Punching In and Out

When you want to correct a specific section of a recording—usually to fix a performance mistake—you can restart playback before the mistake, punch in to engage recording just before the section you wish to fix, and then punch out to stop recording immediately after the section while playback continues. A take folder is created, containing a comp that combines the old recording outside the punchin/punch-out range with the new recording inside that range. This technique allows you to fix smaller mistakes in a recording while still listening to the continuity of the performance.

Tip

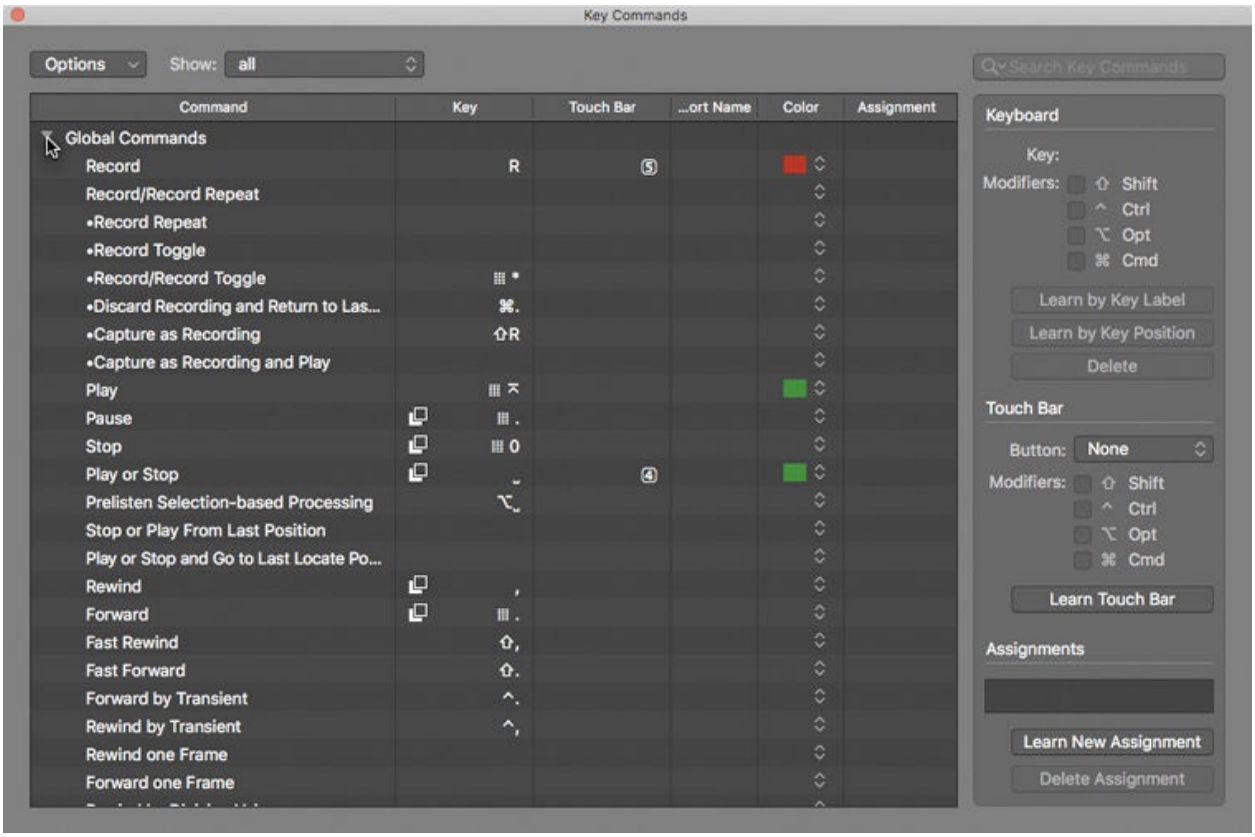
Punching is nondestructive. At any time, you can open the take folder and select the original recording.

There are two punching methods: on the fly and automatic. Punching on the fly allows you to press a key to punch in and out while Logic plays, whereas automatic punching requires you to identify the autopunch area in the ruler before recording. Punching on the fly is fast but usually requires an engineer to perform the punchin and punch-out while the musician is performing. Automatic punching is ideal for the musician-producer who is working alone.

Assigning Key Commands

To punch on the fly, you will use the Record Toggle command, which is unassigned by default. First, you'll open the Key Commands window and assign Record Toggle to a key combination.

1. Choose Logic Pro X > Key Commands > Edit (or press Option-K) to open the Key Commands window. Click the disclosure triangle next to Global Commands.



