

# midi ditty

## Elastic Time in Pro Tools 7.4

Elastic bands are useful because they stretch easily and bind things together. The same might be said of the latest version of Pro Tools. Thanks to the new Elastic Time features in Pro Tools 7.4, you can make your band elastic (or your string section, movie soundtrack, ADR loop, or anything else you might like).

Digidesign's Elastic Time feature set combines the usual elegant simplicity in design with supreme versatility, speed, and power. The new Elastic Time features are available in Pro Tools LE, M-Powered, and HD. Much of the Pro Tools code has been streamlined, tweaked, and improved to make these new real-time functions possible.

The clue to Elastic Time is in the name: Your audio can be manipulated by tempo, duration, timing, and feel to facilitate anything from subtle time corrections to drastic tempo-stretching to instant multitrack quantizing. You can create seamless varispeeding for special effects, or conform audio to meet the needs of complex audio post tasks such as resolving different audio and video speeds.

### How Does It Work?

Elastic Time begins with an analysis of the audio file or selection you wish to work with. The audio's transients—sharp attacks such as snare hits or footsteps—are detected and mapped, and time-stretching algorithms and editing features are used to expand or condense the audio's duration. The existing transient detection techniques employed by Beat Detective and Pro Tools' Tab to Transient function have been further refined, making for a very aggressive and super-accurate transient detection scheme for the Elastic Time features. The same improved detection scheme is also now available in Beat Detective on HD systems (and LE and M-Powered systems with either of the Toolkit options), Tab to Transient, and Separate Region at Transients (see figure 1).

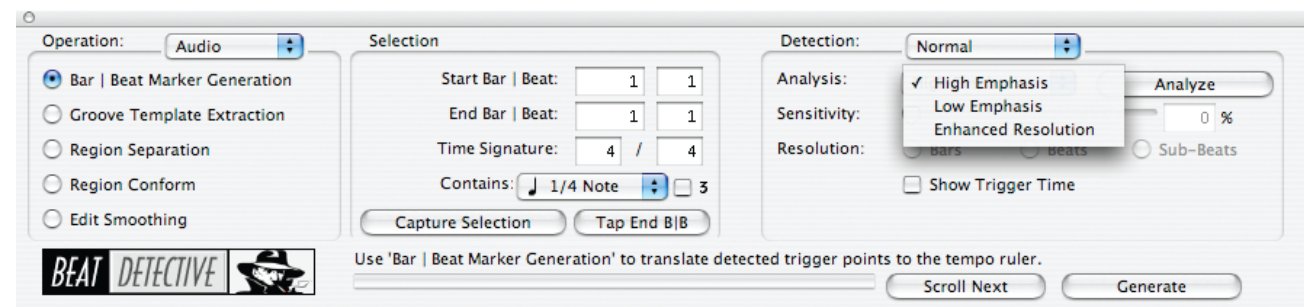


Figure 1: Beat Detective's new Enhanced Resolution mode.

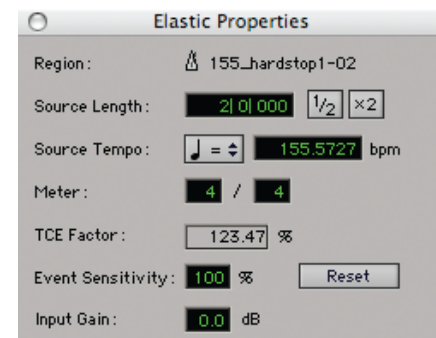


Figure 2: The Elastic Properties window.

This highly aggressive detection can be tamed using "Sensitivity" controls found in a new Elastic Properties window (see figure 2). The analysis of the transients is completely editable via a new Analysis Track View, giving you a "best of both worlds" scenario where every transient

can be easily found, but any false ones can be quickly corrected or ignored—an especially useful feature for audio with fewer or weaker transients. This produces better-sounding, more accurate results when you warp audio or conform it to a tempo map.

### The Algorithms

You can even control how Elastic Time sounds. There are five different algorithms to choose from via new plug-ins that can be previewed or selected on a track-by-track basis through a drop-down menu in DigiBase. These algorithms can be applied with either Real-Time Processing or Rendered Processing (see figure 3). One thing cool about Rendered Processing mode is that your rendered audio still maintains full elastic editing functionality while also relieving the host CPU from real-time processing tasks.

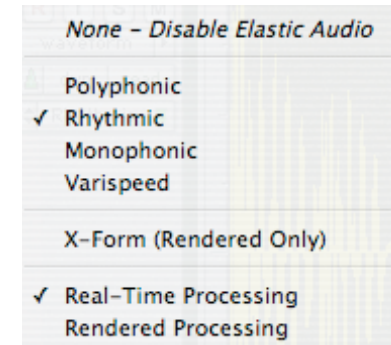


Figure 3: The Elastic Time track-based pop-up.

The **Polyphonic** algorithm is a good general-purpose choice for complex, polyphonic material.

