What's New

Pro Tools HD® 7.4

contents

Introduction

This chapter is an overview of new features in Pro Tools HD 7.4 for Pro Tools|HD® systems on Digidesign-qualified versions of Windows or Mac OS X.

System Requirements

For complete system requirements, refer to the compatibility page of the Digidesign website (www.digidesign.com/compatibility).

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/compatibility).

New Features in Pro Tools HD 7.4

Pro Tools HD 7.4 includes the following new or enhanced features:

Elastic Audio for Real-Time and Rendered Time Compression and Expansion

- Elastic audio tracks:
  - Real-time
  - Rendered
- Optimized analysis and Time Compression and Expansion (TCE) algorithms for polyphonic, monophonic, and rhythmic material
- Varispeed resampling algorithm to link time and pitch changes
- Ability to automatically conform imported audio (AIFF, WAV, BWF, REX, and ACID files) from DigiBase or from the Desktop to local session tempo
- Ability to automatically conform audio to tempo changes on tick-based Elastic Audio tracks
- New Track Views:
  - Warp track view for detailed Elastic Audio editing
  - Analysis track view for advanced Elastic Audio analysis editing

- Elastic Properties window for audio regions on Elastic Audio-enabled tracks
- DigiBase support of Elastic Audio:
  - Ability to preview files in DigiBase browsers at the session tempo
  - Ability to preview audio in DigiBase browsers in tandem with session playback
  - Elastic Audio plug-in selector for preview and import
  - Create Elastic Audio Analysis command for batch analyzing files in DigiBase
  - Clear Elastic Audio Analysis command
- Ability to quantize audio

Miscellaneous Pro Tools Features and Enhancements

- Playback Engine enhancements for Elastic Audio and sampler instrument plug-ins (such as Structure):
  - DAE Playback Buffer Size now includes values in milliseconds
  - Cache Size for determining amount of memory DAE allocates to pre-buffer audio for playback and looping when using Elastic Audio
  - Plug-in Streaming Buffer Size for determining amount of memory DAE allocates for sample playback with sampler plug-ins
  - "Optimize for Streaming Content" option for improved playback of sampler plug-in samples located on your audio drive
- Separate CPU (RTAS) and CPU (Elastic) meters in System Usage window
- New Editing preferences:
  - Changes to Fades Editing preference
  - New Warp/Notes Track View in Zoom Toggle section

- New Processing preferences:
  - Import REX Files as Region Groups preference and Automatically Create Fades option
  - Drag and Drop From Desktop Conforms to Session Tempo preferences
  - Elastic Audio options
- General session, track, and plug-in features:
  - Click menu command renamed to Click/Countoff
  - Event Menu commands renamed
  - Time Shift field (in Time Shift plug-in) renamed to Speed
  - Waveform height for new and imported tracks follows default waveform height setting
  - Save Session Copy In dialog updated with options to Limit Character Set and to not copy Elastic Audio Rendered Files
  - Missing Files dialog updated with option to Regenerate Missing Rendered Files Without Searching
- Stereo Surround Panners now linked by default
- Miscellaneous DigiBase features:
  - Preview button Right-click menu for previewing files
  - Ability to preview one or all channels of a split stereo file or split multichannel file
  - Volume control for previewed files
  - Meter display and clip indicators for previewed files
  - Look ahead typing for DigiBase searches

- Language compatibility features and enhancements:
  - Entry and display of any language characters supported in Unicode
  - Ability to search across multiple languages in DigiBase
  - New Display preference sets language for Pro Tools application, making it possible to run one language version on a different localized version of Windows
  - New "Default Auto-Naming to English (ASCII)" preference
  - New Text Encoding menu in Import Session Data dialog, for identifying language encoding of legacy sessions
  - Ability to choose language encoding used when saving session materials
  - Database information for all languages now stored in a single Unicode folder
- Editing improvements:
  - Beat Detective Enhanced Resolution general analysis algorithm
  - Improved transient detection for Tab to Transients and Separate Region at Transients
  - Tab to Transients command keyboard shortcut
- MIDI improvements:
  - MIDI In to Pro Tools over ReWire

Miscellaneous Video Enhancements and Features

- Expanded video resolution support for Pro Tools with Avid Mojo, including all video resolutions previously supported by Pro Tools with Avid Mojo SDI or AVoption|V10
- Support for co-installation of Avid Xpress Pro 57.x with all versions of Pro Tools 7.4
- Avid interopability improvements (Pro Tools HD on Windows XP only):
  - Support for media streaming with Avid Unity ISIS
  - Ability to digitize video directly to ISIS
  - Avid Interplay Access Support for Exporting Sequences to Any Volume

Media Station|PT Features and Enhancements

- Support for Media Station|PT
- New features for Media Station|PT:
  - HD video digitize, import, playback, and export
  - HD frame rate sequence support
  - Support for Unity ISIS and Unity Media-Network 4.x
  - Support for Avid Interplay
  - Support for Media Station|PT with Intel-based Macs running Mac OS X 10.4.8
  - Support for Avid Mojo SDI
  - Support for Video Satellite option, which synchronizes playback and capture between Pro Tools and Media Station|PT

Enhancements and Features for Pro Tools Hardware

- D-Command and D-Control enhancements
  - Commands for switching playlists
- SYNC HD features and enhancements:
  - Configurable Device ID for using SYNC HD with legacy Pro Tools software
  - Status LED indicators for Locked and Speed Cal clock reference states
  - Support for tri-level sync signals including the following formats: 720p, 1080i, 1080p, and Slow PAL
  - Ability to select Video Reference Format and Video Input Format at HD rates
  - Ability to select video format for connected Avid Video peripheral at HD rates

chapter 2

Elastic Audio

Pro Tools 7.4 introduces Elastic Audio for track-based real-time 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 accelerandi and ritardandi. If you are doing post production, use Elastic Audio to adjust for pull-up or pull-down factors.

