effect. In a typical music mix, the basic tracks are placed in the stereo sound field and remain there.

Surround mixes can become incoherent if too many elements are continuously moving, For special effects, some tracks can be panned *dynamically,* bouncing between speakers or sweeping from one side to the other.

# Example Paths and Signal Routing for a Surround Mix

The examples that follow show how Auxiliary Inputs, Master Faders, and other Pro Tools signal routing features can be used for stem mixes, submixes, and similar project needs.

In these examples, music and effects are being mixed for a trailer, in 5.1 surround. Separate stem mixes (for music and for effects) are to be mastered to 8-track MDM.

## Example Multichannel Paths

Signal routing is the key element in any Pro Tools surround session. Signal routing is configured and defined in the I/O Setup dialog.

### Example Output Paths

Figure 26 shows output paths defined in the I/O Setup dialog of an example session that was created on a Pro Tools|HD system with one 96 I/O audio interface.



*Figure 26. I/O Setup, example output paths*

Sub-paths have been defined for Mix, Music, and FX main output paths.

Additional stereo output paths, with mono sub-paths, have also been defined for the remaining channels.

## Example Bus Paths

Figure 27 shows example bus paths.
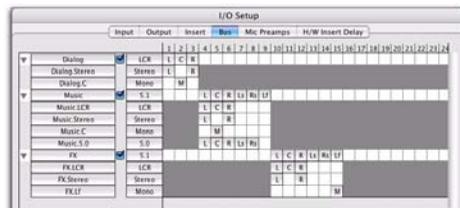


*Figure 27. I/O Setup, example bus paths*

An LCR format path ("Dialog") and two 5.1 format paths ("Music" and "FX") have been defined, each with several sub-paths.

### Example Sub-Paths

Sub-paths let you route to selective channels within the multichannel surround output. In Figure 28, the Mix 5.1 bus has several sub-paths that show this.



*Figure 28. I/O Setup, example sub-paths*

**5.0 Sub-Path** The 5.0 path is a 5-channel sub-path. Use this type of sub-path routing to conserve mixing resources with tracks you want to keep out of the LFE channel.

**LFE Path** A custom LFE sub-path ("Lf") has been added to provide a discrete mono path for the LFE channel.

## Signal Routing Examples

The following examples show how main and sub-paths can be used, using an example session consisting of a 5.1 main mix, with music and effects stems (or submixes).

### Submix Stem Examples

Figure 29 shows a routing configuration for an effects submix. Two tracks are routed to stereo bus sub-paths, while others are assigned to an LCR and a mono bus sub-path. Two tracks (one mono, one stereo) are assigned to multichannel busses for surround panning. A 5.1 Auxiliary Input assigned to the FX main bus path serves as a submixer.



*Figure 29. FX stem*

Figure 30 shows a routing configuration for music tracks.



*Figure 30. Music stem*

Most of the music tracks in this example are routed to the front left/right channels, using a stereo sub-path. A 5.1 Auxiliary Input controls the bus and stem output.

### Main Stems Example

Figure 31 shows two Auxiliary Input channels assigned to additional 5.1 format paths for a main mix.
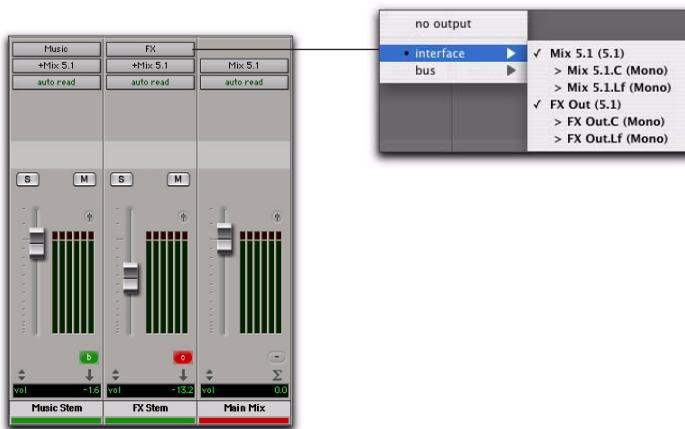


*Figure 31. Main stems*

Multiple output assignments make it possible to configure a number of multi-format mixes. For example, you can assign an additional stereo output to tracks and create a stereo mix at the same time as a 5.1 mix. For more information, see "Multiple Output Assignments" on page 722.

## LFE Examples

LFE tracks and other audio can contribute to the LFE output in two ways:

• Using the LFE fader in Output windows. This LFE signal is post-fader.

– or –

• Using a custom sub-path to route channels discretely.

Figure 32 shows a channel Output window, sending and metering to the LFE channel.
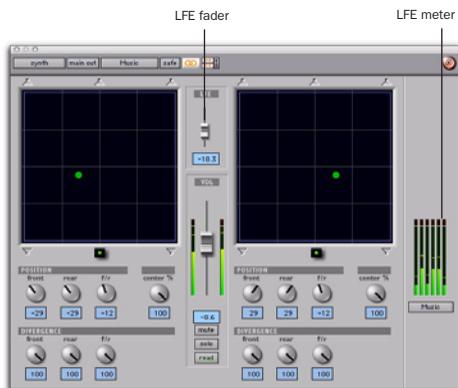


*Figure 32. LFE contribution from a stereo output*

Using the LFE fader, you can add any amount of any multichannel path to the overall LFE output. In the above example, the track's Center percentage has been turned off, and the LFE fader has been raised to route it to the LFE channel.

Figure 33 shows how a "traditional" LFE track can be routed to only the LFE channel. This example uses a custom-defined LFE sub-path to the FX main bus path.



*Figure 33. Discrete LFE routing*

☼ *LFE faders can follow Mix and Edit Groups. For information, see "Selecting Group Attributes" on page 186.*

▤ *For instructions on how to create a sub-path, see "Custom Multichannel Paths" on page 852.*

### LFE and Filtering

Pro Tools applies no filtering to LFE signals. Some delivery requirements may require filtering for the LFE track. See the *Pro Tools Sync & Surround Concepts Guide* for more information.

# Chapter 41: Surround Panning and Mixing (Pro Tools HD Only)

This chapter explains how to pan and mix in surround with Pro Tools.

Multichannel mixing is supported on Pro Tools|HD systems only. In this chapter, all references to Pro Tools refer to Pro Tools|HD systems.

Before you can pan a track in surround, it must be assigned to an appropriate multichannel output or bus path.

The I/O Setup dialog defines the bussing and output architecture of the Pro Tools multichannel surround mixer. If you have not already done so, it is recommended that you become familiar with main and sub-paths and the I/O Setup dialog before starting multichannel Pro Tools projects.

📄 *See Chapter 39, "Pro Tools Setup for Surround (Pro Tools HD Only)" for more information on multichannel configurations and I/O Setup options. For multichannel signal routing, see Chapter 40, "Multichannel Tracks and Signal Routing (Pro Tools HD Only)."*

## Introduction to Pro Tools Surround Panning

There are four different track panning methods available:

- In the Edit window, using the reduced-height Panner Grid in the I/O View

- In the Mix window, using the reduced-height Panner Grid

- In the Output window, using the full-size Panner Grid

- Through pan automation editing

Control surfaces provide additional panning options. Refer to the documentation for your control surface for more information.

## Mix and Edit Window Panner Grids

In the Mix and Edit window, multichannel Panner Grids are displayed on tracks that have multichannel track or send output assignments.

### To pan from the Mix or Edit window:

**1** To pan in the Edit window, make sure I/O View is being shown (View > Edit Window > I/O). Panner Grids are always displayed in Mix window tracks that support panning.

**2** Begin playback.

**3** Click and drag on the appropriate multichannel track's Panner Grid in the Mix or Edit windows.


Click and drag to pan

*Panning in the Track Grid*

The Pan Location cursor follows your movements as long as you hold down the mouse button. Movements are scaled so that, once you click to "grab" the Pan Location cursor, you do not need to limit your movements to the small Track Grid area.

### Pan Location Cursor Color while Automating

The Pan Location cursor is green when the track is in Automation Read mode, red in an Automation Touch, Latch, Touch/Latch, or Write modes, and yellow in Automation Off (or Automation Suspend) mode.

In Trim mode, the Volume fader and LFE fader are yellow.

Output windows provide additional features and controls (and a much larger Grid). For details, see "Output Windows" on page 868.

## Output Windows

Output windows provide panning controls (called panners), as well as standard Pro Tools controls, for tracks of all mix formats (from 3-channel LCR through 8-channel 7.1).

For information on Output window standard controls, see "Standard Controls" on page 869. For information on Output window panning controls, see "Surround Panner Controls" on page 870.

Some of the features of Output windows include:

- X/Y (joystick-style) panning
- 3-Knob panning
- Full Divergence and Center Percentage control
- AutoGlide
- LFE feed
- Multichannel meters
- Pro Tools target window support

Multiple panners can be opened simultaneously, or a single window can display the current panner.

**To open an Output window:**

■ Click the Output Window button in the track in the Mix or Edit window (I/O View).
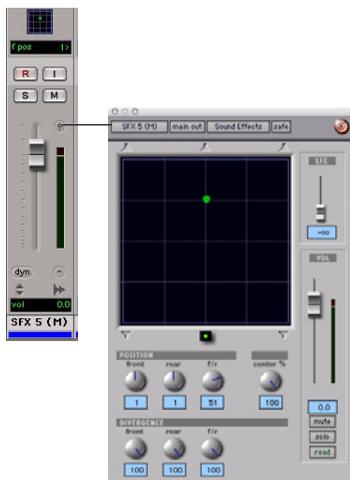


*Opening a multichannel Output window*

📄 *For instructions on managing multiple Output windows, see "Output Windows for Tracks and Sends" on page 730.*

# Standard Controls

All Output windows provide standard Pro Tools controls for routing, path assignment and other track features. These controls are located at the top of all Output, Send, Insert, and Plug-in windows. Some controls are specific to the type of window.
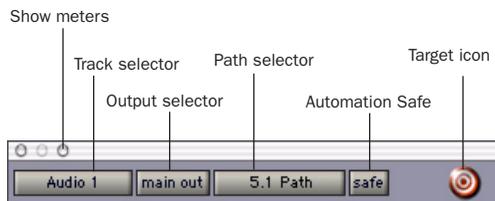


*Panner Control section*

📄 *For details on these standard features, see "Standard Selector Controls in Output Windows" on page 732.*

### Track Fader, Solo, Mute, and Auto

All Output windows provide track volume and mute controls. You can adjust and automate track volume, or mute, directly using these controls. The larger fader and Mute button are equivalent to those in the Pro Tools Mix window.

# Surround Panner Controls

When assigned to tracks or paths with four or more channels, the Output window provides an X/Y Grid for surround panning. The speakers associated with the panner's multichannel format are displayed in their relative positions outside the Panner Grid. These speakers are also used as Snap Pan to Speaker controls.

This section identifies all the controls and features found in Pro Tools multichannel panners.
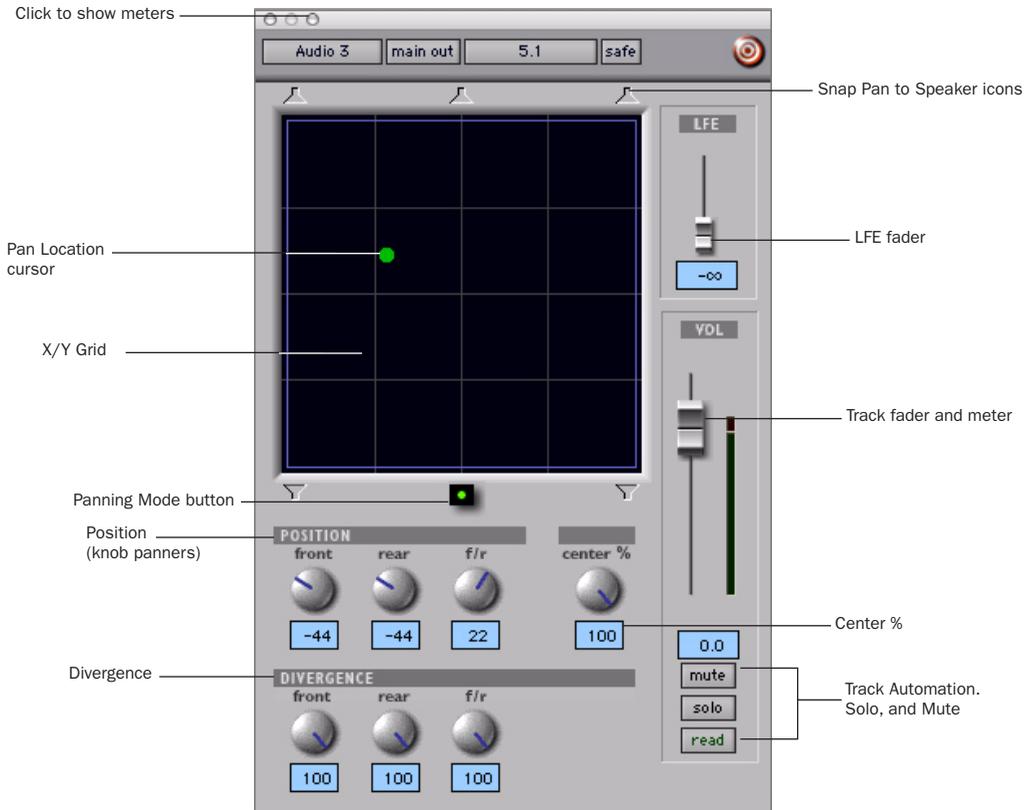


*Figure 34.  Output window with a 5.1-format multichannel panner*

## The X/Y Grid and Pan Location Cursor

The X/Y Grid is where multichannel panning information is input and displayed. You can input pan information using X/Y mode, 3-Knob mode, or by entering numeric values in the Position data fields. You can also edit pan automation graphically in the Edit window.
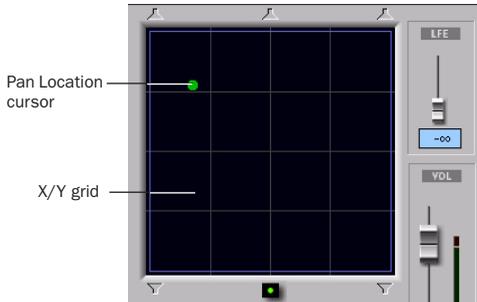


*X/Y Grid and Pan Location cursor*

Multichannel panners default to X/Y mode. In X/Y mode, the track's current pan position is represented by a green dot. This dot is the Pan Location cursor, and its color indicates track automation status using standard Pro Tools colors:

**Green** The track is in automation Read mode.

**Red** The track is in automation Write, Touch, Latch, or Touch/Latch mode.

**Yellow** The track is in automation Off mode (or Automation Suspend) mode.

## Panning Mode Button

This button, located below the X/Y Grid, provides access to Surround panning modes (see "Panning Modes" on page 873).
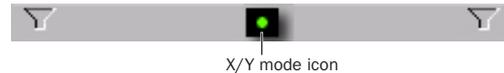


*Panner Mode button set to X/Y mode*

## Position Controls

The Position controls let you set the positions of the panner.



*Position and Center % controls*

**Front** Displays and controls the current front X-axis (left/right) position of the panner.

**Rear** Displays and controls the current rear X-axis (left/right) position of the panner. In default X/Y Panning mode, Rear is linked to Front position and cannot be controlled independently.

**F/R (Front/Rear)** Displays and controls the current Y-axis position of the panner.

## Center % Control

Center % controls how much of the signal is routed to the center speaker. This lets you mix a track to the front with a phantom center (0% Center value) or to three-channel (LCR) when panning front.

## Divergence Controls

Divergence determines the width of the panned signal with respect to neighboring speakers. (For more information, see the *Pro Tools Sync & Surround Concepts Guide*). There are three Divergence controls:

**Front, Rear, and F/R Divergence** Provide separate, automatable divergence control over front speakers, rear speakers, and between front/rear, respectively.



*Divergence controls*

📄 *For examples of how divergence settings affect output panning, see "Divergence and Center Percentage" on page 876.*

## Snap Pan to Speaker Icons

The Snap Pan to Speaker icons let you force the panner to the speaker's location. For example, clicking on the upper left speaker moves the Pan Location cursor to the upper left corner of the X/Y Grid.

## LFE Fader

The LFE fader is only available in ".1" surround formats (5.1, 6.1, and 7.1).



*LFE fader*

The LFE fader determines how much of the current track's signal will be routed to the LFE channel. LFE faders in Track and Send windows can follow groups. The Pro Tools LFE channel is always full-bandwidth. For more information on how to use the LFE fader, see "LFE Faders in Multichannel Panners" on page 878.

## Multichannel Panner Linking

Stereo tracks with multichannel outputs provide left and right multichannel panners. The Output window provides controls to link the left and right channels for precise panning.

