

See an introduction to tracks.

Two Types of Tracks



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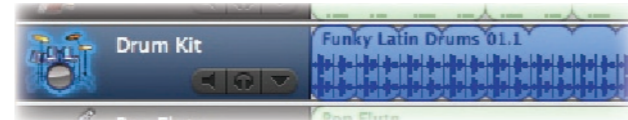
When you compose in GarageBand, you work with two very different types of tracks: *real instrument* tracks and *software instrument* tracks. The loops that GarageBand provides also fall into these two broad categories: loops with a blue icon are real instrument loops, and loops with a green icon are software instrument loops.

But what's the difference between a real instrument and a software instrument? The answer lies in the fact that today's Macs are powerful enough to generate sound using more than one technique. In fact, GarageBand is able to generate sound using multiple techniques *at once*.

Here's a look at how GarageBand makes its noise—and at what it all means to you.

Real Instruments: Prerecorded Sound

A real instrument track holds a digital audio recording—a riff played by a bass player, some strumming on an acoustic guitar, a phrase played by a string section, or a vocal that you record.



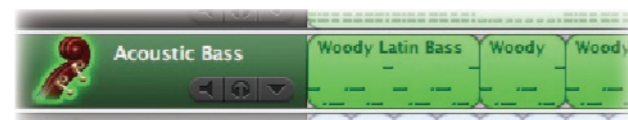
A real instrument track is blue, and a real instrument loop has a blue icon . Notice that the track and the icon depict a waveform—a graphical picture of sound, similar to what we saw back on pages 26 and 176.

The purple variation. Audio that you record—a vocal, for example—is stored in a real instrument track. In the timeline, though, GarageBand uses purple color-coding to indicate these regions.

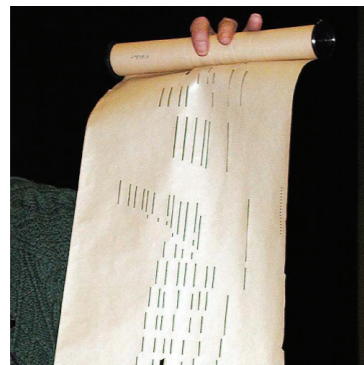
Software Instruments: Sound on the Fly

A software instrument track doesn't hold actual sound. Instead, it holds only *data* that says what notes to play and how to play them. The sounds you hear when you play a software instrument track are being generated by your Mac as the song plays back.

A software instrument track is a bit like the music rolls that a player piano uses—just as the holes in the music roll tell the piano which notes to play, the bits of data in a software instrument track tell your Mac which notes to generate.



A software instrument track is green, and a software instrument loop has a green icon . Instead of depicting a waveform, a software instrument region shows individual notes—why, it even looks a bit like an antique player piano roll (see photo, left).



Photographic Historical Society of Canada

Comparing Approaches

Each type of track has advantages and capabilities that the other lacks.

The real advantage. When it comes to realism, you can't beat real instrument tracks. Listen to the Orchestra Strings loops that come with GarageBand. They don't just sound like a string section—they *are* a string section. Compare their sound to that of the software instrument loop named 70s Ballad Strings 02.

Another advantage of real instrument tracks is that they can hold *your* digital audio. When you plug a microphone into your Mac and belt out *My Way*, your voice is stored in a real instrument track.

The software advantage. The primary advantage of software instrument tracks is versatility. Because software instrument tracks store individual note data, you can edit them in almost any way imaginable. You can even change the instrument entirely. Want to hear how your bass line would sound when played by a synthesizer instead of an electric bass? Just double-click on the software instrument track's header and choose a synth.

On the downside, software instrument tracks make your Mac work harder than real instrument tracks—it's harder to generate sound on the fly than it is to play back a recording.

Common ground. Although real instruments and software instruments work differently, you can do many of the same things with both types of tracks. You can loop regions within both types of tracks, and you can apply effects to both types. You can even transpose both types of tracks, although you can't transpose audio that you've recorded. Also, you can't transpose real instrument loops across as wide a range as you can software instruments—they'd sound too artificial.

By supporting audio recordings (real instruments) and also being able to generate sound on the fly (software instruments), GarageBand gives you the best of both worlds.

How Apple Loops Work

The loops that come with GarageBand are stored in *Apple Loop* format. If you've played with GarageBand, you've experienced the program's ability to adjust the pitch and tempo of loops to fit your song. Here's how that works.

Apple Loops contain more than just sound. They also contain *tags*—tidbits of data—that describe the sound, starting with

the key and the tempo in which the loop was originally recorded. The tags also contain information about the *transients* in the recording. A transient is a spike in volume—such as occurs when a drumstick slaps a drumhead. Transients denote where beats occur, and GarageBand uses this information when changing the playback tempo of an Apple Loop.

When GarageBand transposes an Apple Loop to a different key, it's performing a process called *pitch shifting*. When GarageBand changes a loop's tempo, it's *time stretching*.

Apple Loops also contain descriptive tags. These tags are what enable you to sift through loops by clicking on the buttons in the loop browser.