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:
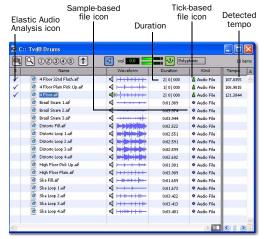
1 Open the Workspace (Window > Workspace).

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.
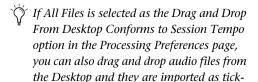
Elastic Audio controls and indicators in DigiBase

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.
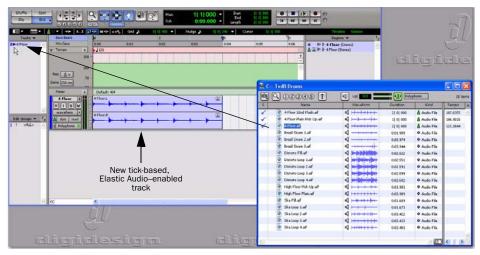
Figure 1. Dragging and dropping a tick-based audio file from a DigiBase browser to the Track List

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 29).*
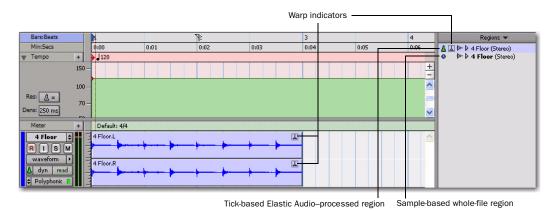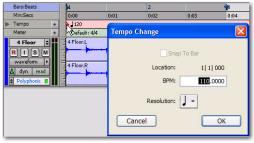
Figure 2. Imported tick-based audio file with Elastic Audio processing

Change the session tempo to change the tempo of the region:

1 Change the tempo from the default 120 BPM to 110 BPM. (For information about the default tempo and tempo changes, see the *Pro Tools Reference Guide*.)

Changing the default tempo

2 Notice on-screen 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, 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.
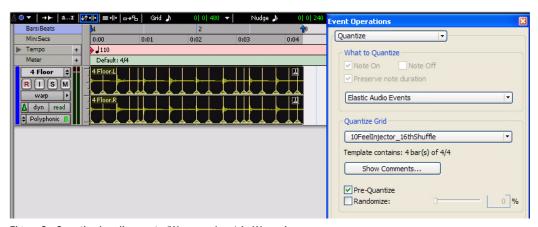
Figure 3. Quantized audio events (Warp markers) in Warp view

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 page.*
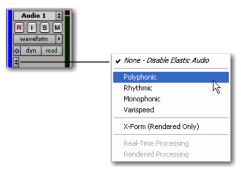
💡 *When creating new tracks by dragging and dropping audio from a DigiBase browser, if the Audio Files Conform to Session Tempo option is enabled, Pro Tools creates tick-based Elastic Audio–enabled tracks regardless of whether the Elastic Audio analyzed file is tick-based or sample-based. If the Audio 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 15).

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.
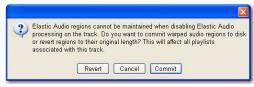
3 From the track's Elastic Audio Plug-in pop-up menu, select Real-Time Processing or Rendered Processing for Real-Time or Rendered Elastic Audio processing.

💡 *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 14.*

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.
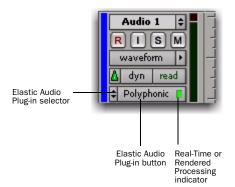
Creating New Tracks with Elastic Audio Enabled

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 Section" on page 46).

- 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 in DigiBase Browsers" on page 35).

- When dragging and dropping REX or ACID files from the Desktop (if either the REX and ACID Files Only option 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 REX and ACID Files" on page 38).

Elastic Audio Track Controls

Audio tracks provide a new set of controls for Elastic Audio.

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 15). 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 14).

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 15).

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 14).

Elastic Audio Track Views

Pro Tools 7.4 provides two new 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 19.*

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 26.*

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 Sensi-

tivity in the Elastic Properties window (see "Event Sensitivity" on page 33). 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 26).

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 26) or lower the Event Sensitivity setting in the Elastic Properties window for the region you want to process (see "Elastic Properties Window" on page 31).*

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.
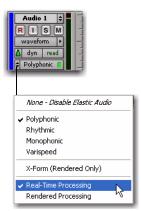
☼ *In rendered mode, any change you make is rendered using the original source audio to avoid generational loss from multiple subsequent edits.*

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
- 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

SHIFT *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
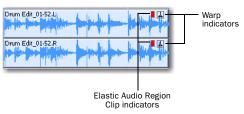
Pro Tools creates temporary files for Rendered Elastic Audio processing. These files are kept in a new, auto-created Rendered Files folder in the session folder. Once you commit Rendered Elastic Audio processing to a track (by disabling Elastic Audio on a track and clicking Commit in the Commit Elastic 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 indica-

tor 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 31).

Elastic Audio Region Clip indicator

Elastic Audio Plug-ins
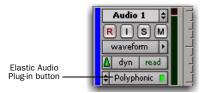
Pro Tools 7.4 provides several TCE algorithms for real-time and rendered track-based Elastic Audio processing. The selected Elastic Audio plug-in determines how the audio is processed. Each plug-in uses different algorithms for Elastic Audio processing. Different algorithms are better suited to different 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:
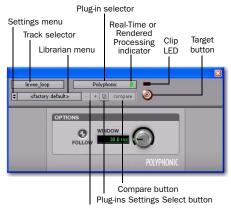
■ Click the Elastic Audio Plug-in button.

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 14).

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 33), or attenuate the Default Input Gain in the Processing Preferences page (see "Elastic Audio Section" on page 46).