When you create a stereo track that is routed to a multichannel output, the following pan linkage controls are active by default:

- Link (links Left and Right pan controls)
- Front Inverse (inverts Left and Right pan control linkage across front)
- Rear Inverse (inverts Left and Right pan control linkage across rear)

The Front/Rear Inverse pan control is unlinked by default.
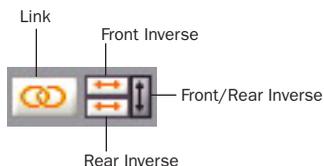


*Stereo multichannel panner controls showing default linking*

# Panning Modes

The Panning Mode button provides access to four panning modes: X/Y mode, Divergence Editing, 3-Knob mode, and AutoGlide mode. Panning controls can be automated in all four modes.



Panning Mode button
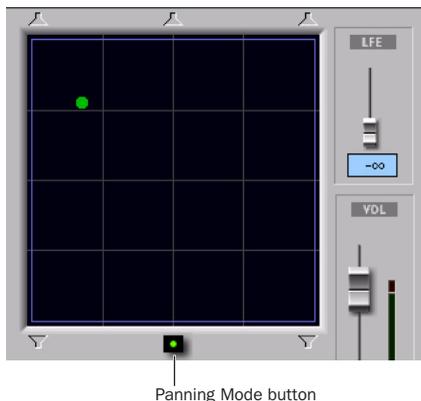
*Panning Mode button (X/Y mode shown)*

## Panning Modes

**X/Y Mode** Joystick-style panning by dragging the Pan Location cursor within the X/Y Speaker Grid. See "X/Y Panning" on page 873 for more information.

**3-Knob Mode** Point-to-point panning, between pairs of speakers. See "3-Knob Panning" on page 874 for more information.

**Divergence Editing** The divergence X/Y Grid can be dragged to resize the divergence boundaries. See "Divergence Editing Mode" on page 877.

**AutoGlide Mode** Point-to-point panning from the Pan Location cursor to a new destination over a specified AutoGlide Time. See "AutoGlide Mode" on page 875 for more information.

## To enable a Panning Mode:

■ Click on the Panning Mode button in the Surround Panner until the desired mode icon is displayed.

## X/Y Panning

### To pan in X/Y mode:

**1** Click on the Panning Mode button until the X/Y mode icon is displayed.



X/Y mode icon
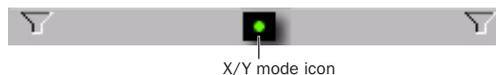
*Panner Mode button set to X/Y mode*

**2** Drag the Pan Location cursor, or click anywhere in the Grid and drag to pan the track. The location of the Pan Location cursor determines the pan position of the signal. For example, to pan something to the left rear speaker, move the Pan Location cursor to the lower-left corner of the Grid.

☼ *It is not necessary to click exactly on the Pan Location cursor. Clicking anywhere in the Grid will move the Pan Location cursor relative to where you click or take over with a hardware panner. Panning does not jump to the click position.*
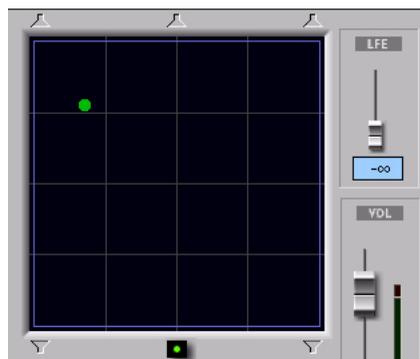


*X/Y Panning*

**To snap the Pan Location cursor to a location in the Grid:**

■ Hold down the Control key and click anywhere in the X/Y Grid.

### Grid Options and Shortcuts

**Fine-Adjust Mode** Hold down the Control key (Windows) or Command key (Mac) for fine adjustment of all Panner controls.

**Constraining to X or Y Movement** Shift-drag the Pan Location cursor to constrain its movement to the X or Y direction.

**Reset to Default** Alt-click (Windows) or Option-click (Mac) in the Panner Grid to reset all controls to their default position.

**Snap Pan to Speaker** Click one of the Snap Pan to Speaker icons to force the panner to that speaker location.

**Display Automation in Edit Window** Control-Start-click (Windows) or Command-Control-click (Mac) a control to display that control's playlist in the Edit window.

🔆 *All Pan controls can be automated, including pan position and divergence. See Chapter 37, "Automation" for details.*

## 3-Knob Panning

Pro Tools provides 3-Knob mode as an additional way to input pan moves.

3-Knob mode lets you:

• Pan in straight lines, moving the Pan Location cursor using the Position rotary knobs with full movement of front, rear, and front-rear position.

– and –

• Pan discretely between pairs of speakers.

For example, when panning front-left to rear-right in 3-Knob mode, audio will be heard from just those two speakers (assuming full divergence is in effect).
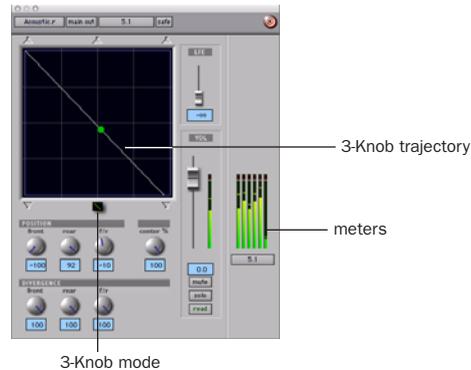


*Panning and metering in 3-Knob mode*

By comparison, in X/Y mode a diagonal pan may result in audio being heard in some or all channels.
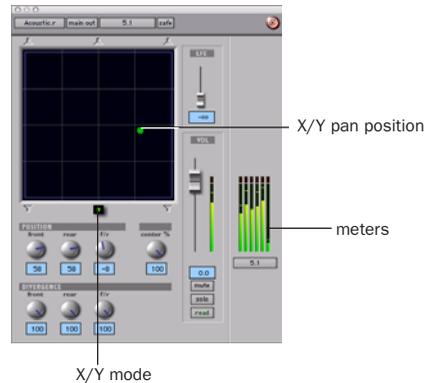


*Panning and metering in X/Y mode*

The difference is that 3-Knob mode pans discretely between the front and rear position of the panning *trajectory*, while X/Y mode panning takes place in the full 360° Panning Grid. Divergence and Center Percentage are variable in both Panning modes.

**To enable 3-Knob Panning mode:**

■ Click on the Panning Mode button until the 3-Knob mode icon is displayed.
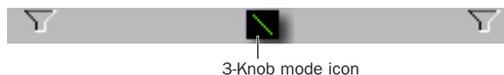


3-Knob mode icon

*Panner Mode button set to 3-Knob mode*

The panner trajectory line appears across the Grid, extending from the front (X-axis) to the rear (Y-axis).

**To pan in 3-Knob mode:**

**1** Adjust the Front and Rear Position knobs to set the trajectory line.

**2** Rotate the Front/Rear Position knob to pan along the trajectory. The Pan Location cursor is constrained to the white trajectory line.

**To change the 3-Knob trajectory angles, do one of the following:**

■ Drag either end point (Front or Rear) of the trajectory line.

– or –

■ Adjust the Front or Rear Position controls.

**To change the current trajectory position (left-to-right) and retain its current angles:**

■ Drag the trajectory line (not its end points) to a new position.

## AutoGlide Mode

AutoGlide mode lets you quickly write Surround Panner automation by clicking new locations in the Surround Panner window, instead of manually moving the Surround Panner controls.

⚠ *When writing automation in AutoGlide mode, the Pan Location cursor cannot be dragged from its location.*

The time it takes to glide from point to point (from the Pan Location cursor to the new destination) is called the AutoGlide Time. This time is set in the Mixing Preferences page and has a range of 10 msec to 10000 msec (10 seconds).

**To set the AutoGlide Time**

**1** Choose Setup > Preferences and click the Mixing tab.

**2** Set the AutoGlide Time in the Automation section.

**To do an AutoGlide automation pass:**

**1** Click the Panning Mode button until the AutoGlide mode icon is displayed.



AutoGlide mode icon

*Panner Mode button set to AutoGlide mode*

The Panning Mode button displays a slanted dotted line that ends with a filled in dot (representing a cursor) at its top right corner.

**2** In the Mix or Edit window, click the Automation Mode selector and select an Automation mode for the track you want to automate.

**3** Press Play to begin playback.

**4** Set a new destination for the cursor by doing one of the following:

- Click a Snap Pan to Speaker icon to glide to its speaker location.

– or –

- Click in the pan window to glide to a specific location in the X/Y Grid.



Snap Pan to Speaker icons
Pan Location cursor
AutoGlide mode
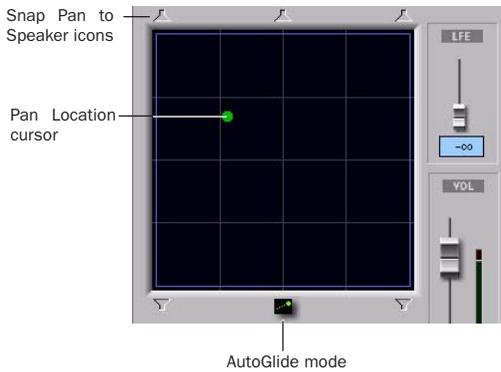
*Panning Mode button (AutoGlide mode shown)*

The Pan Location cursor will begin to move towards the new destination in the time it takes to travel the AutoGlide Time. When the new destination point is reached, a new breakpoint will be written at the new location.

**5** Repeat the previous step if you want to write additional panning moves.

**6** Stop the transport when finished.

# Divergence and Center Percentage

The Divergence and Center Percentage controls range from 0 to 100, and can be automated. They are especially useful for ensuring audibility and coverage in large venues, and to increase clarity of voices.

**Front Divergence** Controls divergence between front speakers (X-axis only).

**Rear Divergence** Controls divergence between the rear speakers (X-axis only).

**Front/Rear Divergence** Controls divergence between front and rear (the Y-axis).

**Center % (Percentage)** Determines whether there is a *discrete* center image, a completely *phantom* center image, or a variable amount in between.

## Divergence

In the Panner Grid, the current divergence values are displayed using a purple outline.



Divergence display
Divergence controls
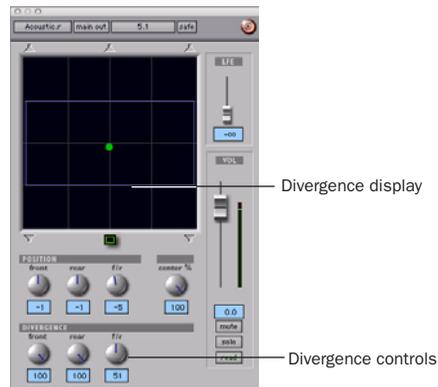
*Divergence display and controls*

By default, Pro Tools surround panners are 100% or fully divergent, meaning that a signal that is panned completely to one speaker will only be audible in that speaker.



*Full divergence for discrete panning to front, left (meters show signal only in front, left)*

Lower divergence settings result in a progressively wider source signal. When Divergence is less than 100%, tracks will be routed to neighboring speakers to some degree, even when the Pan Location cursor is positioned next to a single speaker.
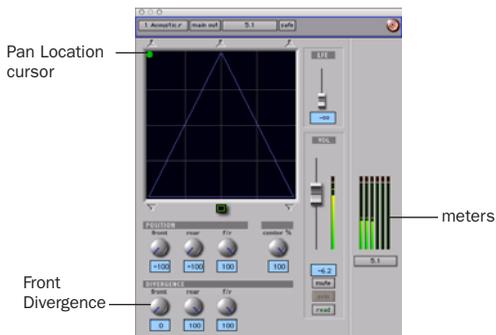


*Front Divergence at 0% for widest panning (note meters showing signal in all three front speakers)*

### To adjust divergence:

▪ Adjust the Front, Rear, and Front/Rear Divergence controls as necessary.

## Divergence Editing Mode

In Divergence Editing mode, you can adjust the divergence boundaries by dragging directly in the Divergence Grid.

### To adjust divergence graphically:

**1** Click on the Panning Mode button until the Divergence Editing icon is displayed.



Divergence Editing icon

*Panner Mode button set to Divergence Editing*

**2** Drag in the Grid to resize the divergence boundaries.

## Center % (Percentage)

Center Percentage controls whether there is a discrete center channel for the track or a phantom center channel.

### Center Percentage Example

In film and video production, the center channel often contains dialog. To enhance the clarity of dialog, it is often beneficial to keep elements such as music out of the center speaker. By reducing the Center Percentage on music tracks, music panned to the front of the soundfield can be panned to only the left and right speakers, forcing them to have a variable phantom center image.
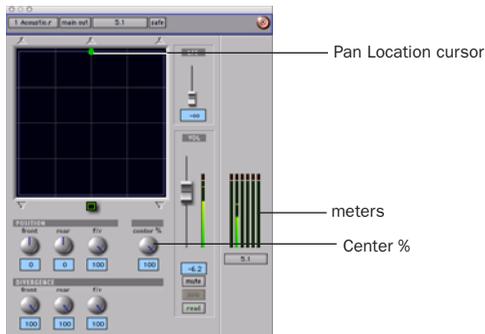


*Discrete center (Center Percentage at 100)*
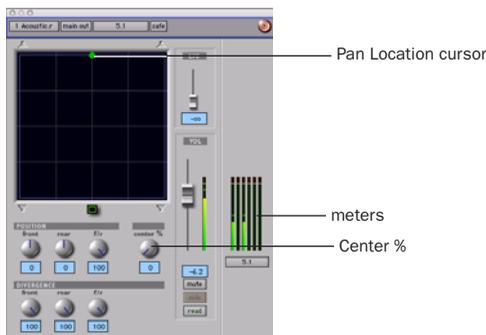


*Phantom center (Center Percentage at 0)*

**To adjust Center Percentage:**

■ Adjust the Center Percentage knob as appropriate.

As you reduce the Center Percentage value, the center speaker at the top of the Grid becomes less visible. At 0, the center speaker is completely invisible, reflecting the setting for fully phantom center.
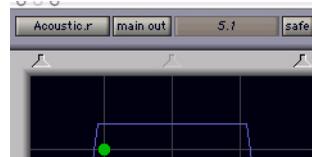


*Center speaker less visible*

## LFE Faders in Multichannel Panners

The LFE fader controls how much of the track is sent to LFE. LFE faders are only available when a track is assigned to a path whose format supports LFE (5.1, 6.1, or 7.1).

**To mix to the LFE channel:**

■ Adjust the LFE fader in any ".1" surround format Output window.

📖 *For general information about LFE, sub channels, and related topics, see the Pro Tools Sync & Surround Concepts Guide.*

### LFE Faders and Groups

Track and send LFE faders can follow Mix and Edit Groups by being enabled in the Group Attributes page in either the Create Groups or Modify Groups dialog. LFE faders can be assigned to follow groups as a global attribute or on a group by group basis. See "Selecting Group Attributes" on page 186.

### LFE Enable

Some multichannel plug-ins, including the multichannel DigiRack Dynamics III Compressor/Limiter, provide LFE Enable. This lets you enable or bypass processing of the LFE channel if present.



*LFE Enable in the multichannel DigiRack Dynamics III Compressor/Limiter*

**To process the LFE channel in a multichannel plug-in:**

■ Click to enable LFE Enable in supporting multichannel plug-ins. LFE Enable is highlighted when LFE processing is enabled, and unhighlighted when LFE processing is bypassed.

☼ *When LFE Enable is unavailable, try using the multi-mono version of the plug-in.*

## Pan Playlists

Multichannel panners have an automation playlist for each position and divergence control.

📄 *Pan automation can be drawn, edited, cut, copied, and pasted from the Edit window. For more information, see Chapter 37, "Automation."*

## Surround Scope Plug-in

The Surround Scope plug-in provides a 360° meter for metering multichannel paths during mixing.

### 5.1 Format Track Layouts

All 5.1-format meters (including those displayed in the Surround Scope meter, on tracks, and in Output windows and their Path Meter Views) are always arranged in the following order:

L C R Ls Rs LFE

📄 *For more information on Pro Tools metering, see "5.1 Tracks, Formats, Mapping, and Metering" on page 853.*

**To use the Surround Scope Plug-in:**

■ On a multichannel Master Fader, click an Insert button and select Multichannel TDM plug-in > Sound Field > Surround Scope.



*Surround Scope plug-in*

Surround Scope displays output levels in both a 360° Grid, and in traditional LED meters.

📄 *For details on Surround Scope, refer to the Digidesign Plug-ins Guide.*

# Chapter 42: Working with Synchronization

Synchronization allows one system to output time code and the other device to follow that time code. Pro Tools is synchronized to other devices using SMPTE/EBU time code or MIDI Time Code.

📖 *For more information on different SMPTE/EBU formats, and other concepts related to time code, refer to the Pro Tools Sync & Surround Concepts Guide.*

## Pro Tools Synchronization Options

There are several options for synchronizing Pro Tools to an external source or using Pro Tools as the master device. Not all options are available on all Pro Tools systems, as noted.

### SMPTE Trigger Only

This solution is useful for short projects if both systems are extremely close in speed, but even the best systems will rarely stay perfectly synchronized for longer than a couple of minutes.

### SMPTE Trigger Resolved with a SYNC Peripheral

#### (Pro Tools HD Only)

You can use an optional Digidesign SYNC peripheral to resolve Pro Tools recording and playback speed with any of the following clock reference sources while slaving Pro Tools to time code:

- LTC
- Video source
- House video reference (SD or HD)
- VITC
- 1x Word Clock
- AES/EBU "null" clock
- Pilot Tone
- Bi-Phase

This enables long-term, high-fidelity synchronization when all transports within the system are resolved to this common synchronization source, or by resolving to any variations in incoming time code while slaving to time code.