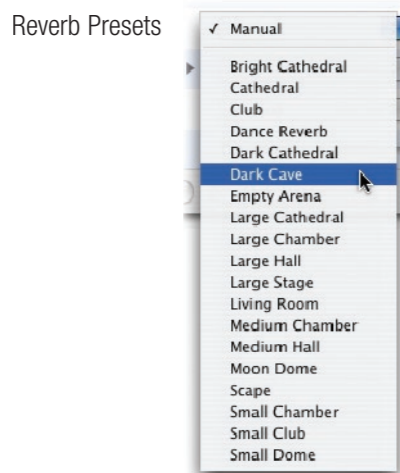
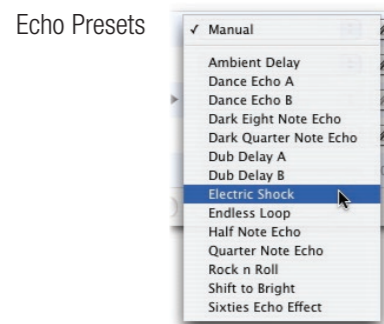
Finally, it's important to know that software instrument loops (the green ones) contain more than just "piano roll" note data. They also contain audio, just as real instrument loops do. This enables you to use them in real instrument tracks—and thus lighten the load on your Mac; see pages 253 and 258.



Creating the Final Mix

When you've refined each track, turn your attention to the big picture: display the song's Master Track to apply final-mastering effects and optionally to create a fade-out at the end of the tune.

Once you've polished your song until it glitters like a platinum record, you can export it to your iTunes music library, where you can burn it to an audio CD, transfer it to your iPod, and use it in the other iLife programs.



Working with the Master Track

GarageBand's *master track* is a special kind of track that doesn't hold notes or regions, but instead controls certain aspects of your entire mix. Specifically, you can apply effects to the master track and create a volume curve to have your song fade in or fade out.

To show the master track, choose Show Master Track from the Track menu (⌘-B.)

Applying effects. Apple has created dozens of final-mastering effects settings for common musical genres. Explore and apply them by double-clicking the master track's header. And, of course, you can customize them and create your own final-mix effects using the techniques I've described on previous pages.

Creating a fade. As I show on the DVD, to fade a song, create a volume curve for it in the master track. **Tip:** To create a musically appealing fade, edit the volume curve so that the fade *ends* at the very beginning of a verse or measure. Don't have a fade end in the middle of a measure—it feels abrupt.

Customizing reverb and echo. In GarageBand, reverb and echo effects are controlled by the master track. As described on page 249, you can adjust *how much* echo and reverb you want on a specific track, but to adjust the actual echo and reverb parameters that GarageBand uses, use the master track's Track Info window.

GarageBand's dozens of reverb and echo settings (shown at left) are worth exploring. The reverb presets are spectacular—everything from a living room to a large cathedral, with some offbeat stops in between. Explore them to add just the right sonic ambience to your track. And if you're into dance and electronic music, you can while away a weekend trying out and customizing GarageBand's echo presets.

Exporting to iTunes

When you've polished your song to perfection, add it to your iTunes music library by choosing Export to iTunes from the File menu. GarageBand mixes your tracks down to two stereo channels and saves the song as an AIFF file.

GarageBand saves files in full CD-quality form: 44KHz, 16-bit. To convert a song into AAC, MP3, or Apple Lossless format, configure iTunes for the format you want to use (page 22), then select your song and choose Convert from the Advanced menu. iTunes won't replace the AIFF version of

your song, so if you want to free up space in your iTunes library (and iPod), use the Show Song File command to move the AIFF file out of your music library.

Exporting an excerpt. At times, you may want to export only part of a song. Maybe you want to email it to a collaborator or mix it down in order to bring it back into GarageBand (see page 259). To export a portion of a song, turn on cycling and then resize the yellow cycling region in the beat ruler to indicate the portion you want to export.

Preserving effect tails. If your song has reverb or echo effects that last well beyond the last note, you may find that these *effect tails* are cut off after you export to iTunes. To fix this, turn cycling on and then resize the yellow cycling region so that it extends beyond the point where the effects die off. Now export the song again.

Customizing tags. To customize how your song is categorized in iTunes—artist name, album name, and so on—use the Export portion of GarageBand's Preferences dialog box.

A Closer Look at Software Instrument Loops

On page 235, I mentioned that software instrument loops contain more than just piano-roll MIDI notes—they also contain audio. To see this for yourself, drag a green loop into a real instrument track—instead of the usual piano-roll notation within a green region, you'll see a waveform display within a blue region.

Two in one. How does this work? A software instrument loop is really two loops in one. It contains not only the MIDI note data that can be used by a software instrument track, but also a *rendered* version of the loop—an actual audio recording, complete with effects.

Here's another way to see this for yourself. Use the Finder's Find command to locate a software instrument loop, such as Southern Rock Guitar 01. You'll notice the loop's file name ends in .AIF—it's an audio file in AIFF format. You can open and play this file using QuickTime Player or iTunes. You can even drag it into iMovie or iDVD. But embedded within the AIFF file is MIDI note data that GarageBand can use.

The fact that software instrument loops also contain audio data has an important ramification: As I mention on page 258, if you plan to use a software

instrument loop as-is, you can lighten the load on your Mac's processor by using the loop in a real instrument track.

If you haven't yet created the track for the loop, take advantage of the following shortcut that Apple added to GarageBand 1.1: press the Option key while dragging a green loop into the timeline, and GarageBand creates a real instrument track for it.

If you frequently use software instrument loops without changing them, you can use GarageBand's Preferences dialog box to have the program *always* create real instrument

tracks when you drag green loops into the timeline.

The downsides. There are some downsides to using a green loop in a real instrument track. You can't edit individual notes or change instrument or effect assignments, since all these things are part of the audio recording. Also, you can't transpose an audio region over as large a range. But for those times when you want to use a green loop as-is, adding it to a real instrument track is a great way to improve GarageBand's performance.