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 15).*

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 plug-in provides the highest quality time compression and expansion algorithms for music production, sound design, and audio loop applications. However, the X-Form Elastic Audio plug-in is for Rendered Elastic Audio processing only and cannot process in real-time.

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 the new Warp Track View in Pro Tools 7.4, 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.
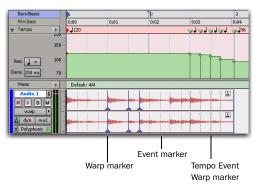
Figure 4. Elastic Audio markers in Warp view

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 26).

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 22).

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 (see "Tempo Changes and Tick-Based Elastic Audio Tracks" on page 28). 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.

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.
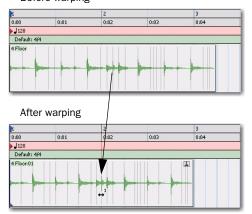
To apply Telescoping Warp to a region:

▪ 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.
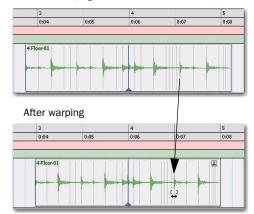
Accordion Warp

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
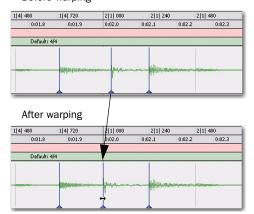
Range Warp

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
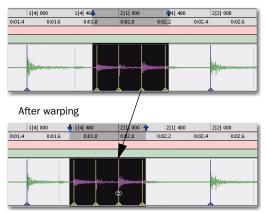
Range Warp with an Edit Selection

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.
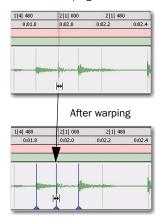
Individual Range Warp

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 icon 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 icon

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 processing range of the selected Elastic Audio plug-in. 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 the out of range 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 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 (Event markers) 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.

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 5 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 region 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.
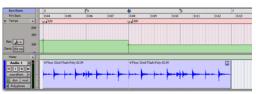

Figure 5. Tempo conformed audio, linear tempo change

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 6 below shows a region in Warp view. Notice how the audio conforms to the tempo curve.

Figure 6. 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 selected region 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. The region must be on an Elastic Audio–enabled track, but the track timebase can be either ticks or samples.

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 22.

⚠ *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.

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. The following table 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.

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 11.)*

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.
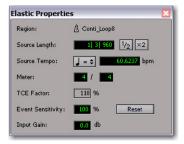
To view the Elastic Properties for a region:

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 15).

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 finished 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).
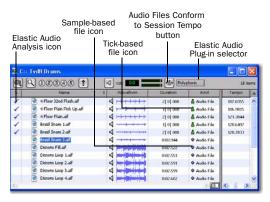
Approximate Waveforms

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 in DigiBase Browsers

DigiBase browsers provide several new commands, controls, and indicators for previewing and importing Elastic Audio. You can batch analyze audio files (AIFF or WAV), clear Elastic Audio analysis, preview analyzed audio files at the session tempo, and even preview analyzed audio files in time with the session during session playback.

New Elastic Audio Controls and Indicators

Elastic Audio Analysis icon
Sample-based file icon
Tick-based file icon
Audio Files Conform to Session Tempo button
Elastic Audio Plug-in selector

New controls and indicators in DigiBase browsers

File Timebase and Elastic Audio Analysis Icons

With the addition of Elastic Audio, DigiBase browsers provide three new icons to indicate whether a file has Elastic Audio analysis and the file's timebase.

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

Audio Files Conform To Session Tempo Button

When the Audio Files Conform to Session Tempo button is enabled, all tick-based audio files (those with tempo detected Elastic Audio analysis, as well as REX and ACID files), conform to match the session tempo. This lets you play back the session, and then simultaneously preview the selected files in time with the session (see "Conforming Preview to the Session Tempo" on page 36).

Audio Files Conform to Session Tempo button

Elastic Audio Plug-in Selector

The Elastic Audio Plug-in selector lets you select any Elastic Audio plug-in as the default plug-in for previewing and importing Elastic Audio. Only Real-Time Elastic Audio plug-ins are available.

Elastic Audio Plug-in selector

Elastic Audio Analysis in Browsers

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.

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.

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 Digi-Base 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.

Deselect the Spacebar Toggles File Preview option in the Browser menu to be able to start and stop session playback with the spacebar without starting and stopping auditioning in the browser. Use Control+P (Windows) or Command+P (Mac) to start and stop preview in the front-most browser during session playback.

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.

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.

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 Section" on page 46).

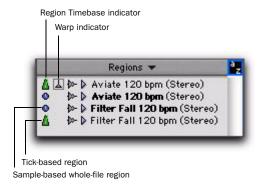### Importing Elastic Audio from DigiBase to the Region List

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 REX and ACID Files

REX and ACID files are tick-based audio files and will be converted to the session file format on import. Dragging and dropping a REX or ACID file from DigiBase browsers to the Track List or empty space in the Edit window creates a new tick-based, Elastic Audio–enabled track using the default Elastic Audio plug-in. However, if the Import REX Files as Region Groups option is enabled in the Processing Preferences page, REX files are imported as tick-based region groups.

Elastic Audio in the Region List

Regions with Elastic Audio analysis (either residing on Elastic Audio–enabled tracks or imported with Elastic Audio analysis from DigiBase) can appear in the Region List as either tick-based or sample-based. Tick-based Elastic Audio regions will always have a corresponding sample-based whole-file region. Regions with Elastic Audio processing are identified with the Warp indicator in the Region List.