### SMPTE Trigger while Locking to an Unresolved Source

SMPTE Trigger can be used with an optional SYNC peripheral or equivalent device to resolve Pro Tools recording and playback speed while slaving to LTC. This enables long-term, accurate synchronization by resolving to any variations in incoming time code. SYNC peripherals also support VITC and Bi-phase/Tach positional reference.

### SYNC Peripheral Synchronization Options

By adding a Digidesign SYNC peripheral to your Pro Tools|HD system, you can use Pro Tools as the master device in your synchronization setup. All other devices are then slaved to Pro Tools.

You can use Pro Tools in conjunction with a SYNC peripheral to generate LTC, MIDI Time Code, or MMC commands. When the SYNC peripheral is reading incoming SMPTE time code, it regenerates the time code through the LTC or MTC output connector. This signal can be passed along to other slave devices.

### MachineControl™

Digidesign SYNC peripherals also support Digidesign MachineControl software, which provides many specialized features for post production synchronization tasks including remote track arming, VTR emulation, serial time code, and other capabilities. (See the *MachineControl Guide* for more information, or contact your Digidesign dealer.)

📄 *For instructions on connecting an external synchronization peripheral to your Pro Tools system, refer to your Getting Started Guide. If you are using a SYNC peripheral, refer to its documentation.*

## Ext. Clock Output

Pro Tools can be used as the master device in your synchronization setup, where all other devices are then slaved to Pro Tools Word Clock output.

With Pro Tools|HD systems, clock output can be configured for 1x Word Clock, or 256x Slave Clock for Digidesign Legacy audio interfaces (such as the 888|24 I/O).

📄 *For more information on configuring Legacy audio interfaces, see the Pro Tools|HD Getting Started Guide.*

**To set Ext. Clock Output:**

**1** Choose Setup > Hardware in Pro Tools.

**2** Click the Ext. Clock Output pop-up menu and select an available signal.

**3** Click OK to close the Hardware Setup dialog when you have finished.

💡 *If the Legacy Port is enabled (as opposed to the Expansion Port) then the Ext. Clock Output automatically switches to Slave Clock.*

# Session Setup Window

The Session Setup window lets you configure various time code-related settings on your system. The window also includes display-only areas for session sample rate, file format, and bit depth.

📄 *Pro Tools LE systems with DV Toolkit 2 support various time code-related settings (such as Time Code and Feet+Frame Timebase rulers). For a complete list, refer to the DV Toolkit 2 Guide.*

The Session Setup window is organized into three sections. Session displays and settings are displayed at the top of the window. The SYNC Setup & Session Offsets section, and the Time Code Settings section, can be shown or hidden using their dedicated expand/collapse triangles. See Figure 35 on page 883.

**To show the Session Setup window:**

■ From a Pro Tools session, choose Setup > Session.

**To expand SYNC Setup & Session Offset section:**

■ Click the SYNC Setup & Time Code Offsets expand/collapse triangle.

The controls in this section configure settings of Digidesign SYNC Peripherals. Settings are provided for Clock and Positional Reference, Video Ref Format, Video In Format, and Variable Speed Override.

**To show Time Code Settings section:**

■ Click the Time Code Settings expand/collapse triangle.

The controls in this section provide time code generation and freewheel options, and separate pull up and down selectors for audio and video rates.
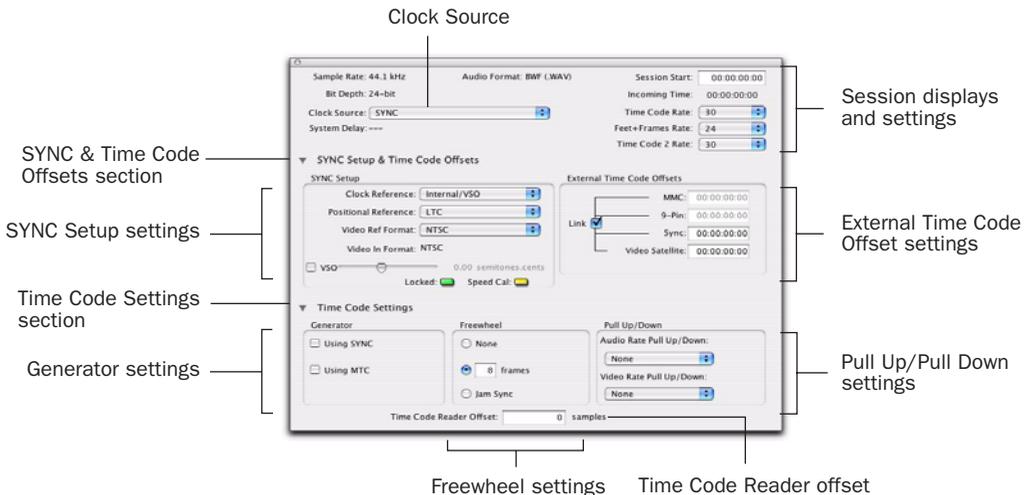


*Figure 35. Session Setup window with a SYNC Peripheral*

## Session Displays and Settings

### Sample Rate

This display indicates the sample rate for the current session.

### Bit Depth

This display indicates the bit depth for the current session.

### Audio Format

This display indicates the file format for files recorded in the session.

### Clock Source

Use this menu to configure the system Clock Source. You can choose between a SYNC peripheral, an internal clock source from a Digidesign peripheral, or an external clock source connected to a Pro Tools|HD audio interface.

*Changes made to Clock Source in the Hardware Setup dialog will be reflected in the Session Setup window and vice versa.*

### Clock Source Options

**SYNC** When using a SYNC Peripheral, Pro Tools receives its clock source from the SYNC peripheral. The SYNC Peripheral can in turn reference an external clock source, selected in the SYNC Setup section of the Session Setup window.

**Internal** In Internal mode, your system references your Digidesign peripheral's internal clock and plays back at the session's sample rate.

**External Clock Sources** Depending on your Pro Tools|HD audio interface, external Clock Source options can include AES/EBU, S/PDIF, S/PDIF Optical, ADAT Optical, TDIF, and Word Clock (optional word clock rates are available at

higher session sample rates). External sources can be any multiple of the "base" rate. The base rate is 44.1 kHz for 88.2 and 176.4 kHz sources. The base rate is 48 kHz for 96 and 192 kHz sources. If an external source is chosen and no valid sync clock is detected at the External Clock In, the I/O will return to Internal mode.

*If a SYNC Peripheral is enabled in the Peripherals dialog, and is correctly connected in the Loop Sync chain, the SYNC peripheral can be the Loop Master, and Pro Tools|HD audio interfaces will clock as Loop Sync slaves.*

*For more information on external clock sources, refer to your SYNC peripheral documentation.*

### System Delay

When Delay Compensation is enabled, this display indicates the total amount of delay (in samples) applied by the system to compensate for plug-ins and mixer routing delays.

### Session Start

Use this field to specify a SMPTE start frame location for your session. See "Setting a SMPTE Session Start Time (Start Frame)" on page 888.

### Incoming Time (Current Time)

This display indicates incoming time code.

### Time Code Rate

This pop-up menu lets you set the SMPTE time code rate for the current session.

### Feet+Frame Rate

Feet+Frame rates for sessions can be set with the Feet+Frame Rate selector. Supported rates are 23.976, 24, and 25 fps.

Set this rate to match the rate of the film projector, or the video if the film projector speed is taken into account. For example, doing a Telecine transfer from a 24 fps film projector to NTSC video would necessitate the projector running at 23.976 fps. This is regardless of whether the session is using pull down audio or not.

### Time Code 2 Rate

This pop-up menu lets you set a secondary frame rate that can be displayed in the ruler alongside the main Timecode ruler. This lets you reference frame rates in the Timeline that are different from the session time code rate (also see "Timebase Rulers" on page 595).

## SYNC Setup and Time Code Offsets

**(Pro Tools HD Only)**

### Sync Setup

The controls in the SYNC Setup section let you configure SYNC peripheral settings, including clock reference, positional reference, video reference format, video input format, and Variable Speed Override (VSO).

**Clock Reference** This menu lets you set the Pro Tools clock reference.

◆ When using a Digidesign SYNC peripheral, the Clock Reference selector lists all supported clock types for the SYNC peripheral.

◆ When using Pro Tools|HD systems without a SYNC peripheral, choices include any currently-enabled digital format or source available from your Pro Tools|HD I/O (such as AES, S/PDIF, or 1x Word arriving at the Pro Tools|HD interface's Word Clock In port).

**Positional Reference** Use this menu to set the time code source for Pro Tools to use for positional reference.

**Video Ref Format** Use this menu to set the video reference format for a SYNC peripheral.

**Video In Format** This item indicates the expected format at the Video In connector on a SYNC peripheral. At certain HD rates, a pop-up menu is provided for selecting a format.

**Variable Speed Override (VSO)** Variable Speed Override (VSO) requires a Digidesign SYNC peripheral.

When a SYNC peripheral is connected to a Pro Tools|HD system, the VSO controls are located in the SYNC Setup section of the Session Setup window.
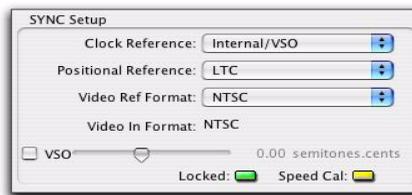


*VSO controls in the Session Setup window*

📖 *Refer to your SYNC peripheral documentation for instructions on using VSO to varispeed Pro Tools playback.*

**Locked Indicator** The Locked indicator lights solid green when the SYNC peripheral is locked to the selected clock reference. The Locked indicator flashes yellow if the selected clock reference source is missing or out of lockable frequency range.

**Speed Cal Indicator** This indicator shows the status of the incoming clock reference:, depending on the type of SYNC peripheral you are using:

- SYNC I/O
  - Lit: SYNC I/O is locked and the clock reference is within 0.025% of the expected rate
  - Flashing fast: SYNC I/O is locked but the clock reference is more than 0.025% faster than the expected rate
  - Flashing slow: SYNC I/O is locked but the clock reference is more than 0.025% slower than the expected rate
  - Unlit: Clock reference is *not* within 0.025% of the expected rate
- SYNC HD
  - Yellow Solid: SYNC HD is locked and the clock reference is within 0.025% of the expected rate
  - Yellow Flashing Fast: SYNC HD is locked but the clock reference is between 0.025% and 4% faster than the expected rate
  - Yellow Flashing Slow: SYNC HD is locked but the clock reference is between 0.025% and 4% slower than the expected rate
  - Red Flashing Fast: SYNC HD is locked but the clock reference is more than 4% faster than the expected rate
  - Red Flashing Slow: SYNC HD is locked but the clock reference is more than 4% slower than the expected rate
  - Unlit: SYNC HD is not locked to the chosen clock reference

## External Time Code Offsets

In the External Time Code Offsets section, Pro Tools lets you compensate for devices that are consistently offset by a fixed number of frames (such as some color–corrected video masters), or for material that starts at a different time than the session.

Pro Tools provides four different types of External Time Code Offset settings. These offsets include:

- MMC (MIDI Machine Control)
- 9-Pin (Deck Control)
- Synchronization peripherals such as the SYNC HD, SYNC I/O, or other peripherals (such as MIDI interfaces that provide MIDI Time Code).
- Video Satellite (Pro Tools with Avid Media Station|PT)

Unique values can be defined for each of these types of offsets, or you can link all to adjust in unison.

Positive and negative offset values can be entered to offset Pro Tools time code display later or earlier, respectively.

If you are using Digidesign's MachineControl option, additional options for External Time Code Offsets are available. See the *MachineControl Guide* for more information.

## Time Code Settings

### Generator

The Generator lets you enable Pro Tools generation and output of LTC and MTC. For more information, see "Generating Time Code" on page 895.

**Using SYNC** This option outputs time code from the device selected in the Synchronization page of the Peripherals dialog.

**Using MTC** This option outputs time code to the destination selected in the Synchronization page of the Peripherals dialog.

### Freewheel

The choices in the Freewheel section let you configure how Pro Tools will *freewheel*, or continue playback if time code is interrupted or corrupted. Use these options to protect against errors that can occur if your SMPTE time code source has "drop outs" or temporary lost signals.

**None** No freewheel is applied.

**Frames** Sets a number of frames to freewheel, from 1 to 120 frames. This value defaults to 8 frames, which is the recommended setting for most applications.

**Jam Sync** Lets Pro Tools trigger synchronization to incoming time code, and continue to play back even if time code input is completely interrupted. It can be useful if time code is damaged, or has been accidentally erased from your source tape.

### Pull Up/Down

When Pro Tools is used in conjunction with a SYNC peripheral, or a third-party peripheral that supports pulled sample rates, this option allows you to "pull up" or "pull down" the current sample rate.

For general information, see the *Pro Tools Sync & Surround Concepts Guide*. For more information on applying pull factors in Pro Tools, see "Pull Up and Pull Down" on page 890.

⚠️ *Remember, pull up and pull down are applied differently in different workflows. Make sure you check each project's specific workflow before you begin your work.*

### Time Code Reader Offset (Sync Offset)

This field lets you set a *trigger offset* for incoming MIDI Time Code (anywhere from –100000 to +100000 samples). This allows you to create a permanent offset to fine-tune the point at which Pro Tools synchronizes relative to incoming time code. For example, a value of –50 makes an event in Pro Tools occur 50 samples before the same event in the incoming MIDI Time Code. Use this to compensate for timing differences between various SMPTE-to-MIDI Time Code converters or analog-to-digital/digital-to-analog converters.

## Preparing to Work with SMPTE

The first step when preparing to work with SMPTE is to choose an appropriate SMPTE frame rate. Pro Tools supports all standard SMPTE frame rates. If you are working with SMPTE striped tape, it is important to know the frame rate. In some cases, a SYNC peripheral can be used to do this.

📄 *For a full explanation of SMPTE frame rates, see the Pro Tools Sync & Surround Concepts Guide.*

## Configuring Pro Tools for SMPTE

Synchronization and MachineControl system settings are enabled in the Pro Tools Peripherals dialog. These settings are *system* settings, and remain constant regardless of the particular session you are working on. Configure these settings before opening a session.

⚠ *MachineControl is supported on Pro Tools|HD systems only.*

Other settings are configured in the Session Setup window, such as the session Time Code rate, the Feet+Frames rate, the session start frame, and time display format. These settings are *session-specific* settings. These settings can only be configured when a session is open.

## Selecting a SMPTE Format

**To choose a SMPTE format:**

**1** In Pro Tools, choose Setup > Session.

**2** Choose a frame rate (SMPTE format) from the Time Code Rate selector.

**3** Enter the Time Code Freewheel frames (if any) in the designated box (see "Freewheel" on page 887).

## Setting a SMPTE Session Start Time (Start Frame)

The Session Setup window also allows you to set a SMPTE Start Frame for your session. Video work tapes are rarely striped beginning at a SMPTE frame address of 00:00:00:00. You can quickly enter a start time for your session based on an appropriate frame number from your project tape. The Pro Tools SMPTE-related functions (such as Spot mode) will then use this value as their reference for the session's start point.

### Start Time When Striping Tape

If you are generating time code, it is a good practice to stripe your time code beginning at 01:00:00:00 (subtracting time for initial black, bars and tone, or logos). This prevents problems that can occur with some synchronizers when the striped time code crosses from 23:59:59:29 to 00:00:00:00 (commonly referred to as the "midnight" boundary).

**To set a SMPTE Start Time for your session:**

**1** Choose Setup > Session.

**2** Enter a SMPTE frame number in the Session Start field.

**To capture an incoming SMPTE address as the session start time:**

**1** Click in the Session Start field.

**2** Begin playback of the time code source.

**3** At the location where you want to capture the incoming value, press Equal (=) in the numeric keypad.

**4** Press Enter to accept the value. You can then edit the captured address. The session uses the frame number you enter as its SMPTE start frame when online.

- If there are existing regions on the tracks and you are changing the original SMPTE start frame to a later time (from 00:00:00:00 to 01:00:00:00, for example), all existing regions on tracks will remain in their relative positions, but will start later by the time value added to the start frame.

- If you are changing the session start time in an open session in which tracks already exist, a warning dialog appears when you press Enter. Choose from one of two options:

**Maintain Time Code** Places the additional session time at the start of the session, and keeps existing regions in their original time code locations.

**Maintain Relative Position** Places the additional session time at the start of the session, and maintains the relative position of existing regions to the new start frame. For example, if you change the session start frame from 01:00:00:00 to 00:59:00:00, Pro Tools adds one minute of session time to accommodate the new start frame, and moves all existing regions earlier in time to maintain their relative position to the start frame.

# Redefining a Time Code Position

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

Use the Current Time Code Position command to redefine the current time code position and session start time. By creating an insertion point (or selection), and then entering the new time code position for that location, the session start time will be recalculated based on the new, relative Time Code location.