The **Rhythmic** algorithm sounds best on material with strong transients, such as drum loops.

The **Monophonic** algorithm is a good option for audio where one note at a time occurs, such as a vocal line. It's designed to keep formants intact.

The **Varispeed** algorithm is a special mode where pitch is linked to time, simulating the behavior of a tape machine.

The **X-Form** setting is the best-sounding algorithm of the lot, but is not real-time. It requires rendering of the audio.

The Elastic Time plug-ins are available only from the Elastic Time button on each audio track—not from the normal plug-in slots in the mixer. They are very simple in terms of tweakable parameters to optimize the sound (see figure 4).

### DigiBase and Elastic Time

Within DigiBase, any audio file can be analyzed for transients, and a check mark is shown to the left of the file. If a tempo is successfully detected, its icon in the DigiBase "Kind" column will change from sample-based (the blue clock) to tick-based (the green metronome), as shown in figure 5.

File Name	Kind	Duration
157_round_the_circle.aif	Audio File	11 0 000
158_flatheads.aif	Audio File	11 0 000
158_flying.aif	Audio File	2 0 000
158_natural_straight.aif	Audio File	11 0 000
158_proexpo_straight.aif	Audio File	11 0 000
159_funky_plaidplash.aif	Audio File	11 0 000
159_movin_jungle.aif	Audio File	11 0 000
160_amenorig.aif	Audio File	2 3 750
160_ruffneck_rolls.aif	Audio File	2 0 000
160_soft_thick_junga.aif	Audio File	2 0 000
161_amenvar3.aif	Audio File	11 0 000
161_bassllok_inyerface.aif	Audio File	11 0 000
161_breakin_snareaction.aif	Audio File	2 0 000
161_clinte.aif	Audio File	2 0 000
161_combi4.aif	Audio File	2 0 000
161_dinkybrk.aif	Audio File	4 0 000
161_dinkybrk2.aif	Audio File	0 02 979
161_dinkybrk3.aif	Audio File	0 02 977
161_fast_funki_drummer.aif	Audio File	0 01 487
161_fiercejoy.aif	Audio File	0 01 492
161_frenzied.aif	Audio File	0 02 975

Figure 5: Elastic Time analysis in DigiBase.



Figure 4: The Rhythmic and X-Form Elastic Time plug-ins.

If, like me, you have around four billion drum and percussion loops, you can set the analysis going and do them all in one batch, so you only have to do this once. You can then preview any of your loops and have them automatically conform to the session tempo, in sync with session playback. The DigiBase "Context Preview" feature enables you to play any audio file in time and in sync with your song. Or to put it another way, you can audi-

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tion loops on the fly, in perfect sync with your session, regardless of the loop's source tempo—an extremely creative writing feature!

For Pro Tools|HD systems, DigiBase no longer uses Direct I/O to audition audio—like other versions of Pro Tools, it now uses DAE playback. This means there's no lag when switching between DigiBase and the Edit/Mix pages in Pro Tools. Other useful enhancements include DigiBase metering/volume control and stereo audition of split stereo files.

## Back to the Bendiness

Elastic Time has still more twisty tricks up its sleeve. When you drag and drop audio from a browser to the timeline, if you've hit the Conform to Session Tempo button (see figure 6), the file automatically warps on import to conform to your session's tempo map.

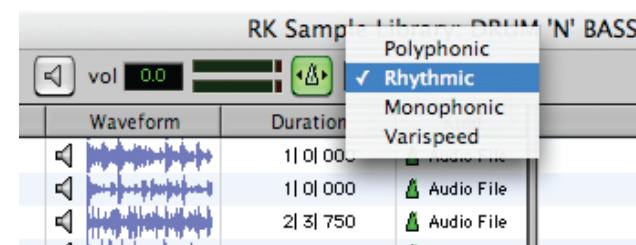


Figure 6: The Conform to Tempo and DigiBase Metering/Volume controls.

When non-analyzed audio is dragged or recorded onto an Elastic Time-enabled track, it temporarily goes offline while a transient analysis is performed (a process that's near-instant for short regions). This creates event markers within the newly inserted region (see figure 7) to indicate where Pro Tools has found transients in the waveform.

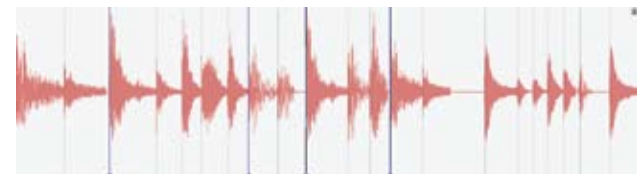


Figure 7: Elastic Time analysis and warp markers.

Should this analysis not be completely accurate, the event markers can be manually edited, created, or removed in the track's analysis view (see figure 8), available alongside standard Track View options such as volume and waveform.