Real Time Elastic Audio region in a track playlist and in the Region List

Previewing Elastic Audio in the Region List

Sample-based regions in the Region List always preview at their native tempo; no Elastic Audio processing is applied. Tick-based regions always preview at the session tempo. If a tick-based region's native tempo is different from the session tempo, Elastic Audio processing is applied and a Warp indicator appears to the left of the region's name in the Region List. The Warp indicator lets you know that Elastic Audio processing has been applied to the region.

Importing Elastic Audio from the Region List

Dragging and dropping tick-based audio regions from the Region List to the Track List, or to empty space in Edit window, creates new Elastic Audio–enabled tick-based audio tracks using the selected default Elastic Audio plug-in (see "Elastic Audio Section" on page 46).

Dragging and dropping tick-based or sample-based audio regions from the Region List to existing tracks results in the same behavior as moving regions between tracks with different time bases and with or without Elastic Audio enabled (see "Moving Elastic Audio Between Tracks" on page 30).

Quantizing Audio

With Pro Tools 7.4, you can apply Quantize and Restore Performance to audio.
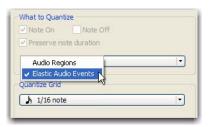
Quantizing Elastic Audio

Quantize can be applied to Event and Warp markers closest to the quantize grid on Elastic Audio–enabled tracks, whether they are sample- or tick-based. 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.

Additionally, on all audio tracks, whether or not they are Elastic Audio–enabled, or sample- or tick-based, quantization can be applied to region start times or sync points. 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 the *Pro Tools Reference Guide* for information on using Restore Performance.

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:

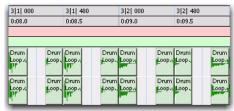**1** Select the audio regions you want to quantize.

💡 *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.*
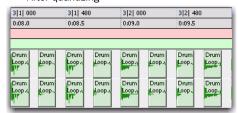
2 Choose Events > Event Operations > Quantize.

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.
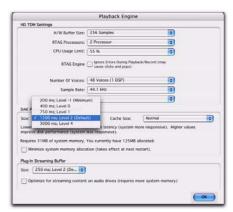
Miscellaneous Pro Tools Features and Enhancements

Playback Engine Enhancements

The Playback Engine dialog includes the following changes and new features:

Updated DAE Playback Buffer Size

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.

DAE Playback Buffer Size menu in the Playback Engine dialog

Cache Size

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

The optimum Cache Size for most sessions is Normal.

• 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.

• 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.

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 the plug-in controls.

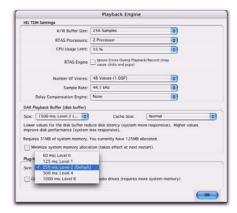The optimum Plug-in Streaming Buffer Size for most sessions is 250 ms (Level 2).

• 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.

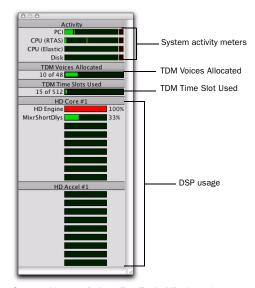### Optimizing the Plug-in Streaming Buffer Size

(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.

System Usage Window Enhancements

In Pro Tools 7.4, the System Usage window updates the CPU meter with two separate CPU meters: one for RTAS processing and one for Elastic Audio processing.

System Usage window (Pro Tools HD shown)

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.

New and Improved Preferences Options

Display Preferences

Basics Section

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. This option is selected by default.
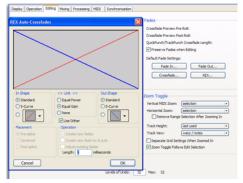
Operation Preferences

Transport

Reserve Voices For Preview In Context 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.

Editing Preferences

Fades Section

REX Selects 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 in the Processing Preferences page. This option used to be named REX/ACID. ACID files are no longer imported as region groups, but are imported as tick-based Elastic Audio.

REX Auto-Crossfades preference and dialog

Zoom Toggle Section

In the Zoom Toggle section, the Track view option supports Warp/Notes, and the Zoom Toggle Follows Edit Selection option has been added.
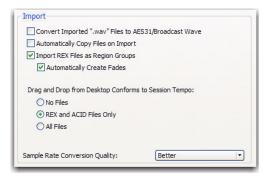

Zoom Toggle preferences (Editing Preferences page)

Track View Selects Waveform/Notes, Warp/Notes, Last Used, or No Change for the Zoom Toggle Track View.

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.

Processing Preferences

Import Section

Import preferences (Processing Preferences page)

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.

⚠ *ACID files are always imported as tick-based Elastic Audio if the Audio Files Conform to Session Tempo button is enabled in DigiBase or if REX and ACID Files Only or All Files is selected for the Drag and Drop from Desktop Conforms to Session Tempo preference.*

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 of the Editing Preferences page.

The Automatically Create Fades option used to be the Automatically Create Fades for Imported REX and ACID Files option located in 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 are imported as tick-based Elastic Audio and conform to the session tempo.

Elastic Audio Section

Pro Tools 7.4 provides three new Processing 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.

Elastic Audio preferences (Processing Preferences page)

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 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 31).

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.

General Session and Track Features

Click Command Renamed Click/Countoff

The Click menu command has been renamed to Click/Countoff.

Event Menu Commands Renamed

The following Event menu commands have been renamed for improved clarity:

The Time command is now called Time Operations. Its first submenu is now called Time Operations Window (instead of Operations Window) and all of its windows are labeled as Time Operations.

The Tempo command is now called Tempo Operations. Its first submenu is now called Tempo Operations Window (instead of Operations Window) and all of its windows are labeled as Tempo Operations.

The MIDI Operations command is now called Event Operations. Its first submenu is now called Event Operations Window and all of its windows are labeled as Event Operations.

The Grid/Groove Quantize command and window have been renamed as Quantize.