**To redefine a current Time Code code position:**

**1** With the Selector tool, click in a track (or make a selection) where you want to redefine the position.

⚠ *If your insertion or selection is not on a grid boundary, it will round to the closest boundary.*

**2** Choose Setup > Current Time Code Position.

**3** Enter a new SMPTE frame number in the dialog to correspond to the time code shown in the dialog.

**4** Click OK.

# Redefining a Feet+Frames Position

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

Use the Current Feet+Frames command to redefine the Feet+Frames position at the current insertion point. The session start time is recalculated based on the new, relative Feet+Frames location.

Typically, this command is used for integrating test tones, pre-roll, Academy leader, and similar pre-program material into Pro Tools sessions. Redefining Feet+Frames does not redefine the session start time.

### To set a relative frame position for a session (Feet+Frames):

**1** With the Selector tool, click in a track (or make a selection) where you want to redefine the position.

⚠ *If your insertion or selection is not on a grid boundary, it will round to the closest boundary.*

**2** Choose Setup > Current Feet+Frames Position.

**3** Enter a Feet+Frame position to correspond to the time code shown in the dialog.

**4** Click OK.

## Displaying Time in SMPTE Frames
### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

In Pro Tools, you can set the Main Time Scale to Time Code (SMPTE) and this will be displayed in the Main Counter. Though Pro Tools will still synchronize to incoming SMPTE time code if the Time Scale is displayed in Bars:Beats, Minutes:Seconds, or Feet.Frames, it is usually more useful to use SMPTE time code as your reference.

### To set the Main Time Scale to SMPTE Time Code, do one of the following:

■ Choose View > Rulers > Time Code.

 – or –

■ Click the Main Counter selector in the Edit window and select Time Code.



*Selecting Main Time Scale with Main Counter selector*

Pro Tools displays time code values in the currently selected SMPTE frame rate.

### Sub Counter and Sub Time Scale Display

You can display a Sub Time Scale in the Sub Counter. For example, if the Main Time Scale is set to Time Code, and you want to compare SMPTE time to "wall clock," when you are using 29.97 Non-Drop frame rate, click the Sub Counter selector and select Min:Secs as the Sub Time Scale.

## Pull Up and Pull Down

Pro Tools supports up to 4% pull up and pull down, with support for an additional 0.1% up or down. Separate rates can be set for session audio and video (when video has been imported or captured into the session).

When referring to 4% pull up and pull down, the precise percentages used in pull ups is 4.167%. See Table 43 on page 893.

While a Digidesign SYNC peripheral is not required in order to use the extended pull up and down options provided in Pro Tools, a SYNC peripheral is the only device that can be controlled from within Pro Tools, and that recalls and restores pull factors automatically when a session opens. Other synchronization peripherals must be configured manually.

� *Pull up and down settings do not affect time code generated by a SYNC peripheral.*

## Configuring Pull Up and Pull Down

**To pull up or pull down audio or video:**

**1** Choose Setup > Session.

**2** From the Time Code Settings section of the Session Setup window, select a Pull Up/Down Rate.



Audio Rate Pull Up and Down

Video Rate Pull Up and Down
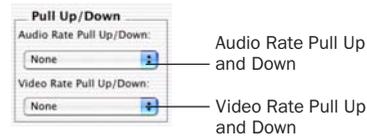
*Session Setup window*

**Audio Rate Pull Up/Down** Controls audio sample rate. See "Audio Sample Rate Pull Up and Down" on page 892.

**Video Rate Pull Up/Down** Controls video rate. See "Video Frame Rate Pull Up and Down" on page 894.

The choices available in these menus are determined by the session frame rate. Combinations can be applied by choosing from both menus.

� *4% pull factors are not available in 176.4 and 192 kHz sessions.*

The choices available in these menus are also determined by the Preferences and Auto Match Pull Factors settings in the Time Code Rate menu. See "Extended Pull Up and Pull Down" on page 892 and "Auto Match Pull Factors" on page 892.

### Extended Pull Up and Pull Down

**Preference and Session Setup Controls** The Audio Rate Pull Up and Down menu offers all possible combinations of pull ups and pull downs for the audio sample rate, regardless of the session frame rate.

In addition, if there is a QuickTime movie in the Timeline, the video rate can be pulled up or down by 0.1%, regardless of the session frame rate. Though not an approved workflow, earlier versions of Pro Tools also enabled pull down of QuickTime video clips when audio was pulled down, so this option is included in Pro Tools 5.3.1 and higher to maintain compatibility with earlier sessions.

### Auto Match Pull Factors

Auto Match Pull Factors is available from the session Time Code Rate menu in the Session Setup window. When Auto Match Pull Factors is enabled, Pro Tools adjusts audio and video playback rates as needed to match any changes to the current session Time Code Rate.

Auto Match Pull is applied relative to the current pull up setting. While enabled, if the session frame rate is changed in such a way that the video would have to be pulled by an unsupported amount, the video remains unaffected.

This setting is latching, is not enabled by default, and its state is stored with the session.

#### Example of Auto Match Pull Factors

Auto Match Pull Factors links audio and video pull factors when changing session frame rate.

For example, assume a Pro Tools session is set to a frame rate of 25 fps, the audio and video are both playing with no pull ups, and Auto Match Pull Factors is enabled.

If you then change the session Frame Rate to 24 fps, both the Audio and Video Rate Pull settings would change by –4.0% (the appropriate pull setting required by the change in frame rate).

Auto Match-enabled pull factors are applied to any existing Audio Rate Pull Up/Down or Video Rate Pull Up/Down settings. For example, if audio was already being pulled –0.1% when you changed the session Frame Rate from 29.97 to 24 fps, then the Audio Rate Pull Up/Down menu would switch to None.

## Audio Sample Rate Pull Up and Down

The Audio Rate Pull Up/Down menu applies pull up or down factors to session audio record and playback. All pull rates are available, regardless of session frame rate.
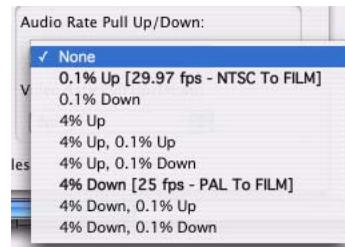


*Audio Rate Pull Up/Down menu in Session Setup*

📖 *See also "Auto Match Pull Factors" on page 892.*

## Audio Rates and Pull Up/Down Options

Table 43 lists actual sample rates of each pull up and pull down option and combination (rounded to the nearest whole Hz):

*Table 43. Sample Rates at Pull Up and Pull Down Settings*

| Pull Up/Down | Sample Rate | | | | | |
|---|---|---|---|---|---|---|
| | 44100 | 48000 | 88200 | 96000 | 176400 | 192000 |
| +4.1667% and +0.1% | 45983 | 50050 | 91967 | 100100 | n/a | n/a |
| +4.1667% | 45938 | 50000 | 91875 | 100000 | n/a | n/a |
| +4.1667% and −0.1% | 45892 | 49950 | 91783 | 99900 | n/a | n/a |
| +0.1% | 44144 | 48048 | 88288 | 96096 | 176576 | 192192 |
| −0.1% | 44056 | 47952 | 88112 | 95904 | 176224 | 191808 |
| −4.0% and +0.1% | 42378 | 46126 | 84757 | 92252 | n/a | n/a |
| −4.0% | 42336 | 46080 | 84672 | 92160 | n/a | n/a |
| −4.0% and −0.1% | 42294 | 46034 | 84587 | 92068 | n/a | n/a |

## Video Frame Rate Pull Up and Down

The Video Pull Up/Down selector lets you change the frame rate of QuickTime movie playback independently from the audio pull-up/down rate. The selector is located below the Audio Rate Pull Up/Down menu in the Session Setup window.



*Video Rate Pull Up/Down menu in Session Setup*

&#9638; *See also "Auto Match Pull Factors" on page 892.*

The choices available in the Video Rate Pull Up/Down menu depend on the file format and frame rate of the QuickTime movie. Video pull rates are saved with the session.

### Effect of Using Pull Up or Pull Down

The following sections describe how related Pro Tools features are affected by pull up and down rates.

#### Time Code Ruler

Video pull up and down does *not* affect the Time Code ruler. Be sure to set the session Frame Rate to the correct frame rate for your project. For example, if working with 24 fps video and you pull the video up by 4%, switch the session Frame Rate to 25 fps to keep the Time Code ruler aligned. Similarly, if working with 24 fps video that is pulled down by 0.1%, switch the frame rate of the session to 29.97.

When working with 25 fps Avid media and the video is set to pull down by 4%, set the session Frame Rate to 24 fps.

#### Plug-ins

For proper operation at larger (4%) pull rates, plug-ins must utilize sample clock instead of an absolute time clock. All Digidesign plug-ins are based on sample clock.

### Higher Sample Rates and Pull Factors

4% audio pull rates are not available in 176.4 and 192 kHz sample rate sessions.

### No Video Recording with Pull Ups

#### (Avid Video Peripheral Required)

Video may not be recorded to the Timeline if a video pull up is selected. If the video track is record-enabled while video pull ups are enabled, or if you attempt to set a video pull up rate while the video track is record-enabled, Pro Tools will post a dialog and disallow video recording. To proceed with digitization, reset the Video Rate Pull Up menu to None.

# Putting Pro Tools Online

To trigger playback or recording from an external source, the Pro Tools Transport must be placed *online*. This tells Pro Tools to listen for incoming time code.

**To put the Pro Tools Transport online, do one of the following:**

&#9642; Choose Options > Transport Online.

&#9642; Click the Online button at the far left of the Transport.

&#9642; Press Control+J (Windows) or Command+J (Mac).

The Online button flashes while Pro Tools waits for a SMPTE frame to trigger playback. When time code is received, playback begins and the Online button becomes highlighted. The Edit Selection indicators in the Edit window, and the Incoming Time field in the Session Setup window display the incoming time code.

**To take Pro Tools offline, do one of the following:**

▪ Deselect Options > Transport Online.

– or –

▪ Deselect the Online button in the Transport window.

## Recording Online

The Operation Preferences page contains two options that affect how Pro Tools initiates recording when online.

**Record Online at Time Code (or ADAT) Lock** Makes online recording begin as soon as Pro Tools receives and locks to time code or ADAT sync. In this case, you do not need to make an insertion or selection in a track to designate a start point.

**Record Online at Insertion/Selection** Makes online recording begin wherever you have placed the insertion point in a track. Recording then continues until Pro Tools stops receiving time code. If you make a selection in a track, Pro Tools will record online only for the length of the selection.

## Generating Time Code

Using a SYNC peripheral, Pro Tools can generate SMPTE and MIDI Time Code (MTC). You can then make Pro Tools a master synchronization source with other devices slaved to it.

**A SYNC peripheral cannot generate 30 fps, 24 fps, or 23.976 fps time code while locked to video input or video reference**

A SYNC peripheral cannot generate 30 fps, 24 fps, or 23.976 fps time code while it is locked to a video clock signal. If you set Pro Tools to generate 30 fps time code while the SYNC peripheral is locked to a video clock signal, the SYNC peripheral will actually generate at the NTSC color standard 29.97 fps. Pro Tools can generate time code at non-NTSC frame rates if you use the internal clock or external word clock on the SYNC peripheral as a synchronization source.

**To generate time code using a SYNC peripheral:**

**1** Connect the SYNC peripheral LTC Out to the SMPTE in connector on the devices you are slaving. If you are slaving a device that recognizes MTC, connect the MTC OUT connector of the SYNC peripheral to the MIDI IN connector of the slaved device.

**2** Make sure your SYNC peripheral is powered on.

**3** In Pro Tools, choose Setup > Peripherals and click Synchronization.

**4** In the Digidesign Synchronization Device section of the Synchronization page, select Enable SYNC Peripheral.

**5** Click OK to close the Peripherals dialog.

**6** Choose Setup > Session, and choose the appropriate frame rate from the Time Code Rate pop-up menu.

⚠ *If you change time code rates in the middle of a session, many SMPTE-to-MIDI Time Code converters need to be turned off and turned on again to be able to recognize the new frame rate.*

**7** In the SYNC Setup section of the Session Setup window, choose a clock reference from the Clock Reference selector. Not all clock choices are available at all sample rates. See "External Clock Sources" on page 884.)

**8** Click the Online button on the Transport, then click Play. Pro Tools generates and outputs time code from the SYNC peripheral.

# Using MIDI Machine Control

Pro Tools provides the capability to transmit location information to external devices and to control their transports using MIDI Machine Control (MMC).

## Controlling External Devices Using MMC

Any device that supports MMC can be controlled directly from within Pro Tools, with either the device or Pro Tools acting as clock master.

The external devices supported by Pro Tools implement "open loop" communications only. Because of this, while Pro Tools is the Transport Master, any direct operation of the receiving device's transport will not be communicated back to Pro Tools. Instead, you can use the Transport pop-up to select the external device (MMC in the pop-up) and use the Pro Tools on-screen transport controls to drive the device.

Pro Tools does not support remote track arming of MMC-controlled external devices. You need to manually arm tracks for recording on the external device.

📄 *Digidesign's MachineControl option supports remote track arming for Sony 9-pin and V-LAN enabled devices. See "Remote Track Arming" on page 900.*

## Enabling MIDI Machine Control in Pro Tools

### Pro Tools as MMC Master

When Pro Tools is the Master, it sends MMC commands to the slave device and receives MTC information back from the slave device.

**To slave an external device to Pro Tools using MIDI Machine Control:**

**1** Connect a MIDI Out port on your Pro Tools MIDI interface to an appropriate port on the slave device.

**2** Connect the MTC out from the slave device to a MIDI In port on your Pro Tools MIDI Interface.

**3** In Pro Tools, choose Setup > Peripherals and click the Synchronization tab.

**4** Deselect Enable SYNC Peripheral if it is selected.

**5** From the MTC Reader Port pop-up menu, select the MIDI In port to which the slave device is connected (the source of MTC information from the slave device).

**6** Click the Machine Control tab in the Peripherals dialog.

**7** In the MIDI Machine Control (Master) section, select Enable.
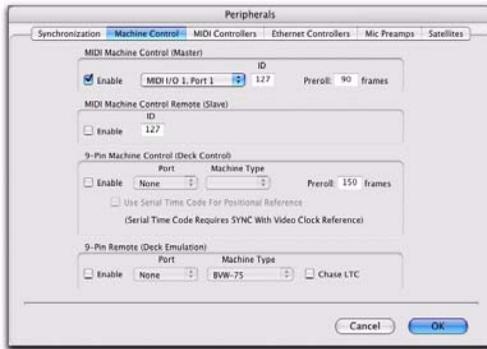


*Machine Control page of the Peripherals dialog*

**8** In the MIDI Machine Control (Master) section, select the MIDI Out port to which the slave device is connected from the pop-up menu.

**9** Set the MMC ID number for which this information will be sent in the "ID" field.

MMC commands contain an ID number to identify which machine should respond to the MMC command. There are 128 MMC ID numbers, from 0–127. The default of ID #127 is a special setting that transmits to all 128 MMC IDs. With a setting of 127, Pro Tools will transmit MMC commands to all MMC IDs.

**10** Set a pre-roll time for your MMC slave device. Pre-roll is needed to provide the device with sufficient time to lock to the time code transmitted by Pro Tools. This value will vary depending on the external device. If the pre-roll time is insufficient, the device may not be ready to lock until after the current time code position has passed.

**11** Click OK to close the Peripherals dialog.

**12** In the Pro Tools Transport window, choose Transport = MMC.

Pro Tools will now be able to control the selected device's transport and act as the clock master.

**13** To have the Pro Tools transport chase the playback location of the slave device, click the Online button in the Transport window.

## Pro Tools as MMC Slave

When Pro Tools is the slave, it receives MMC commands from the master device and sends MTC information back to the slave device.

☼ *In order for Pro Tools to receive MMC commands, the MMC source must be enabled in the Input Devices dialog. For more information, see "Enabling Input Devices" on page 362*

**To slave Pro Tools to an external device using MIDI Machine Control:**

**1** Connect a MIDI In port on your Pro Tools MIDI interface to an appropriate port on the master device.

**2** Connect a MIDI Out port on your Pro Tools MIDI Interface to the MTC in port on the master device.

**3** In Pro Tools, choose Setup > Session.

**4** In the Time Code Settings section of the Session Setup window, select Using MTC.

**5** Choose Setup > Peripherals and click the Synchronization tab.

**6** Deselect Enable SYNC Peripheral if it is selected.

**7** From the MTC Generator Port pop-up menu, select the MIDI Out port to which the master device is connected (this the destination of MTC information from Pro Tools).

**8** Click the Machine Control tab in the Peripherals dialog.

**9** In the MIDI Machine Control (Slave) section, select Enable.
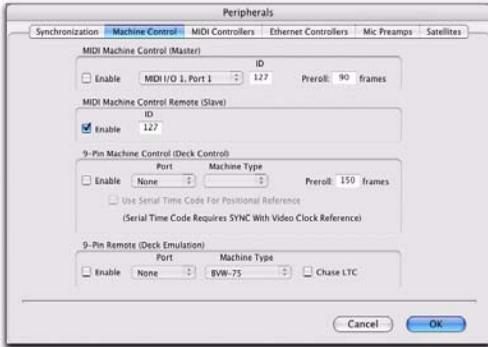


*Machine Control page of the Peripherals dialog*

**10** Set the MMC ID number (channel) on which this information will be received in the "ID" field.

**11** Click OK to close the Peripherals dialog.

Pro Tools will now respond to MMC commands from the external device.