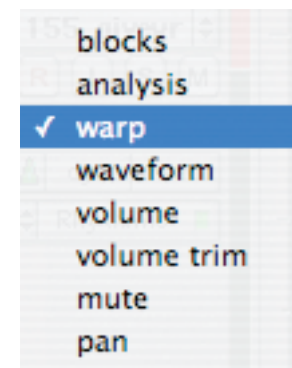


Figure 8: Choosing warp or analysis Track Views.

warp mode (see figure 9) is very useful for making corrections within one section of a longer phrase. Think of the Pro Tools timeline as a wooden ruler, the audio as an elastic band, and warp markers as pins. You can use one warp marker to fix a point of the band (audio) to the ruler (timeline), insert a second marker to pin down another point, and add a third pin equally between them, but then move it and place it closer to the second pin to stretch (expand) the audio between the first and middle pins and relax (compress) it between the middle pin and the last.

Telescope warp is like a straight time stretch: You can drag an event marker at the beginning or end of a region while keeping the other end fixed, so the audio expands or compresses linearly in one direction, like a telescope being opened or closed.

Accordion warp, as the name implies, lets you fix a single warp marker that acts as an anchor point within a region, and stretch or squash the audio equally on either side of the marker by dragging either end of the region.

Any region that has been warped gets a new warp icon, visible at the top right of the region in any region view. Any warping can be easily removed via a Remove Warp command.

## Warp Options

Warp view is used to add warp markers and compress or expand the timing of the audio. Event markers can be transformed into warp markers by double-clicking on them, and new warp markers can be created independently of event markers. A third type of warp marker is a tempo event marker: These are automatically generated warp markers for tick-based Elastic Time, and are used by Pro Tools to conform the audio to the session's tempo map.

There are three methods by which audio can be warped: Telescope, Accordion, and Range. Range

## Samples vs. Ticks

Like regular audio tracks, Elastic Time tracks can be either sample- or tick-based. Sample-based Elastic Time-enabled tracks let you apply real-time or rendered Elastic Time processing by editing in Warp view, applying Quantize, and using the TCE Trim tool. However, as mentioned above, tick-based Elastic Time tracks also automatically apply Elastic Time processing based on tempo changes. Your audio stretches to follow any tempo events you might subsequently add, even allowing continuous changes such as accelerandi and ritardandi to be drawn in. This is a great way to fit pre-recorded music to a re-cut picture.

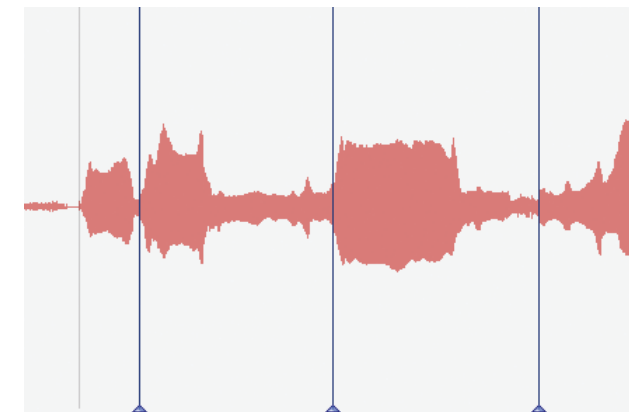


Figure 9: Using Range warp mode.

The ability to quantize Elastic Time is a very cool feature. Like Beat Detective, it allows you to correct timing in audio files, but does so without the need to slice the audio up into regions first. You can also use Groove Quantize to change the feel of Elastic Time—a very quick and easy way to re-groove your whole song (see figure 10).

This concludes our look at some of the major features of Pro Tools 7.4—though there are many others I don't have time to mention. Elastic Time's flexible implementation should make it a very useful tool for both music and post production, not to mention opening doors to all kinds of new sonic creativity. Stretch away, friends! 🎧

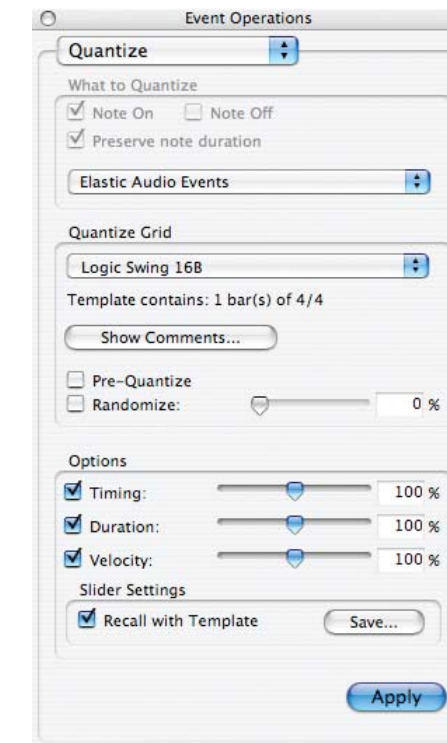


Figure 10: Quantizing Elastic Time.