Time Shift Plug-in Field Renamed

In the Time Shift plug-in window, the Time Shift field has been renamed to Speed.

Waveform Height Display Enhancements

In Pro Tools 7.4, the operation of the Zoomer tool has changed for vertical zooming of audio waveforms.

◆ If you zoom an individual audio track (or group of tracks), the waveform display in that track remains offset when you zoom all tracks, unless you reset waveform height by doing any of the following:

- Double-click the Zoomer tool.
- Control-Shift-click (Windows) or Command-Shift-click (Mac) any of the Zoom buttons to set all audio track waveform heights to match the waveform height of the topmost audio track in the Edit window.
- Start-Shift-drag (Windows) or Control-Shift-drag (Mac) in an audio track with the Zoomer tool to zoom all audio tracks.

◆ When you create a new track or import a track into a session, the waveform height of the new track will match the global waveform height (the waveform height of all tracks that are not individually zoomed).

◆ When you duplicate a track, the new track will keep the waveform height of the original track.

Vertical Zooming

To continuously zoom vertically on a single audio track (or group of tracks):

■ Start-drag (Windows) or Control-drag (Mac) with the Zoomer tool up or down in the track. The waveform height of the track will be offset from other audio tracks in the session.

To continuously zoom vertically on all audio tracks, do one of the following:

■ Drag up or down on the Audio Zoom In button. Any waveform height offsets will be maintained.

– or –

■ Start-Shift-drag (Windows) or Control-Shift-drag (Mac) in an audio track with the Zoomer tool. All waveform height offsets will be lost.

To incrementally zoom vertically on all audio tracks, do one of the following:

■ Click the Audio Vertical Zoom buttons. Any waveform height offsets will be maintained.

– or –

■ Press Control+Alt+[or Control+Alt+] (Windows) or Command+Option+[or Command+Option+] (Mac). Any waveform height offsets will be maintained.

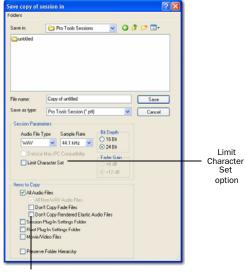### To zoom all audio tracks and reset waveform display to the default height:

■ Double-click the Zoomer tool.

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.

Save Session Updates

The Save Session Copy In dialog now includes options to Limit Character Set (see "Language Compatibility Features" on page 53) and to not copy Elastic Audio Rendered Files.

Limit Character Set option

Don't Copy Elastic Audio Rendered Files option

Save Copy In dialog

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 render 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.

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, or the Timeline, 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.

Missing Rendered Files

When opening a session with missing files, the Missing Files dialog opens. The Missing Files dialog now includes the option to Regenerate Missing Rendered Files Without Searching.

Missing files warning when opening a session

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.
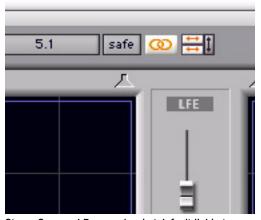
Stereo Surround Panners Linked by Default

In Pro Tools 7.4, Stereo Surround Panners are now linked by default.

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)
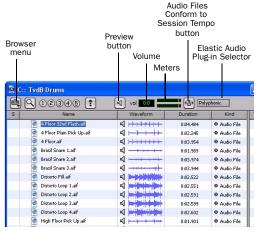- Rear Inverse (inverts Left and Right pan control linkage across rear)

The Front/Rear Inverse pan control is unlinked by default.

Stereo Surround Panner showing default linking

DigiBase Enhancements

In Pro Tools 7.4, DigiBase browsers provide new audio preview commands, controls, and indicators, as well as new Right-click functionality.
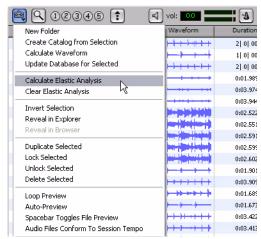

New or enhanced controls in DigiBase browsers

Browser Menu

The Browser menu adds three new commands for Elastic Audio analysis and preview: Calculate Elastic Analysis, Clear Elastic Analysis, and Audio File Conform to Session Tempo.

☞ *You can also Right-click on any item in the Name column to access the commands in the Browser menu.*

DigiBase Browser, Browser menu pop-up menu

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.

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 un-analyzed 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.
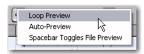
When the Audio Files Conform to Session Tempo option is disabled, any tick-based audio files with Elastic Audio analysis, and REX and ACID files preview and import at their native tempo.

📋 *For more information on working with Elastic Audio in DigiBase browsers, see "Elastic Audio in DigiBase Browsers" on page 35.*

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 space-bar toggles file preview.

DigiBase Browser, Preview button Right-click pop-up menu

Loop Preview Mode 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 Pre-view button updates to show a Loop Preview Mode icon.

[SHIFT] *Start-click (Windows) or Control-click (Mac) the Preview button to toggle Loop Preview mode on and off.*

Auto-Preview Enables or disables automatic pre-view of files. When this option is enabled, se-lecting a file in the browser starts preview. Addi-tionally, the Preview button updates to show an Auto-Preview icon.

[SHIFT] *Control-click (Windows) or Command-click (Mac) the Preview button to toggle Auto-Preview mode on and off.*

Spacebar Toggles File Preview Enables or dis-ables the Spacebar for starting and stopping pre-view. When this option is disabled, use the Pre-view button to start and stop preview. In this mode, the spacebar starts and stops session play-back. This lets you play back the session and, with Context Preview enabled, preview the se-lected audio file in time with the session.

[SHIFT] *When a browser is front-most, Control+P (Windows) or Command+P (Mac) starts and stops preview. Also, the Esc key stops preview.*

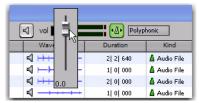## Split Stereo Files Preview Together

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.