## Operating MMC Devices with the Pro Tools Transport

You can use the Pro Tools Transport window as the remote controller for all your enabled devices (such as a nonlinear video deck). To do so, set the enabled devices to listen to the address you enter for MMC. The Transport window will then drive the Pro Tools transport and any slaved devices.

**To control external devices from the Pro Tools Transport:**

■ Select either Pro Tools or MMC from the Transport pop-up in the Pro Tools Transport window. The selected item will act as Transport Master.



*Selecting the Transport Master*

- When the Transport Master is set to Pro Tools, the playback position is governed by the on-screen cursor in Pro Tools.
- When the Transport Master is set to MMC, the playback position is governed by the external device's play position.

## MMC Transport Settings

When using MMC, you can set the following options for machine transport behavior in the Synchronization Preferences page.

**Machine Chases Memory Location** When selected, navigating to a specific location in a session with a Memory Location causes a connected transport to chase to that location.

**Machine Follows Edit Insertion/Scrub** When selected, navigating to a specific location in a session by moving the selection point or by scrubbing a track causes a connected transport to chase to that location.

## Taking a Device Offline

Use the Online pop-up menu in the Transport Master selector to take a MIDI (or Machine) device offline.

**To take a device offline:**

**1** Click the Transport Master selector.

**2** Click on the Online pop-up menu and deselect the device (Machine or MIDI) by clicking on it. Device choices depend on the current Transport Master and which devices have been set up in Pro Tools.



Online pop-up menu

*Deselecting a device to take it offline*

To bring a device back online, click and reselect it in the Online pop-up menu.

📖 *The Online pop-up menu will only display devices that have been properly set up in Pro Tools.*

*To set up MIDI devices, see "Enabling MIDI Machine Control in Pro Tools" on page 896.*

*To set up machine devices, see the Machine-Control Guide.*

## Setting Minimum Sync Delay

Lock-up time delay is the initial amount of prime time your system's devices need to achieve synchronization "lock." This amount varies for each device. Pro Tools lock up delay is set by entering a value for Minimum Sync Delay in the Synchronization window of the Peripherals dialog. The lowest value available is 15 frames. Find the shortest possible lock-up time that your equipment can operate at consistently, and set this as the Minimum Sync Delay. On systems utilizing Digidesign Machine-Control, enabling the Use Serial Time Code setting will make machines lock up much faster. (Serial time code requires both the SYNC peripheral and external devices to be locked to house video reference.)

**To set a Minimum Sync Delay:**

**1** Choose Setup > Preferences, and click Synchronization.

**2** Enter a number of frames in the Minimum Sync Delay field.

**3** Click OK to close the Preferences dialog.

### Configuring Minimum Sync Delay for External MMC Devices Locked to House Sync

When controlling a house-synced device from Pro Tools through MMC, the device will first lock to the MMC location and then align the color framing. Within house sync code are 4 frames for ensuring color frame lock. If the minimum synchronization setup time is less than the time required to achieve both location and color frame lock, playback will begin before the device has aligned the color frames. In this scenario, you should set the Minimum Sync Delay to be more than the time required for color frame lock. This is not a problem with a SYNC peripheral, which will drop out of lock until the color frame is locked.

## Setting Pro Tools LTC Source

When locking Pro Tools to a stable time code source, enable the Stable LTC Source preference. When selected, this option suppresses the normal 1-second wait time before Pro Tools attempts to lock to incoming LTC.

**To set the Pro Tools LTC Source option:**

**1** Choose Setup > Preferences, and click Synchronization.

**2** Do one of the following:

- For stable time code sources (such as an LTC generator), select the Stable LTC Source option.
- For time code sources such as tape decks, deselect the Stable LTC Source option.

**3** Click OK.

## Remote Track Arming

Digidesign's MachineControl™ option for Pro Tools allows you to remotely arm tracks on supported 9-pin (or V-LAN for transport only) decks. Without MachineControl, Pro Tools does not support remote track arming of external devices. MachineControl lets Pro Tools act as the master or slave to external Sony 9-pin (or V-LAN for transport only) machines, in addition to providing remote track arming from within Pro Tools.

🔅 *Choose Setup > Machine Track Arming Profiles to configure your system, and choose Window > Machine Track Arming to display the Machine Track Arming window.*

📖 *For information on remote track arming with MachineControl, see the MachineControl Guide.*

# Spotting Regions to SMPTE Frame Locations

### (Pro Tools HD and Pro Tools LE with DV Toolkit 2 Only)

*Spotting* is the process of assigning music and sound cues to specific SMPTE frame locations in a film or video. This function can be used to spot:

◆ Entire regions, selected with the Time Grabber tool. Multiple regions can also be selected, and Pro Tools will reference the first region in your selection.

◆ A specific location within a region, by clicking with the Selector tool at that location, and choosing Region > Identify Sync Point.

◆ Sessions or tracks, dragged from a browser to the session Timeline or Region List.

## Spot Mode

In Spot mode, a region in a track can be quickly spotted by simply clicking it with the Time Grabber tool.

You can also drag a region from a DigiBase browser, or from the Region List, to a track while in Spot mode.

## The Spot Dialog

The Spot dialog appears when you drag a region to a track or click a region with the Time Grabber tool in Spot mode. The numeric fields function as both data displays and editing controls for the currently selected regions.

Information in these fields is displayed in SMPTE Time Code, Minutes:Seconds, Feet.Frames, Samples, or Bars & Beats, depending on which Time Scale format is selected.
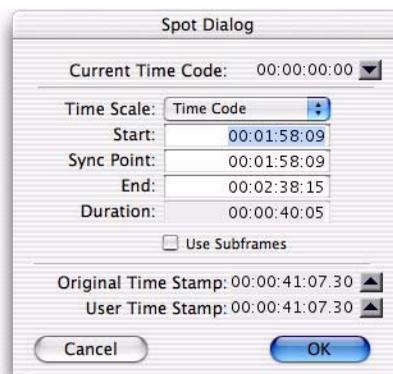


*Spot dialog*

A highlighted numeric field indicates the current active field for numeric entry editing. Entering a value in a field allows you to move a selected element to the time location that you enter. The Start, Sync Point, and End fields are accessible when the Time Grabber tool is active. Only the Start or End (depending on where you click the mouse) and Duration fields are active when one of the Trimmer tools is active (see "Using the Trimmer Tools in Spot Mode" on page 903).

SHIFT *To increase or decrease SMPTE values in the Spot dialog by a specific number of frames, press Plus (+) or Minus (–) on the numeric keypad, enter a number, and press the Enter key.*

## Use Subframes Option

A subframe is 1/100th of a frame. The Use Subframes option enables you to use these smaller units for greater accuracy. This command adds an additional time field in the SMPTE

hours:minutes:seconds:frames box, which appears as the far right time field when enabled. Use a Period (.) to separate subframe values from whole frames.



| Time Scale: | Time Code ▾ |
| Start: | 00:01:58:09.00 |
| Sync Point: | 00:01:58:09.00 |
| End: | 00:02:38:14.93 |
| Duration: | 00:00:40:05.93 |
| | ☑ Use Subframes |
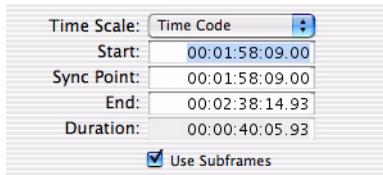
*Additional time field with "Use Subframes" enabled*

⚠ *Subframe measurements are not available in the Current Time field.*

## Capturing Time Code

Pro Tools also allows you to easily capture frame locations on-the-fly in the Spot dialog by pressing the Equal key, or by clicking the Current Time button while valid time code is being received by Pro Tools. With VITC, you can accurately capture a paused or "crawling" VTR's SMPTE location.

When Time Code is selected for the Time Scale, pressing the Equal key captures the incoming time code. When Bars:Beats is selected for the Time Scale, pressing the Equal key will capture to the nearest measure.

Although the Capture Time Code button works with free-running Linear Time Code (LTC) or VITC, frame numbers of a paused frame can only be captured with VITC.

SYNC peripherals can read VITC. With MachineControl and a SYNC peripheral, you can also read serial time code.

💡 *To use Remote mode with MachineControl, you will need an approved serial port. For a complete list of currently approved ports, see www.digidesign.com.*

**To spot a region to a specific SMPTE frame:**

**1** Choose Window > Edit.

**2** Set the Main Time Scale to Time Code. (See "Setting a SMPTE Session Start Time (Start Frame)" on page 888.)

**3** Click the Spot button at the top left of the Edit window to put Pro Tools into Spot mode.



| Shuffle | Spot |
| Slip | Grid ▾ |

*Spot mode enabled*

**4** Identify the SMPTE frame location where you want to trigger playback of your region by pausing your video deck on that frame.

**5** With the Time Grabber tool, click a region in a track, or in the Region List, and drag it into a track. The Spot dialog appears.

**6** Enter the SMPTE frame location by doing one of the following:

- If you are using VITC, you can press the Equal (=) key on the numeric keypad, or click Current Time Code to enter a paused VTR's current SMPTE location.

– or –

- If you are using LTC, when Time Code is selected for the Time Scale, press the Equal (=) key on the numeric keypad to capture the incoming time code. When Bars:Beats is selected for the Time Scale, press the Equal key to capture the nearest measure.

**7** If you recorded the region while online, you can use the Original Time Stamp button to recall and enter the SMPTE frame location at which the region was originally recorded. You can also access a user-defined Time Stamp in the same fashion. See "Time Stamping" on page 903 for more information.

**8** Click OK to close this dialog. The region spots to the chosen SMPTE frame location. When the session is online, this frame number will trigger playback of the region.

## Auto-Spotting Regions

The Pro Tools Auto-Spot Regions option simplifies the task of spotting regions even further. If you are using VITC with this option enabled, or MachineControl software, you can pause your video at an appropriate SMPTE frame location, click a region with the Time Grabber tool, and the region will be automatically spotted to the current time code location.

You can also use MachineControl's serial time code ability to auto-spot by enabling MachineControl and enabling serial time code in the peripheral.

### To Auto-Spot a region:

**1** Choose Options > Auto-Spot Regions.

**2** If you are using VITC, identify the SMPTE frame location where you want to trigger playback of your region by pausing your video deck on that frame.

**3** Click the region with the Time Grabber tool. The region will be automatically spotted to the current time code location (or machine location).

> Clicking a region with any of the Trimmer tools will allow you to trim the region to the current time code location.

> Auto-spotted regions are spotted by their start times, unless you have identified a Sync Point (see "Identifying a Synchronization Point" on page 905). If the region contains a Sync Point, the region is spotted to it.

## Using the Trimmer Tools in Spot Mode

You can use the Spot dialog to trim your regions, including start/end/duration times and referencing incoming time code addresses. If you click a region with any of the Trimmer tools in Spot mode, the Spot dialog will appear, allowing you to enter a value in the Start or End and Duration fields to specify exactly where you want to trim the region's beginning or end. Use this to edit the length of a region to correspond to a particular visual "hit point."

Trimming a region that contains a sync point (see "Identifying a Synchronization Point" on page 905) does not affect the SMPTE location of the sync point, unless the region is trimmed past the sync point.

## Time Stamping

Pro Tools time stamps every region recorded online with the original SMPTE time at which audio was recorded. You can recall this original SMPTE time for a region by clicking the Original Time Stamp button in the Spot dialog.

You can also spot a region to a separate user-defined SMPTE time stamp, defined using the Time Stamp command in the Region List pop-up menu. Once the region is time stamped using this command, you can click the User Time Stamp button to re-spot a region to its user-defined SMPTE location.

## Show Original Time Code in Regions

This command displays the original "time stamped" SMPTE times in all regions currently placed in tracks. This SMPTE frame number represents the time at which the region was originally recorded online with Pro Tools, and does not necessarily reflect the region's current SMPTE location in a track.

**To display Original Time Stamps in regions:**

■ Select View > Region > Original Time Stamp.

**To hide Original Time Stamps:**

■ Select View > Region > No Time.

## Creating a User Time Stamp

If you want to create a separate user-defined SMPTE time stamp, you can use the Time Stamp command in the Region List pop-up menu. This command lets you select a region (or regions) and redefine its SMPTE time stamp. The Original Time Stamp and the User-Time Stamp are then stored with your session.

When audio is first recorded, the User Time Stamp will match the Original Time Stamp, but you can change the User Time Stamp at any time using the Time Stamp command. This feature is particularly useful in post production situations where the SMPTE time code on video "work prints" often changes from one edit revision to another.

**To time stamp a region (or regions) with a new SMPTE frame number:**

**1** In a track, select the region that you want to time stamp.

**2** From the Region List pop-up menu, choose the Time Stamp command.
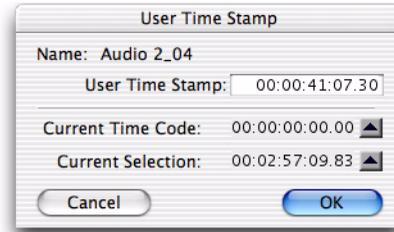


*User Time Stamp dialog*

**3** Enter a new SMPTE time by doing one of the following:

- Enter the numbers manually (with the help of the arrow keys).
- Click the Current Time Code button (or press the Equal key), if you want to capture the incoming time code address.
- Click the Current Selection button, if you want to enter the start time of the current on-screen selection.

**4** Click OK to close this dialog.

This command can be used in "batch mode" to set new time stamps for several regions at a time. To do this, simply select several regions and choose the Time Stamp Selected command. One after another, a dialog will open for each region, allowing you to quickly enter new values.

Once entered, the user time stamps can be displayed in all regions currently placed in tracks.

**To display User Time Stamps in regions:**

■ Choose View > Region > User Time Stamp.

**To hide User Time Stamps:**

■ Choose View > Region > No Time.

# Identifying a Synchronization Point

The Pro Tools Identify Sync Point command lets you identify a specific point within a region for audio spotting purposes.

Imagine the following sound effects spotting scenario: You have a single sound effect that consists of a creaky door slamming shut, followed by a few seconds of ambient reverberation. The slam portion of the effect—which you must precisely match to picture—occurs neither at the very beginning of the audio file nor at the very end. It is somewhere in the middle, making it tough to spot. In this scenario, use the Identify Sync Point command to create a point in the region and synchronize that point to a SMPTE frame.

📖 *For more information on Sync Points, see "Sync Points" on page 662.*

**To create a sync point in a region:**

**1** Do one of the following:

- Click with the Selector tool at the point in the region that you want to synchronize to a SMPTE frame location.

– or –

- Press the Down Arrow key while playing back.

**2** Choose Region > Identify Sync Point. The current SMPTE time is automatically entered as the SMPTE location for the sync point. A small down arrow appears at the bottom of the region, with a vertical, light gray line indicating the location of the sync point.
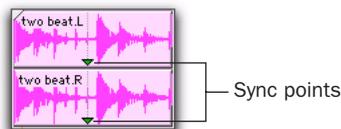


*Sync Points*

# Troubleshooting SMPTE Synchronization

If you are having problems getting SMPTE synchronization to work properly, the following suggestions may help you troubleshoot and solve common problems.

### Stripe SMPTE Before You Record

All tapes in your setup (both audio and video) must be striped with SMPTE Time Code before any audio is recorded onto them or to Pro Tools. If tapes aren't striped, your system may seem to work, but synchronization will never properly occur. The machines and Pro Tools will drift farther and farther apart the longer they run.

The same problem occurs when audio is recorded into Pro Tools without a resolved SMPTE source (for example, if it was recorded before the current session). The audio cannot be accurately synchronized with an analog tape recorder or video tape deck, since the Pro Tools audio was not recorded referenced to the SMPTE time code from the analog tape deck or video tape deck.

### Resolve All Components of Your System

When striping time code, make sure that the time code generator and the video record deck are resolved to the same crystal reference. For example, when striping 29.97 Drop Frame time code onto a VTR, both the SMPTE generator and

the VTR should be resolved to the same "black burst" or house sync generator. During playback, the master deck should be resolved to "black burst" or house sync.

This convention provides compatibility for your tape between the record and playback passes, and when it's played back in other facilities on different equipment. This also means that when playing back a tape striped with time code, the playback deck should be resolved to the same synchronization rate as the record deck was resolved to at the time of the striping. When you stripe time code using an audio transport, it should be "free-running" and unresolved, but should be resolved with a house sync-referenced synchronizer during playback.

### Know the True Frame Rate on Your Media

If you get your media from a production company instead of recording them yourself, be absolutely sure that they indicate the SMPTE frame rate used on the tape correctly. Several time code formats use the same frame count (such as 23.976 fps and 24 fps) yet they run at slightly different frame rates per second.

A Digidesign SYNC peripheral (and some third-party products) can be used to help determine frame rate.

### 29.97 fps Non-Drop Rate Not Recognized

29.97 fps Non-Drop is a slightly slower version of 30 fps Non-Drop time code. When 29.97 fps Non-Drop is used with color video, each video frame matches up with each SMPTE frame without having to use a drop-frame coding. This makes any frame number mathematics much simpler, since no frame numbers are dropped.

Some hardware and software devices do not recognize 29.97 Non-Drop as a separate frame rate. For example, any standard SMPTE-to MTC-converter does not explicitly recognize it. You must set the convertor to expect 30 fps Non-Drop instead. In fact, many devices that read SMPTE work acceptably by reading 29.97 Non-Drop if they are set to expect 30 fps Non-Drop.

Any SMPTE reader that uses the time code numbers to make real-time calculations (as Pro Tools does when it tries to trigger and synchronize to SMPTE) also needs to know that the frame format is 29.97 and not 30 fps. Since Pro Tools allows this choice of frame rate this does not really pose a problem. The problem exists because many users cannot readily distinguish 29.97 from 30 fps.

Even though NTSC tapes only use 29.97, some production companies will distribute video work prints striped with 29.97 fps but mark them as "30 fps NTSC," by which they actually mean 29.97 fps Non-Drop.

By the time you get the tape, you may have no idea what's actually on it. Feeding 29.97 Non-Drop to Pro Tools when it's set for 30 fps Non-Drop will result in timing errors of about 1.8 frames per minute, causing audio playback to trigger out of sync.

### Use a Consistent Clock Source

When possible, media files should be played back using the same sync reference signal they were recorded with. This assures the closest match between record and playback sample rates.

# MIDI Beat Clock

Some MIDI devices such as drum machines, hardware sequencers, and arpeggiators can only synchronize to MIDI Beat Clock. To synchronize these devices to Pro Tools, you can transmit MIDI Beat Clock to them. Many plug-ins also support MIDI Beat Clock.

**To transmit MIDI Beat Clock:**

**1** Choose Setup > MIDI > MIDI Beat Clock.

**2** In the MIDI Beat Clock dialog, select the Enable MIDI Beat Clock option.
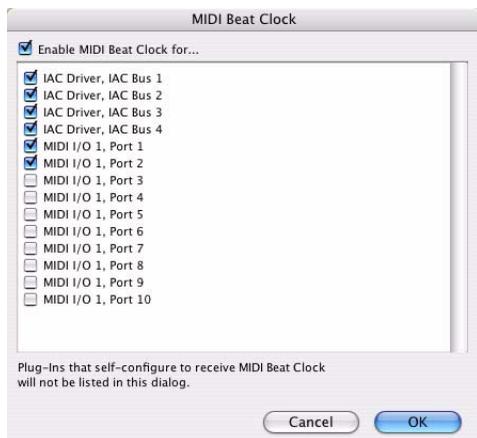


*MIDI Beat Clock dialog*

**3** Select the devices you want to receive MIDI Beat Clock. If your MIDI interface does not support transmitting MIDI Beat Clock to separate ports, only the interface appears as a destination.

**4** Click OK.

**5** Enable the Conductor in the Pro Tools Transport window to enable transmission of MID Beat Clock during Pro Tools playback.

# Sending MIDI Beat Clock Over IAC (Mac Only)

You can synchronize other MIDI applications that use the Apple Inter-Application Communication (IAC) driver to Pro Tools by transmitting MIDI Beat Clock on the IAC bus.

**To transmit MIDI Beat Clock on the IAC bus:**

**1** Choose Setup > MIDI > MIDI Studio.

**2** In the MIDI Devices window of Audio MIDI Setup, double-click the IAC Driver icon.

**3** Configure the IAC Driver ports and confirm that it is online.

**4** Choose Setup > MIDI > MIDI Beat Clock.

**5** In the MIDI Beat Clock dialog, select the Enable MIDI Beat Clock option.

**6** Select the IAC Driver ports you want to enable to send MIDI Beat Clock.

**7** Click OK.

**8** Enable the Conductor in the Pro Tools Transport window to enable transmission of MID Beat Clock during Pro Tools playback.

# Chapter 43: Working with Video in Pro Tools

This chapter covers video features in Pro Tools. Differences between support for QuickTime, Windows Media, and Avid video are noted throughout.

📄 *For detailed information on features that apply specifically to working with Avid video in Pro Tools, see the Avid Video Peripherals Guide.*

## Introduction

Pro Tools lets you do the following with video:

- Create video tracks and import QuickTime and Windows Media video to the Timeline using menu commands or drag and drop
- Lock video tracks
- Extract audio from QuickTime or Windows Media video
- Scrub audio in tandem with video
- View video in the Video window or output it through a FireWire peripheral to an external monitor
- Bounce the video track to QuickTime or Windows Media video

Pro Tools LE with DV Toolkit 2, Pro Tools LE with an Avid video peripheral, and Pro Tools HD let you do the following with video:

- Import multiple video files into the Timeline
- Select from multiple video playlists on each video track
- Mix multiple codecs in video tracks
- Organize, group, and edit video regions in the Timeline much like audio regions
- Organize, group, and edit video regions with audio regions
- Manage video regions
- Undo multiple video operations
- Create multiple video tracks with QuickTime, Windows Media, and Avid video in the Timeline

# QuickTime Movies Support in Pro Tools

Pro Tools supports the import, playback, and editing of QuickTime movies.

## QuickTime Required

Quicktime must be installed if you plan to include movie files, or import MP3 or MP4 (AAC) files in your Pro Tools sessions. QuickTime for Windows is available as a free download from the Apple website (www.apple.com).

*For information on which version of Quick-Time is compatible with your version of Pro Tools, visit the compatibility pages of the Digidesign website (www.digidesign.com).*

## QuickTime Movie Playback Performance Options

The Operation Preferences page provides three options for QuickTime Playback Priority:

**Normal** This setting gives no extra priority to movie playback over other screen update tasks such as metering, moving faders, and so on. In most cases you should use this setting.

**Medium** This setting gives QuickTime movie playback a higher priority relative to other Pro Tools screen update tasks. Use this setting if you experience inconsistent QuickTime movie playback with the Normal setting.

**Highest** This setting gives QuickTime movie playback highest priority. In this mode, Pro Tools disables screen activity and requires you to use the Spacebar to stop playback. Use this setting if you require uninterrupted Quick-Time movie playback.

### High Quality QuickTime Image

When enabled, Pro Tools decompresses both fields of each interlaced frame of QuickTime video. When viewing a QuickTime movie in the Pro Tools Video window, select this option to display the movie at the highest possible resolution. Deselecting this option can help improve performance if your system experiences problems playing back a session with QuickTime video.

## Supported QuickTime Movies

When working with someone who is preparing QuickTime movies for use with Pro Tools, ensure that you communicate the following:

**Consolidated and Referenced Media** QuickTime DV movies can be either complete (consolidated) Quicktime files (where media is copied into a Quicktime file) or Quicktime reference files (where just a small composition is in the Quicktime file which references the original DV files).

**Codec Requirements** When exporting from Avid, always use the Apple DV codec. Do not enable "Use Avid Codec" in the export dialog. If an Avid-codec DV movie is imported into Pro Tools, you cannot play it unless you have installed an Avid video peripheral.

**DV Stream Movies** Pro Tools does not support audio from a DV Stream file. DV Stream files contain the entire data stream that has been transferred or recorded over the FireWire cable from a camera. In this type of file, the audio and video data are stored in an interleaved fashion, as opposed to a QuickTime file where audio and video are stored separately.

*See also "Exporting QuickTime DV from Avid" on page 930.*

## Limitations for Applying Pull-Ups to QuickTime Movies in Sessions Containing Avid Video

Applying a pull-up to QuickTime movies in a session may have unpredictable effects on the playback of any Avid video in that session. Only use video pull-up for sessions that do not contain Avid video.

## Windows Media Video (VC-1 AP Codec) Support in Pro Tools

### (Windows Vista Only)

Pro Tools natively supports the import and playback of Windows Media video files created using the VC-1 Advanced Profile codec. See your Windows documentation for detailed information about Windows Media video.

⚠ *Though not prohibited, editing Windows Media video or adding multiple clips to the timeline can lead to irregular video output performance.*

## Windows Media Video File Caveats

The following limitations apply to Windows Media video in Pro Tools.

- Pro Tools cannot open Windows Media video files that require Windows Media File Digital Rights Management (DRM) passwords to view.

- High-resolution Windows Media video files play back accurately at normal speed on the Windows desktop or an external monitor with a qualified DirectShow output device. However, due to processing requirements for VC-1 decompression, Digidesign cannot guarantee accurate playback of video frames when performing other transport commands (such as scrubbing, looping, and off-speed play).

- Pro Tools does not support Windows Media playback via Avid video peripherals.

## Before Starting Your Project

Before you start any project that requires working with video, consider the following:

**Frame Rate** Before receiving video, find out the frame rate. Use this frame rate when setting the frame rate of your Pro Tools sessions and when capturing video.

**Creator Application and Codec** Before receiving video as media files, find out the application and codec used to create those files. Then confirm that you can play those files in Pro Tools. It is always a good idea to get a sample file in advance.

**QuickTime Movie Time Code Burn-in** Before receiving QuickTime movies, request the time code display to be "burned in" (superimposed) if possible. This ensures that Pro Tools places the file at the correct time code location in the Timeline.

**Sufficient Space on Video Drives** Ensure sufficient space is available on separate dedicated video-only drives. Video files take up significantly more space and bandwidth than audio, and must be kept on separate drives from audio files to prevent performance problems.

**Separate video-only and audio-only drives** For best results, always use separate video-only and audio-only drives. For complete information on hard drive requirements, visit the Digidesign website (www.digidesign.com).

## Video Tracks

Video tracks let you add or import video to the Timeline, as follows:

- Pro Tools LE lets you add or import one video track per session, with a limit of one video playlist and one QuickTime or Windows Media video file on that track.

- Pro Tools HD, Pro Tools LE with DV Toolkit 2, and Pro Tools LE with an Avid video peripheral let you add multiple video tracks to the Timeline, with multiple video playlists and multiple video files per track.

⚠️ *An Avid video peripheral is required to import, play back, and edit Avid video.*

- Pro Tools with an Avid video peripheral lets you mix QuickTime and Avid video tracks in the Timeline (but not on the same video track).

**To create a video track in Pro Tools LE, do one of the following:**

■ Use File > Import to import a video file.

■ Drag a video file to the Timeline.

■ Use File > Import > Session Data to import a session containing a video track.

See "Importing Video into Pro Tools" on page 917 for more information.

**To create a new video track with Pro Tools HD and Pro Tools LE with DV Toolkit 2 or an Avid video peripheral:**

**1** Choose Track > New.



*New Tracks dialog*

**2** In the New Tracks dialog, do the following:

- Select Video Track from the Track Type pop-up menu.

– and –

- Enter the number of new video tracks.

**3** Click Create.

A new empty video track appears. Video tracks may appear slightly different depending on your system configuration or the type of video added to a video track.



*Empty video track*

## Multiple Video Tracks in the Timeline

### (Pro Tools HD, and Pro Tools LE with DV Toolkit 2 or an Avid Video Peripheral Only)

You can add multiple video tracks to the Timeline, but only one video track can be played back at a time. This track is known as the main video track.

## Multiple Video Track Playlists

### (Pro Tools HD, and Pro Tools LE with DV Toolkit 2 or an Avid Video Peripheral Only)

Playlists provide an easy way of changing back and forth between alternate versions of a video track.
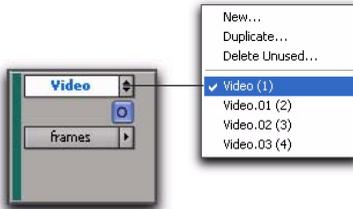


*Playlist selector*

You can perform all of the same operations with video playlists as you can with audio playlists, including:

- Duplicating a playlist
- Creating a playlist
- Assigning a playlist to another video track
- Renaming a playlist
- Deleting a playlist

*For more information, see "Playlists" on page 410.*

## Multiple Codecs on an Individual Video Track

### (Pro Tools HD, and Pro Tools LE with DV Toolkit 2 or an Avid Video Peripheral Only)

A single video track can contain video regions compressed with different video codecs of the same type of video. For example, you can add QuickTime files that were compressed using multiple codecs to the same video track.

However, once the first video file has been added to a session, all additional video files added to the Timeline must have the same video engine rate as the first video file.

## Main Video Track

The main video track is the video track that is currently online, and will be played back with any audio in the session.

When the main video track is offline, you can play back the audio in your session without playing back the video. When the video is offline, the Video Online button changes to gray so you can tell at a glance whether your video is offline or simply playing black fill.

If no video track is currently online, the main video track is the video track that was last online.

### To select the main video track:

■ Click the Video Online button of any track that is offline (gray) to put it online (blue), making that track the main video track.
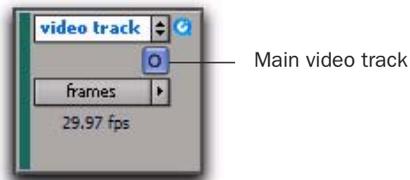


Main video track

*Video Online button (offline and online, respectively)*

# Video Track Controls and Indicators

## Video Track View

The video track can be viewed in Frames View or in Blocks View, both of which display all video region boundaries and metadata. Video frame images are displayed only in Frames View.

⚠️ *When switching from Blocks mode to Frames mode during playback, the video track will not update to displaying frames until playback is stopped.*

**To set the view for the video track:**

■ On the video track, select Frames or Blocks from the View Options pop-up menu.

### Frames View

In Frames View, video data is displayed as pictures in the video track. These pictures are computed based on the video image, and scale according to your track zoom and height settings. They allow you to easily find a scene or sequence in the video track.



*Video track in Frames View*

Frames do not display properly if you change zoom settings during playback. Black frames are drawn until playback is stopped. You should stop playback before changing zoom settings if you want to view frames.

If video pull-up or pull-down is enabled, frames do not change position.

### Frames View Performance

When using Frames View to view video content in the video track, your computer may exhibit reduced or sluggish performance. If this happens on your computer, hide the video track or switch to Blocks View.

### Blocks View

In Blocks View, video frames are replaced by colored blocks.



*Video track in Blocks View*

## Video Track Type Icons

A video track displays a QuickTime icon, Windows Media icon, or an Avid icon depending on the type of video added to it. No icon displays when the video track is empty.
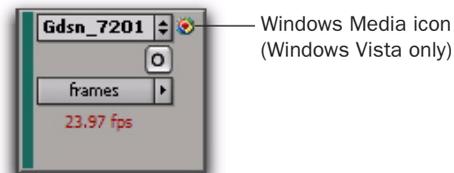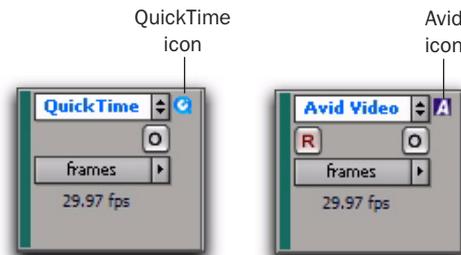


*Video tracks displaying QuickTime, Windows Media, and Avid icons*

You can add any supported video to an empty video track, in which case the icon will update and the video track will play back only that type of video.

### Differences in Video Tracks with Avid Video

When an Avid video peripheral (such as an Avid Mojo SDI) is connected to your system and powered on, the following conditions apply:

- All video tracks display a Video Output selector, but only tracks containing Avid video display a Video Input selector.
- You can add Avid video to an empty video track.
- Only Avid video tracks contain a Record Enable button.

📖 *See the Avid Video Peripherals Guide for detailed information on using the Record Enable button and the controls in the I/O View.*

## Video Online Button

The Video Online button lets you select the main video track, switch that track online or offline, and see at a glance by color whether a video track is offline (gray) or online (blue).



Video track offline          Video track online
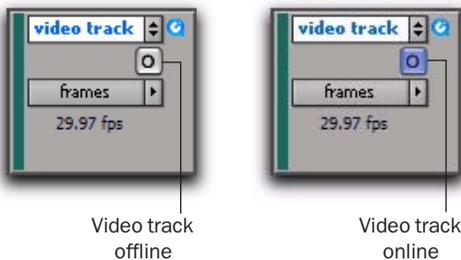
*Video Online button (offline and online, respectively)*

**To switch a video track online or offline:**

- Click the Video Online button of any track that is offline (gray) to put it online (blue), making that track the main video track.

- Click the Video Online button of the main video track to take it offline, and Pro Tools will not output video.

## Locking Video Tracks

You can lock one or more video tracks to prevent any video regions on those tracks from being edited.

When a video track is locked, Pro Tools restricts all editing operations involving the track (except for locking and unlocking video regions).

A locked video track displays a small lock to indicate that the video track has been locked and cannot be edited. (The lock does not appear if the Track Height of the video track is set to Mini.)



Lock icon

*Locked video track*

Locking or unlocking a video track does not alter the lock status of individual regions. If a region was locked before you lock the track, the region will still be locked when you unlock the track. However, unlocking a region in a locked track will not allow you to edit that region. It will behave as if the region were locked until you unlock the track.