Volume

The new 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.

2 Adjust the resultant 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 on working with Elastic Audio in DigiBase browsers, see "Elastic Audio in DigiBase Browsers" on page 35.*
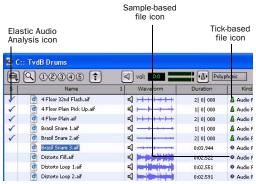
Elastic Audio Plug-in Selector

The Elastic Audio Plug-in selector lets you select any Elastic Audio plug-in as the default plug-in for previewing and importing Elastic Audio. Only Real-Time Elastic Audio plug-ins are available.

Elastic Audio Plug-in selector

File Timebase and Elastic Audio Analysis Icons

With the addition of Elastic Audio, DigiBase browsers provide three new icons to indicate whether a file has Elastic Audio analysis and the file's timebase.

New timebase and analysis 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

Format Column Displays ReCycle and WAV (ACID)

The Format column now displays "ReCycle" for REX files and "WAV (ACID)" for ACID files. REX and ACID files are tick-based.

Look Ahead Typing

DigiBase browsers now support "look ahead typing." 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.

Language Compatibility Features

Unicode Support for Languages

Pro Tools 7.4 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 within the same session.
- Search for terms in multiple languages in DigiBase browsers.

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 Preferences > Display.

2 Choose the language you want to use in Pro Tools from the Language pop-up menu.

Language options in the Display Preferences page

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.

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. This option is selected by default.

To set the Automatic Naming Language to match the language selected for the Pro Tools application:

1 Choose Preferences > Display.

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.

Importing Session Data from Sessions Created with Pro Tools 7.4

When importing data from sessions or OMF sequences created or saved with Pro Tools 7.4, Unicode data is preserved for the imported elements.

Importing Data from Sessions Created with Lower Versions of Pro Tools

When importing data from sessions or OMF sequences created or saved with Pro Tools 7.4, you 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.

Text encoding options in the Import Session Data dialog

Sharing Pro Tools 7.4 Sessions

When using the Save Copy In command to share sessions between systems, you can choose the language encoding used when saving the session materials.

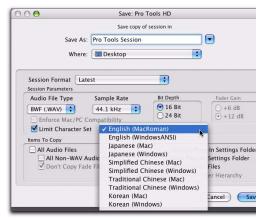### Sharing Pro Tools 7.4 Sessions with the Same Version of Pro Tools

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.

Sharing Pro Tools 7.4 Sessions with Lower Versions of Pro Tools

When saving a copy of a session to a lower session format, the Limit Character Set option is automatically selected.

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 pop-up menu in Save Copy In dialog

Updating DigiBase Databases

In Pro Tools 7.3 and lower, DigiBase stored database information in separate language folders for English, Japanese, Korean, Simplified Chinese, and Traditional Chinese.

In Pro Tools 7.4, DigiBase stores database information for all languages in a single Unicode folder.

Importing Databases Generated with Lower Versions of Pro Tools

When you connect a drive containing Digidesign Databases generated with versions of Pro Tools lower than 7.4, Pro Tools converts the databases as follows:
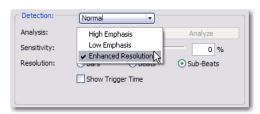
If the databases include only one language folder, they are automatically imported to the Unicode folder.

If the databases include more than one language folder, only one of those language folders can be imported to the Unicode folder. When you first connect the drive to the system and launch Pro Tools, you will be prompted to choose the language to import.

Beat Detective Enhancement

Beat Detective includes the new analysis option, Enhanced Resolution, which is suitable for a wide range of audio material. Additionally, Enhanced Resolution is now the default analysis option for Beat Detective. Because of the complexity of the algorithm, Enhanced Resolution may take a little longer to analyze audio than the High Emphasis or Low Emphasis options.

For audio material in higher frequency ranges, the High Emphasis option may produce better results. For audio material in lower frequency ranges, Low Emphasis may produce better results. However, Enhanced Resolution is likely to produce the best results for the widest variety of audio material.

Beat Detective window, Analysis pop-up menu

Transient Resolution for Tabbing and Separating

Tab to Transients and the Separate Regions at Transients command both use the new Enhanced Resolution transient detection algorithm used in Beat Detective. This new algorithm provides the best possible and most reliable transient detection for widest variety of audio material.

For regions on Elastic Audio–enabled tracks, Tab to Transients and Separate Regions at Transients use Elastic Audio Event markers.

Tab to Transients Command Keyboard Shortcut

With Pro Tools 7.4, you can use a keyboard shortcut to toggle the Tab to Transients command on and off.

To toggle the Tab to Transients command on and off:

■ Press Control+Alt+Tab (Windows) or Command+Option+Tab (Mac).

MIDI In with ReWire

Pro Tools 7.4 now supports receiving MIDI over ReWire. This lets you route the MIDI output from a ReWire client application (like Propellerhead's Reason) to the MIDI input of a Pro Tools MIDI or Instrument track (for a diagram of MIDI and audio signal flow with ReWire, see Figure 7 on page 57). This is especially useful for recording changes to parameters in a ReWire client application, such as Reason, to a Pro Tools MIDI track. You can then play back that track in Pro Tools to control the parameter changes in the ReWire client application.
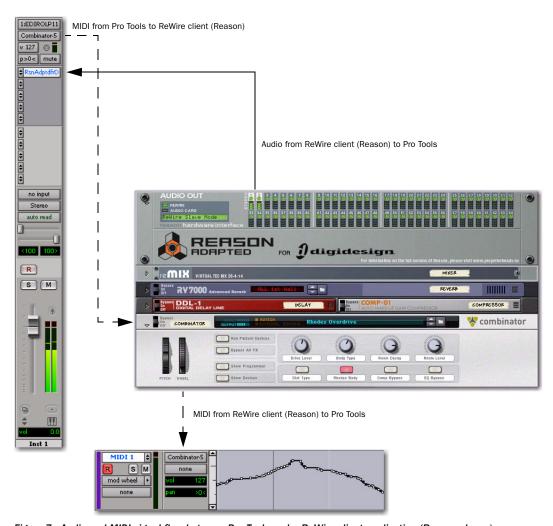