**To lock a video track:**

**1** Select the video track or tracks you want to lock.

**2** Do one of the following:

- Start-click (Windows) or Control-click (Mac) the name of any selected video track, and select Locked.

– or –

- Right-click the name of any selected video track, and select Locked.
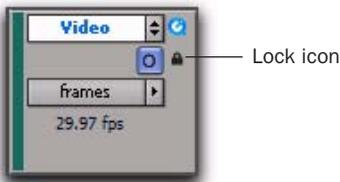


*Locked video track*

# Video Engine Rate

The *video engine rate* represents the number of video frames output by Pro Tools per second, and is determined automatically by the frame rate of the first video file added to a session. Video files subsequently added to the session must have the same video frame rate as the video engine rate.

The video frame rate is displayed for each video file in the DigiBase browsers, and the current video engine rate is displayed in the I/O View of the main video track.

📖 *See "Video Engine Rate Indicator" on page 916 for information on the Video Engine Rate indicator in the I/O View.*

The video engine rate is independent of the session's time code rate, which determines the number of frames displayed per second in grids, rulers, and counters. You can set the session

time code rate manually with the Time Code Rate pop-up menu in the Session Setup window. In order for the grids and rulers to align with the actual frames of the video files in the Timeline, the session's Time Code Rate setting should be set to match the video engine rate.

# Video Engine Rate Indicator

The Video Engine Rate indicator displays only in the main video track (whether it is online or offline) and shows the video engine rate, which is the number of video frames per second output by Pro Tools.
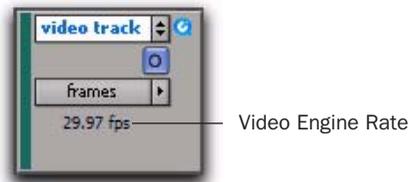


*Video Frame Rate*

The Video Engine Rate indicator is normally black, but turns red if one of the following conditions are present:

- The video engine rate does not match the session's current Time Code Rate setting.

– or –

- A pull-up has been applied to the video, causing the video engine rate to differ from the session Time Code Rate.

📖 *The Time Code Rate is set in the Session Setup window. For more information, see "Session Setup Window" on page 883.*

📖 *See "Pull Up and Pull Down" on page 890 for detailed information on using video pull up and pull down.*

# Importing Video into Pro Tools

Pro Tools provides the following methods of importing video files into the Timeline, Region List, and new or existing video tracks:

- Using the Import Video menu command
- Dragging from the Region List to the Timeline (Pro Tools HD, Pro Tools LE with DV Toolkit 2, or Pro Tools LE with an Avid video peripheral only)
- Dragging from a DigiBase browser or from Windows Explorer or Mac Finder
- Using the Import Session Data command

*The video frame rate of the first video file added to a session determines the session's video engine rate. Video files subsequently added to the session must have the same video frame rate as the video engine rate.*

*In general, audio and video media should be stored on separate dedicated drives. When importing audio and video at the same time by linking to media, however, Pro Tools may copy both to the same drive. To avoid performance problems, move the video to the desired video playback drive before importing the audio and video into your session.*

*When you import MPEG-2 video into Pro Tools, only the video portion of the file is imported and the resulting video regions cannot be edited.*

*In a DigiBase browser, you can designate your audio drives to play or record audio but only transfer video, or vice versa. You may use these settings to ensure that your audio and video are on the correct volumes. For detailed instructions, see "Audio and Video Volume Designators" on page 239.*

## Importing Video into Pro Tools Using the Import Video Command

The Import Video menu command lets you choose one or more video files to import into Pro Tools.

When you use this method to import video into Pro Tools, the Video Import Options dialog appears. This dialog contains multiple options for customizing how files are imported.

**To import video into Pro Tools using the Import Video command:**

**1** Do one of the following:

- Choose File > Import > Video.

– or –

- Press Alt+Control+Shift+I (Windows) or Command+Control+Shift+I (Mac).

**2** In the Select Video File to Import dialog, select one or more video files.

**3** Click Open.

**4** Configure the Video Import Options dialog as desired, and click OK to import video into Pro Tools.

*See "Configuring Video Import Options" on page 918 for detailed instructions.*

## Importing Video into Pro Tools with Drag and Drop

You can drag and drop video files from a DigiBase browser or from Windows Explorer or Mac Finder to the Timeline, a track, a Track List, or the Region List.

When you use this method to import video into Pro Tools, the Video Import Options dialog appears. This dialog contains multiple options for customizing how files are imported.

### To import video into Pro Tools using drag and drop:

**1** Drag and drop one or more video files from a DigiBase browser or from Windows Explorer or Mac Finder to the Track List, Timeline, or an existing video track.

**2** Configure the Video Import Options dialog as desired, and click OK to import video into Pro Tools.

📋 *See "Configuring Video Import Options" on page 918 for detailed instructions.*

### Importing Video into Pro Tools Using Import Session Data

You can use the Import Session Data command to import video from other Pro Tools sessions or (with DigiTranslator 2.0) from an AAF or OMF sequence. Any video files you import must have the same video frame rate as any video file already present in the session.

📋 *For information on importing session data, see "Importing Session Data" on page 266. For detailed information on importing AAF or OMF sequences into Pro Tools, see the DigiTranslator Guide.*

## Dragging Video Files from the Region List to the Timeline

### (Pro Tools HD, and Pro Tools LE with DV Toolkit 2 or an Avid Video Peripheral Only)

You can add video files to the Timeline by dragging and dropping directly from the Region List to a video track.

### To add video files to a video track by dragging them from the Region List:

**1** Select one or more video files in the Region List.

**2** In any Edit mode, drag the selected video files to a blank area in the Timeline (to create a new video track) or an existing video track (to place it within that track).

## Configuring Video Import Options

The Video Import Options dialog appears when you import video into Pro Tools by using the Import Video command or dragging video files from a DigiBase browser or from Windows Explorer or Mac Finder.
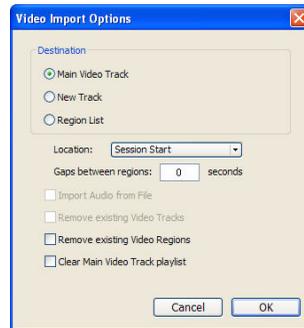


*Video Import Options dialog*

📋 *See "Bypassing the Video Import Options Dialog" on page 920 for details on bypassing the Video Import Options dialog when dragging and dropping video files.*

## Destination Section

The Destination section of the Video Import Options dialog lets you choose a general destination for imported video in Pro Tools.

**Main Video Track** The video file is imported directly to the track that is currently online (known as the main video track) and into the Region List. If no track is currently online, the video file will be imported to the last existing video track that was online.

**New Track** Each video file is imported into its own individual track and into the Region List.

**Region List (Pro Tools HD and Pro Tools LE with DV Toolkit 2 or an Avid Video Peripheral Only)**

Each video file is imported directly into the Region List, where it will be available to drag and drop into the Timeline.

## Location Pop-Up Menu

If you do not select the Region List as a destination in the Destination section, the Location pop-up menu lets you choose precisely where in the Timeline Pro Tools places imported video.

**Session Start** Places the video file at the start of the session.

**Song Start** Places the video file at the Song Start position.

**Selection** Places the video file at the edit cursor position or within the selection (if one was made).

**Spot** Displays the Spot dialog, which lets you spot video to precise locations based on any of the Time Scales.

**Original Time Stamp (Avid Video Only)** Places Avid video in the Timeline at a time code location that corresponds to the timestamps from the original source tape. With multiple video files, this places all video files in the Timeline at their respective original timestamps.

## Additional Video Import Options

**Gaps Between Regions (Pro Tools HD and Pro Tools LE with DV Toolkit 2 or an Avid Video Peripheral Only)** When you import more than one video file into a track, they will be shuffled together by default. This option lets you indicate the number of seconds by which each video clip will be separated when imported into the video track.

**Import Audio from File (QuickTime and Windows Media Video Only)**
When selected, the audio from the QuickTime or Windows Media video file you are importing will be extracted and placed into new mono or stereo audio tracks in the Timeline. (Mono or stereo audio with a sampling rate of 48 kHz or lower are supported.) When unselected, only the video portion of the video file will be imported into Pro Tools.

**Remove Existing Video Tracks** When selected, all existing video tracks will be deleted before Pro Tools imports video into the session.

**Remove Existing Video Regions** When selected, all existing video regions will be removed from the Timeline and the Region List before Pro Tools imports video into the session (but left on disk). This option is useful if you want to import a video file into the session with a video frame rate that does not match the current video engine rate.

📖 *See "Video Engine Rate" on page 916 for more information.*

**Clear Main Video Track Playlist** When selected, all existing video regions in the currently-selected playlist on the main video track will be removed from the track before Pro Tools imports video into the session. No other playlists, video tracks, or video regions will be affected. (This option is only enabled if the main video track is selected as the Destination option.)

### Bypassing the Video Import Options Dialog

You can bypass the Video Import Options dialog when dragging video files into Pro Tools. The video files are added exactly where you drop them in the Timeline following the current Pro Tools editing mode.

**To bypass the Video Import Options dialog when importing video into Pro Tools:**

■ Alt-drag (Windows) or Option-drag (Mac) one or more video files from a DigiBase browser, Windows Explorer, or Mac Finder into the Region List or the Timeline.

## Extracting Audio from QuickTime and Windows Media Video

**(QuickTime and Windows Media Video Only)**

You can extract many audio file formats from QuickTime and Windows Media video files without importing the video.

⚠ *Pro Tools cannot extract audio from Windows Media video files that require Windows Media File Digital Rights Management (DRM) passwords.*

The audio is converted to the session's sample rate and bit resolution, and a new region appears in the Region List for each imported file. The regions are listed in the Region List with the region name, the number of the originating track, and the number of the region from the track.

**To import audio from a QuickTime or Windows Media video file without importing the video, do the following:**

**1** Choose File > Import > Audio.

**2** In the Import Audio dialog, navigate to the video file from which you want to import audio, and select it.

**3** Under the Region section, click the name of the audio region you want to extract from the video file, and click Convert Region or Add Region.

**4** Select other audio files as desired, and click Done to import the audio.

**5** In the Audio Import Options dialog, choose whether to import the audio into a new track (and the Region List) or the Region List only.

### Sample Rate Conversion Quality

If you import QuickTime audio that was not originally recorded at the session's sample rate, the sample rate is converted to match the audio to your session. Pro Tools allows you to choose the quality of the sample rate conversion by means of the Conversion Quality setting in the Editing Preferences page.

There are five possible settings, ranging from Low (lowest quality) to Tweak Head (highest quality). The higher the quality of sample rate conversion, the longer it takes to convert the bounced file.

**To set the sample rate conversion quality:**

**1** Choose Setup > Preferences and click the Processing tab.

**2** Click the Conversion Quality pop-up menu and select a conversion setting.

# Video Regions

You can create video regions that function in much the same way as audio regions.



*Video region as displayed in Frames View in the Timeline*

A video region is a segment of video data, and can be a portion of video or an entire video file. In Pro Tools, video regions are created from QuickTime, Windows Media, or Avid video files, and can be arranged in corresponding video track playlists. Video regions can also be grouped, looped, and color coded.

When using Pro Tools HD, Pro Tools LE with DV Toolkit 2, or Pro Tools LE with an Avid video peripheral, you can add, edit, and change viewing options for video regions in the same ways as audio regions. All edits to video regions are nondestructive. (See "General Video Editing" on page 922 for more information.)

Just like audio regions, video regions display in Pro Tools in the Region List or the Timeline.

When using Pro Tools LE, the following limitations apply to video regions:

• You can add only one video region to a session. It can be played back, but cannot be edited and will not be listed in the Region List.

• When you import video or open a session created by Pro Tools HD, Pro Tools LE with DV Toolkit 2, or Pro Tools LE with an Avid video peripheral, only the main or first available video track containing QuickTime regions will be imported. You can play back and view multiple regions, and tab through region boundaries. However, you cannot edit them. (See "Using Pro Tools LE to Import Video from Other Versions of Pro Tools" on page 933 for more information.)

## Video Regions in the Region List

**(Pro Tools HD, and Pro Tools LE with DV Toolkit 2 or an Avid Video Peripheral Only)**

A video region displays in the Region List with a small video icon next to its name.
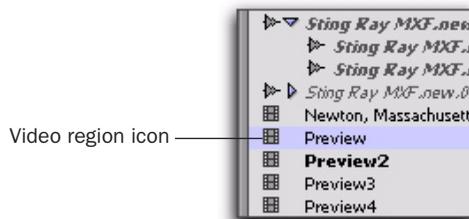


Video region icon

*Video region as displayed in the Region List*

📖 *For information on working with regions in the Region List, see Chapter 12, "The Region List."*

## Showing or Hiding Video Regions in the Region List

The Region List pop-up menu provides commands that let you show or hide video regions in the Region List.

### To show or hide video regions in the Region List:

**1** In the Edit window, click the Region List pop-up menu, and choose Show.

**2** Select the Video option to show or hide video regions.

# General Video Editing

### (Pro Tools HD, and Pro Tools LE with DV Toolkit 2 or an Avid Video Peripheral Only)

Most editing operations that are available for audio regions can also be applied to video regions. This section describes all available video editing operations. Unless noted, the procedure for each video editing operation is the same as its audio editing counterpart.

📓 *See the appropriate section in this guide for detailed information on performing editing operations.*

### Basic Video Editing Features

- Nondestructive editing
- Display of region names, region times, and other data in playlists
- Multiple video playlists
- Multiple Undo
- Video regions and video region groups in Region List
- All Edit modes
- All Edit Tools (except for Time Compression Expansion and Pencil tools)

### Playing and Selecting Video Track Material

- Selecting within video frame boundaries (see "Selecting within Video Frame Boundaries" on page 923)
- Selecting and editing across multiple Video and audio tracks (see "Selecting and Editing Across Multiple Audio and Video Tracks" on page 923)
- Link or unlink track and Edit selections
- Auto-scroll video tracks
- Loop playback
- Universe window (Pro Tools HD only—see "Browsing Video in the Video Universe Window" on page 927)

### Working with Regions and Selections

- Capture regions
- Separate regions and Separate Grabber Tool
- Region overlap and underlap
- All trimming commands except for TCE
- Heal separated regions
- Place, align, slide, shuffle, and spot regions
- Sync points
- Nudging (quantized to frame boundaries)
- Shift command (moving track material back or forward in time by a specified amount)
- Quantize region to Grid (rounds to nearest video frame)
- Replace Region command
- Cut, Copy, Paste, and Clear commands
- Special Cut, Copy, Paste, and Clear commands
  - Repeat to fill selection
  - Editing across multiple tracks
- Duplicate command
- Repeat command

- Region groups (see "Video Region Groups" on page 924)

- Region looping

**Managing Regions**

- Insert space (see "Using the Insert Silence Command to Insert Space in Video Tracks" on page 924)

- Compact Selected (nothing happens to the video, and at least one audio track must be selected)

- All naming and displaying of region commands

## Editing Caveats

The following caveats apply to video editing in Pro Tools:

- MPEG-2 video in the Timeline cannot be edited.

- If you create and enable a track group containing audio and video tracks—and any audio track has region boundaries that do not line up with video frame boundaries— you cannot tab through those region boundaries.

## General Editing Operations Not Applicable to Video Regions

The following editing operations are applicable to audio regions, but are not applicable to video regions:

- Fades

- Mute/unmute regions

- AudioSuite plug-ins

- Waveform Repair with the Pencil tool

- Strip silence

- Consolidate regions

## Selecting and Editing Across Multiple Audio and Video Tracks

You can create a selection across multiple audio and video tracks, and cut, copy, or paste audio and video simultaneously.



before                    after
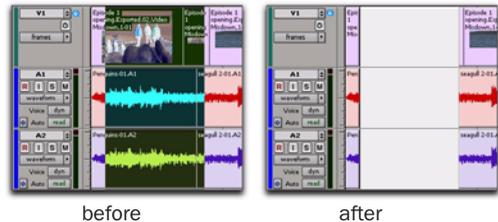
*Selecting and editing across multiple tracks (Slip mode shown)*

Audio and video that is selected and cut, copied, or pasted follow the current Edit mode.

## Selecting within Video Frame Boundaries

Pro Tools does not let you select, play back, or edit a partial video frame. The following rules apply when selecting or editing video:

- When you make a selection in a video track, the selection boundaries follow the current Grid setting but round to the nearest video frame boundary, as follows:

  - If the selection includes more than half of a video frame, the video frame is included within the selection.

  - If the selection includes less than half of a video frame, it is not included in a video selection.

• When you paste a selection containing video to a video track, the insertion point automatically aligns with the closest video frame boundary.

⚠ *When you paste audio and video simultaneously, this video frame re-alignment may result in the audio not being positioned exactly where you placed it. A warning dialog displays when this occurs.*

## Using the Insert Silence Command to Insert Space in Video Tracks

The Insert Silence command lets you make a selection on a track (or tracks) and insert precisely that amount of space. You can also select across video and audio tracks, and use the Insert Silence command to insert audio silence and space simultaneously.