Figure 7. Audio and MIDI signal flow between Pro Tools and a ReWire client application (Reason shown)
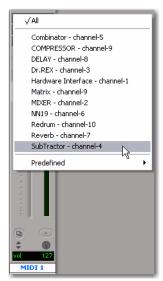
MIDI Automation with ReWire

You can use Pro Tools MIDI tracks to record MIDI continuous controller (CC) data from a ReWire client application, and then play back MIDI from Pro Tools to send the recorded MIDI CC data back to the ReWire client application. In this way, you can adjust parameters in the ReWire client application (using the mouse or an external MIDI controller) and record those changes in Pro Tools.

Recording MIDI Continuous Controller Data Over ReWire

The first step in automating a ReWire client application's parameters is to record the CC data to a MIDI track in Pro Tools.

To record MIDI from a ReWire client application in Pro Tools:

1 In Pro Tools, create a new MIDI track.

2 From the track's MIDI Input selector, select the ReWire device that you want to record.

Selecting the ReWire client device to record MIDI CC data in Pro Tools

⚠ *You must select the ReWire device from which you want to record MIDI controller data. Leaving the track's MIDI Input set to All does not record any MIDI data over ReWire.*

3 Record enable the MIDI track.

4 Start recording in Pro Tools.

5 Switch to the ReWire client application.

6 Adjust the parameter for which you want to record MIDI CC data. Parameter changes are recorded to the Pro Tools MIDI track as CC data.

Adjusting a parameter in a ReWire client application (Reason's SubTractor shown)

⌁ *If your external MIDI controller is correctly mapped to the corresponding ReWire client application's parameters, and it is correctly routed through Pro Tools, use your MIDI controller to adjust the parameter you want to record.*

7 When you are done adjusting the parameter, return to Pro Tools and stop recording.

8 Record disable the MIDI track.

9 From the MIDI Track View selector in the Edit window, select the view for the CC data you just recorded.

MIDI CC data recorded from a ReWire client application

Playing Back MIDI Continuous Controller Data Over ReWire

Once you have recorded MIDI CC data from the ReWire client application to a MIDI track, configure the MIDI track to play the ReWire client application. You can also edit the MIDI CC data in Pro Tools until you achieve the best results.

To play back MIDI CC data over ReWire:

1 From the MIDI track's MIDI Output selector, select the ReWire client application device you want to control (the same device from which you recorded the MIDI CC data).

2 Start playback in Pro Tools.

3 Switch to the ReWire client application. Notice that the corresponding parameter changes according the MIDI CC data from Pro Tools.

chapter 4

Miscellaneous Pro Tools|HD Video Enhancements and Features

General Video-Related Improvements

Pro Tools 7.4 adds new support for the following general video-related improvements.

Expanded Video Resolution Support with Avid Mojo

Pro Tools with Avid Mojo adds support for the same list of video resolutions as Pro Tools with Mojo SDI or AVoption|V10.

Supported video resolutions include:

- All standard-definition Avid OMF and MXF video files

⚠️ *The oldest class of ABVB files (ABVB "MFM" files) are not supported in Pro Tools. These files were created with versions of Media Composer lower than 7.0, and do not have the .omf extension.*

- Avid IMX MPEG50, MPEG40, MPEG30, and OP1a files

- DV50, DV25 and DVC Pro 25 resolutions compressed with the Avid codec, including:
  - DV25 411: DV25 interlaced scan at 4:1:1 sampling (for NTSC 30i and PAL 25i projects)
  - DV25 420: DV25 interlaced scan at 4:2:0 sampling (for PAL 25i projects)
  - DV25p 411: DV25 progressive scan at 4:1:1 sampling (for NTSC 23.976p and NTSC 24p projects)
  - DV25p 420: DV25 progressive scan at 4:2:0 sampling (for PAL 25p and PAL 24p projects)
  - All standard-definition Avid Multi-Cam Resolution files (see "Avid Multi-Cam Resolution Files" on page 61.)

Avid Multi-Cam Resolution Files

Pro Tools with Avid Mojo adds support to all standard-definition Avid Multi-Cam Resolution files for import and playback. Pro Tools will play the clip of an Avid Multi-Cam Resolution file that was being used as the active camera angle when the file was exported to AAF or OMF.

Support for Co-Installation of Avid Xpress Pro 5.7.x with All Pro Tools 7.4 Platforms

Pro Tools 7.4 with Avid Mojo lets you install Avid Xpress Pro 5.7.x on the same computer.

Avid Interoperability Improvements

(Pro Tools HD and Windows XP Only)

Pro Tools HD 7.4 adds the following new support for interoperability:

Support for Pro Tools Media Streaming with Avid Unity ISIS

Pro Tools HD lets you record and stream audio and video media with Avid Unity™ ISIS, which provides integrated high-speed network storage systems for Avid and Pro Tools workstations.

For detailed information on configuring your Pro Tools system as an Avid Unity ISIS client, see the *Pro Tools Unity ISIS Guide*. For compatibility information, refer to the Digidesign website (www.digidesign.com/compatibility). For additional information, see your Avid Unity ISIS documentation.

Digitizing Video Directly to ISIS

You can digitize video directly to an Avid Unity ISIS by designating a Unity workspace (volume) as the video record volume. For more information, see the *Pro Tools Reference Guide* and the *Pro Tools Unity ISIS Guide*.

Avid Interplay Access Support for Exporting Sequences to Any Volume

With Avid Interplay Access version 1.x, you can export a sequence that has been checked into the Interplay server directly to any volume as an AAF sequence. This allows you to open sequences with applications that cannot otherwise interface with an Interplay system (such as third-party audio conform software).

See the *Pro Tools Avid Interplay Guide* for details.

Media Station|PT Features and Enhancements

Pro Tools HD 7.4 supports Media Station|PT 2.7, which has added the following features and enhancements:

- HD video digitize, import, playback, and export
- HD frame rate sequence support
- Support for Unity ISIS and Unity Media-Network 4.x
- Support for Avid Interplay integration
- Support for Avid Mojo SDI
- Support for Video Satellite option, which synchronizes playback and capture between Pro Tools and Media Station|PT

See the *Media Station|PT Guide* for detailed information on using Pro Tools with Media Station|PT.

Hardware Features and Enhancements

ICON New Feature

Recalling Playlists

With Pro Tools 7.4, D-Control and D-Command now allow you to toggle through available playlists on the focused track from the Soft Keys section.

To cycle through playlists on a track:

1 Focus the track.

2 In the Management section, press the Playlist switch.

3 In the Soft Keys section, do one of the following:

- Press the Soft Key that corresponds to "Prevs Plylst" to select the previous playlist in that track's Playlist menu.
- Press the Soft Key that corresponds to "Next Plylst" to select the select the next playlist in that track's Playlist menu.

SYNC HD New Features

You can set SYNC HD to emulate a SYNC I/O, which allows you to use the SYNC HD unit with legacy Pro Tools software.

Configuring the Device ID

◆ If you are using SYNC HD with Pro Tools HD 7.4 or higher, Pro Tools will automatically recognize the SYNC HD.

◆ If you are using SYNC HD with Pro Tools HD version 7.3 or lower, set SYNC HD to emulate a SYNC I/O.

To set SYNC HD to emulate a SYNC I/O:

1 Press Set, and use the Up or Down switches to display Device ID (dEuicE id).

2 Press Set. The LED Time Code Display shows shows the current Device ID for the unit: SYNC HD (SYnc HD) or SYNC I/O (SYnc IO).

3 Press Up and Down to toggle the Device ID to read SYNC I/O (SYnc IO).

4 Press Set.

New Status LED Indications

The SYNC HD Status LEDs show the current state of the SYNC HD in relation to clock references. Indicators include:

Locked This LED lights solid green when the SYNC HD is locked to the selected clock reference. The LOCKED LED flashes yellow if the selected clock reference source is missing or out of lockable frequency range.

Speed Cal (Speed Calibration) This LED lights to indicate the status of the clock reference:

- Yellow Solid: Indicates that SYNC HD is locked and that the clock reference matches the expected rate
- Yellow Flashing Fast: Indicates that SYNC HD is locked, but the clock reference is 0.1% faster than the expected rate
- Yellow Flashing Slow: Indicates that SYNC HD is locked, but the clock reference is 0.1% slower than the expected rate
- Red Flashing Fast: Indicates that SYNC HD is locked, but the clock reference is more than 4% faster than the expected rate
- Red Flashing Slow: Indicates that SYNC HD is locked, but the clock reference is more than 4% slower than the expected rate

Support Tri-Level Video Reference Signals

SYNC HD now allows synchronization to HD (High-Definition) video reference signals.

To set the Clock Reference to an HD Video Reference signal:

1 In Pro Tools, choose Session > Setup.

2 In the SYNC Setup section of the Session Setup window, choose Video Reference (HD) from the Clock Reference pop-up menu.

3 Choose the video reference rate from the Video Format pop-up menu.

When the Clock Reference is set to Video Reference (HD), the following video reference rates are available in the Video Format pop-up menu:

- Slow PAL 23.976
- Slow PAL 24
- 720p - 23.976
- 720p - 24
- 720p - 25
- 720p - 29.97
- 720p - 30
- 720p - 50
- 720p - 59.94
- 720p - 60
- 1080i - 47.95
- 1080i - 48
- 1080i - 50
- 1080i - 59.94
- 1080i - 60
- 1080p - 23.976
- 1080p - 24
- 1080p - 25
- 1080p - 29.97
- 1080p - 30
- 1080p - 50
- 1080p - 59.94
- 1080p - 60

Selecting HD Video Reference Formats and SD Video Input Formats

When you have an HD video reference signal connected to the Video Ref In connector, you can still connect an SD video signal to the Video In connector. This allows you to generate a window burn for the SD signal.

When you select an HD video reference rate for a session, the SYNC HD is automatically configured for the corresponding SD Video In format (NTSC or PAL), according to the following table.

If you have a connected Avid video peripheral (V10 or Mojo), Pro Tools also automatically sets its Video In format (NTSC or PAL) according to the following table.

Video Reference (HD) Format	Video In Format
Slow PAL 23.976	NTSC
Slow PAL 24	PAL
720p - 23.976	NTSC
720p - 24	PAL
720p - 25	PAL
720p - 29.97	NTSC
720p - 30	NTSC
720p - 50	PAL
720p - 59.94	NTSC
720p - 60	NTSC
1080i - 47.95	NTSC
1080i - 48	PAL
1080i - 50	PAL
1080i - 59.94	NTSC
1080i - 60	NTSC
1080p - 24	PAL
1080p - 25	PAL
1080p - 29.97	NTSC
1080p - 30	NTSC
1080p - 50	PAL
1080p - 59.94	NTSC
1080p - 60	NTSC

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