In Shuffle mode, all video data on the track is shuffled later in the track by an amount equal to the selection. In Slip, Grid, or Spot mode, the Insert Silence command works just like the Edit > Clear command.

**To insert space into a video track:**

**1** Make a selection in a track or tracks. The length of the selection determines the duration of the space inserted.

**2** Choose Edit > Insert Silence.

## Renaming Video Disk Files

When renaming audio regions in either the Timeline or the Region List, you have the option of also renaming the audio files on disk. However, this does not apply to video files on disk.

To rename video files on disk, you must rename them in a DigiBase browser or in Windows Explorer or Mac Finder.

⚠ *Changes made in the operating system will not automatically update the information displayed in the DigiBase browser.*

## Video Region Groups

**(Pro Tools HD, and Pro Tools LE with DV Toolkit 2 or an Avid Video Peripheral Only)**

You can include video regions within region groups for the following operations:

• Creating region groups
• Creating multitrack region groups (including audio tracks)
• Editing region groups
• Creating fades and crossfades for audio files in region groups
• Importing and exporting region group files

📖 *See "Region Groups" on page 675 for detailed information on working with region groups.*

# Using the Video Window

Pro Tools provides a Video window that lets you view, display, or scrub video.

⚠️ *Avid video displays in the Video window only when scrubbed or shuttled.*

**To display the Video window, do one of the following:**

■ Select Window > Video.

– or –

■ Press Control+9 (Windows) or Command+9 (Mac).
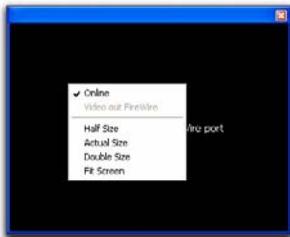


*Video window (with pop-up menu shown)*

## Changing Video Window Options

The Video window pop-up menu lets you do the following:

• Toggle online status of the main video track.

• Toggle output of QuickTime video between the Video window and an external monitor via the FireWire port (Mac OS X only).

• Resize the Video window.

**To toggle the online status of the main video track:**

■ Right-click (Windows or Mac) or Control-click (Mac) the Video window, and select Online.

**To toggle output of QuickTime video between the Video window and FireWire, do one of the following (Mac OS X only):**

■ Choose Options > Video Out FireWire.

– or –

■ Right-click, or Control-click, the Video window, and select Video Out FireWire.

## Resizing the Video Window

You can resize the Video window by dragging or using the Video window pop-up menu.

**To resize the Video window by dragging:**

■ Place the cursor at the bottom left or bottom right of the Video window, and drag the window to the size you want.

**To resize the Video window by using the Video window pop-up menu:**

■ Right-click (Windows or Mac) or Control-click (Mac) the Video window, and choose from the following resize options:

• Half Size
• Actual Size
• Double Size
• Fit Screen

## Scrubbing the Video Track

Due to the latency introduced by all FireWire-based video peripherals, the video on an external monitor will not be in sync with the Scrubber tool. To scrub video without latency, you can scrub in the Video window.

If you scrub directly on the video track, only the video will scrub (no audio will play). If you scrub on an audio track, audio and video will scrub simultaneously.

**To scrub a video track:**

**1** Ensure that scrubbing in the Video window is enabled by selecting Options > Scrub in Video Window.

**2** Select the Scrubber tool.



*Scrubber tool*

**3** Click in the video track and drag the Scrubber.

⇧ *To scrub with finer precision, press the Command key while scrubbing.*

## Shuttling the Video Track

Shuttle Lock mode lets you use the numeric keypad to shuttle a video track and one or two audio tracks forward or backwards at specific speeds. Numbers 0 through 9 provide progressively faster speeds, as follows:

- To stop shuttling, press 0.
- To increase the speed progressively towards normal speed, press numbers 1 through 4.
- To shuttle at normal speed, press 5.
- To increase the speed progressively faster than normal speed, press numbers 6 through 9.

Only the main video track is shuttled. When multiple audio tracks are selected, only the first two tracks are shuttled.

**To play the video track with the shuttle lock:**

**1** With Pro Tools HD, make sure the Operation preference for Numeric Keypad mode is not set to Shuttle (see "Operation Preferences" on page 76).

**2** Make sure the Video Online button in the video track you want to scrub is set to an online (blue) status.

**3** With the Selector tool, click in the audio track where you want playback to begin. To shuttle on two tracks, Shift-click in a second audio track.

**4** Press the Start key (Windows) or Control (Mac) and a number on the numeric keypad: 0–9 (9 is fastest, 5 is normal speed, and 0 stops shuttling).

Once Shuttle Lock mode is initiated, Fast Forward and Rewind become highlighted in the Transport window.

**5** Press additional keys to change the playback speed, or press Plus (+) or Minus (–) to switch the playback direction (plus for forward, minus for backward).

**6** To stop playback, press Start+0 (Windows) or Control+0 (Mac).

**To exit Shuttle Lock mode, do one of the following:**

■ Click Stop in the Transport window.

– or –

■ Press the Spacebar.

# Browsing Video in the Video Universe Window

**(Pro Tools HD Only)**

The Video Universe, which is accessible from the Universe window, lets you view, navigate, zoom, and select video regions on the main video track.

The Video Universe window displays the center video frame of each video region in the main video track. Video frames are ordered sequentially according to their order in the Timeline, and the colored strip under each frame represents the color coding for that region.

**To display the Video Universe window:**

**1** Make sure the Video Online button in the main video track is set to an online (blue) status.

**2** Choose Window > Universe to display the Universe window.

**3** Right-click (Windows or Mac) or Control-click (Mac) anywhere in the Universe window, and choose Video Universe.



*Video Universe with video frames representing video regions on the main video track*

## Increasing or Decreasing the Size of Video Frames

**To increase or decrease the size of video frames in the Video Universe window:**

■ Right-click (Windows or Mac) or Control-click (Mac) anywhere in the Universe, and select Increase or Decrease.

## Selecting Zoom Resolutions in the Video Universe

When you move the cursor over the top half of a video frame in the Video Universe, it displays and behaves as a zoom tool. This tool lets you zoom in on one or more video regions to fill the entire Edit window display.



*Video frame with zoom tool*

**To use the Video Universe window to zoom video regions in the Edit window:**

**1** Move the cursor over the top half of any video frame until it becomes a zoom tool.

**2** Do one of the following:

- To move the beginning of a video region to the far left of the Timeline while maintaining the current zoom resolution in the Edit window, click the video frame representing the region once.

- To zoom in on a video region so that it fills the entire Edit window, double-click the video frame representing the region.

- To zoom a range of selected regions so that they fill the Edit window, click and drag on the video frames that represent the regions.

### Selecting Ranges in the Video Universe

When you move the cursor over the bottom half of a video frame in the Video Universe, it displays and behaves as a selector tool. This tool lets you select ranges within one or more video regions in the Edit window.



*Video frame with selector tool*

**To use the Video Universe window to select ranges in video regions in the Edit window:**

**1** Move the cursor over the bottom half of any video frame until it becomes a selector tool.

**2** Do one of the following:

- To place the cursor at the beginning of a video region, click the video frame representing the video region.
- To select an entire video region from start to end, double-click the video frame representing that region.
- To select one or more entire regions from start to end, drag the video frames representing the video regions.

☼ *If the Edit window does not display the selected video regions, it will automatically scroll to show the beginning of the selection.*

### Selecting Zoom Resolutions and Ranges Simultaneously in the Video Universe

When you move the cursor over a video frame in the Video Universe while pressing Alt (Windows) or Option (Mac), the cursor appears as a selector tool. This tool lets you zoom and select ranges simultaneously.

**To use the Video Universe window to select and zoom simultaneously in the Edit window:**

**1** Move the cursor over any area of any video frame in the Video Universe window until it becomes a selector or zoom tool.

**2** To select a range of video regions while simultaneously zooming to fill the Edit window, Alt-drag (Windows) or Option-drag (Mac) multiple video frames.

## Playback of High-Definition QuickTime and Windows Media Video

Pro Tools lets you import and play back High-Definition QuickTime and Windows Media video files.

☼ *When playing HD video through an Avid video peripheral (QuickTime only) or other device locked to a standard-definition video reference (such as a black burst generator), the display updates at the frame rate of the video reference.*

## Setting Session Time Code Rate for HD QuickTime and HD Windows Media Video Import

When playing back QuickTime and Windows Media video with frame rates higher than 30 fps, Pro Tools syncs properly only if the Time Code Rate in the Session Setup window is set to half of the video frame rate of the video files.

For example, to properly play back QuickTime or Windows Media HD video at 59.94 fps, change the session's Time Code Rate to 29.97 frames per second.

**To set the session's Time Code Rate:**

**1** Choose Setup > Session.

**2** In the Session Setup window, select the appropriate time code rate in the Time Code Rate pop-up menu.

# Playing QuickTime DV Video to an External Monitor Via FireWire

**(Mac OS X Only)**

When using a DV decoder, you can output QuickTime DV25 video (including QuickTime movies exported as QuickTime DV from Avid) through your computer's FireWire port.

For the latest compatibility information on Firewire transcoders, visit the Digidesign website (www.digidesign.com).

Performance may vary, depending on the specifics of your system and projects.

*When using an Avid video peripheral (such as an Avid Mojo SDI, Avid Mojo, or AVoption|V10), you can output QuickTime video formats to an external display via the FireWire port on Windows XP and Mac OS X. See the Avid Video Peripherals Guide for detailed information.*

### Playing QuickTime DV Video Through the FireWire Port

**(Mac OS X Only)**

**To Play QuickTime DV video through the FireWire Port:**

**1** Import a QuickTime video file into a Pro Tools session. (See "Importing Video into Pro Tools" on page 917 for detailed information.)

**2** Choose Options > Video Out Firewire.

When this option is enabled, Pro Tools will play the video (NTSC or PAL) out the FireWire port to an external DV decoder.

If the Video window is open while video plays out the FireWire port, it displays text indicating that video is playing out the FireWire port.

## Exporting QuickTime DV from Avid

The following instructions describe export settings for Media Composer, Media Station|PT, or Avid Xpress Pro. These settings are required to create QuickTime DV movies that can be played back in Pro Tools through the Firewire port.

**To export a QuickTime DV reference movie for Pro Tools Firewire playback, set the following:**

**1** Enable the following export options:

- Flatten video tracks
- Fill in spaces with black
- Render all video effects
- Use Apple DV Codec
- Enable the Apple DV codec

**2** Make sure Use Avid Codec is not enabled.

*These export settings can be saved in Avid Xpress Pro as a default, simplifying future media exchange. Refer to your Avid XPress documentation for more information on export settings and defaults.*

## Tips for Optimizing Video Playback

When using Pro Tools to play video files, the quality of the playback is dependent on the following:

- Speed of your computer and hard drive
- Size (in pixels) of the video file
- Quality of the video hardware used to capture and play back the digitized video
- Codec and level of compression used

For more consistently smooth video playback, here are some suggestions:

- Use an Avid video peripheral.
- Use the fastest computer possible.
- Set Scrolling option to None (Options > Scrolling > None).
- Recompress the video at a reduced pixel dimension, for example 320 x 240 pixels to 640 x 480 pixels.
- Use a video clip with less compression (heavily compressed files require more processor speed to decompress for display).
- Hide the video track when not needed (or change from Frames to Blocks view).
- Ensure that any unnecessary software is not running.
- Resize the Video window to a small desktop size, for example by using half size instead of whole or full screen.

## Compensating for Video Monitoring Delays

You can compensate for delays in the video output that may be introduced by external decoders and certain types of displays (such as projectors or plasma screens).

**To compensate for delays caused by video monitoring devices:**

**1** Choose Setup > Video Sync Offset.

**2** In the Set Video Sync Offset dialog, enter a value in the QuickTime Video Offset field or Windows Media Video Offset field that is appropriate to compensate for the delay caused by your video monitor chain. The amount of delay introduced varies based on your system and the type of video peripheral you are using. When using an Avid peripheral with QuickTime, 18 quarter-frames is a good starting point, but you will need to verify the precise setting for your system. (Third-party devices are available to help you measure this delay.)



*Video Sync Offset dialog*

Once this value is set, it should not need to be updated unless you change components in your video monitoring chain (such as projectors or plasma screens).

## Playing Video to an External Monitor Via a Video Card

Pro Tools lets you output Windows Media (VC-1 AP) video to NTSC or PAL monitors via any device that is compatible with standard Direct-Show output.

For a list of devices explicitly tested for Windows Media (VC-1 AP) output from Pro Tools, see *http://www.digidesign.com/support*.

## Bouncing the Video Track to a QuickTime Movie

When you have finished your final mix and synchronized your audio events to the movie, you can bounce the main video track (QuickTime or Avid video) and a mono or stereo mixdown of your session to a new QuickTime movie.

You can choose from a variety of standard QuickTime codecs, which are fully compatible with other QuickTime applications.

⚠ *Because all formats and codecs have not been tested, you should verify the Quick-Time movie bounced successfully.*

⚠ *Pro Tools cannot bounce audio or video to an MPEG-2 video file.*

**To bounce video and audio in the video track to a QuickTime movie:**

**1** Finalize your mix.

**2** Make sure the video track you want to bounce is currently the main video track. (The track's Video Online button must be highlighted blue.)

**3** Make sure that all of the audio tracks you want to include in the bounce are audible (not muted or inactive).

**4** Assign the output of each of the tracks you want to include in your bounce to the same stereo output or bus path.

**5** Do one of the following:

- To bounce the entire session, click Return to Zero in the Transport window to go to the beginning of the session.

– or –

- To bounce a portion of the session, enable Options > Link Timeline and Edit Selection, and make a selection in the Edit window or the Timeline.

**6** Choose File > Bounce to > QuickTime Movie.

The Bounce dialog appears (if you are bouncing QuickTime movies) or the Bounce to QuickTime dialog appears (if you are bouncing Avid video to QuickTime movies).

**7** Select your mix's output or bus path from the Bounce Source selector.

**8** If you are bouncing Avid to QuickTime and you want to configure QuickTime video settings, click Options.

**9** Configure other settings as appropriate.

⚠ *Pro Tools is qualified to bounce to Quick-Time DV25. Bouncing to other formats may work but has not been tested.*

📖 *See Apple documentation for detailed information on configuring QuickTime movie settings.*

**10** Click Bounce.

**11** Select a destination for the new QuickTime movie, enter a new name, and click Save.

Bouncing video may take quite a bit longer than real-time, depending on the format of the source video, the format of the bounced video, and processing speed.

## Bouncing a Video Track with Windows Media Video to a WIndows Media Movie

You can bounce the main video track and a mono or stereo mixdown of your session to a new Windows Media movie.

⚠ *QuickTime and Avid video cannot be bounced to Windows Media video, and vice versa.*

⚠ *Because all formats and codecs have not been tested, you should verify the Windows Media movie file bounced successfully.*

**To bounce video and audio in the video track to a Windows Media movie:**

**1** Finalize your mix.

**2** Make sure the video track you want to bounce is currently the main video track. (The track's Video Online button must be highlighted blue.)

**3** Make sure that all of the audio tracks you want to include in the bounce are audible (not muted or inactive).

**4** Assign the output of each of the tracks you want to include in your bounce to the same stereo output or bus path.

**5** Do one of the following:

- To bounce the entire session, click Return to Zero in the Transport window to go to the beginning of the session.

– or –

- To bounce a portion of the session, enable Options > Link Timeline and Edit Selection, and make a selection in the Edit window or the Timeline.

**6** Choose File > Bounce to > Windows Media Movie.

The Bounce dialog appears.

**7** Select your mix's output or bus path from the Bounce Source selector.

**8** Click Bounce.

**9** In the Windows Media dialog, do the following:

- In the Profile pop-up menu, select the profile matching the desired size and data rate of the exported video—the larger the resolution, the larger the resulting video file.
- To include uncompressed audio in the video file that will be exported, select Lossless Audio Compression.

**10** Select a destination for the new video file, enter a new name, and click Save.

Bouncing video may take quite a bit longer than real-time, depending on the format of the source video, the format of the bounced video, and processing speed.

# Using Pro Tools LE to Import Video from Other Versions of Pro Tools

When you use Pro Tools LE to import video or open a session created by Pro Tools HD or Pro Tools LE with DV Toolkit 2 or an Avid video peripheral, some components of the session may open differently or not open at all, as follows:

- Only the main video track is displayed. If no video track was selected as the main video track when the session was saved, the first video track containing QuickTime or Windows Media video in that session is displayed.

- Only the playlist that was chosen when the session was saved will be displayed.

- All QuickTime or Windows Media video on the main video track will be displayed, but the video track will be locked and cannot be edited.

- All additional video tracks, playlists, and video regions will not be shown. However, they will continue to be saved with the session, and will be available if the session is opened on a system that supports them.

When using Pro Tools LE to work with video in such a session, you can do the following:

- Use the Tab key to move the Location Cursor to video region boundaries.

- Add and edit audio tracks.

- Bounce the video track to disk as a QuickTime or Windows Media video file.

- Export the session, including the full video track.

*See "Bouncing the Video Track to a Quick-Time Movie" on page 931.*

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