The Key Commands window lists all available Logic commands and their keyboard shortcuts, if any.

Tip

Many commands are unassigned by default. When looking for a specific functionality in Logic Pro X, open the Key Commands window and try to locate the function using the search field. A command likely exists for that functionality that may or may not be assigned.

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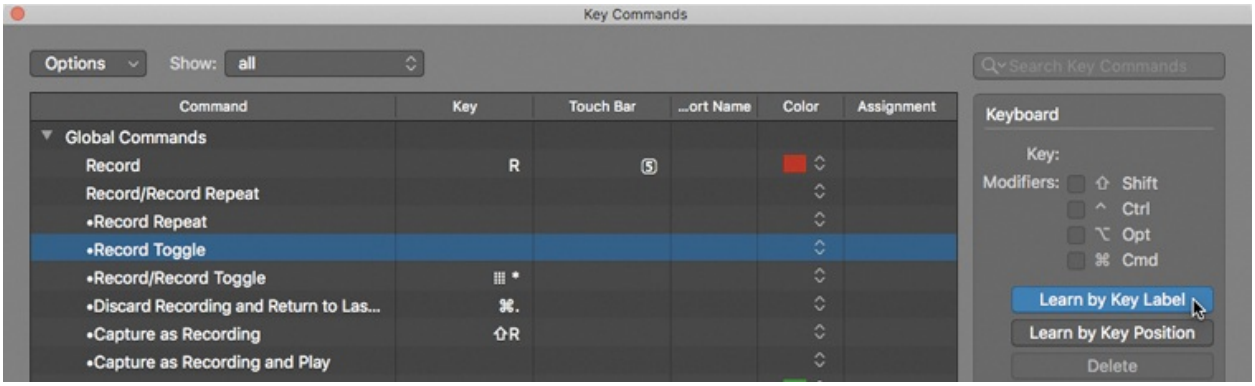
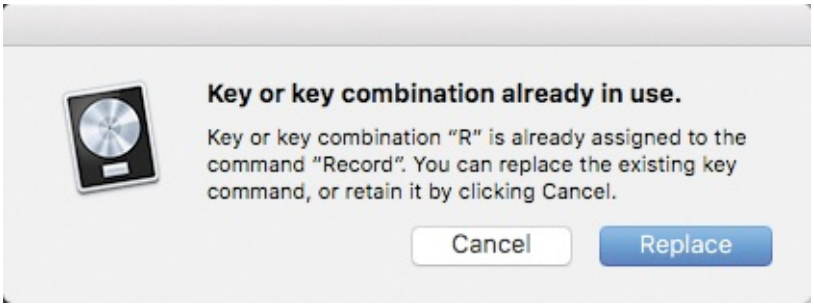
2 In the Command list, click the Record Toggle command to select it.

3 Click Learn by Key Label.



When Learn by Key Label is selected, you can press a key, or a key plus a combination of modifiers (Command, Control, Shift, Option), to create a keyboard command for the selected function.

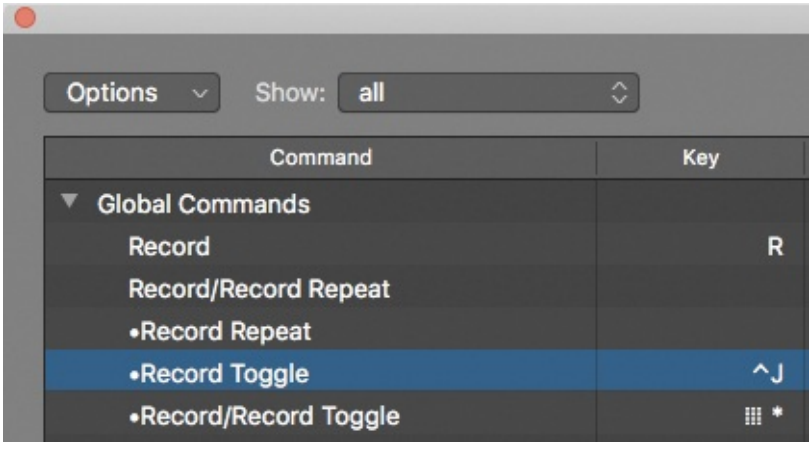
4 Press R.



An alert indicates that the R key is already assigned to the Record command. You could click Replace to assign R to Record Toggle, but then Record would no longer be assigned to a keyboard shortcut. Instead, let's use another key combination.

5 Click Cancel (or press Esc).

6 Press Control-J.



Control-J is now listed in the Key column next to Record Toggle,

indicating that the command was successfully assigned.

Tip

To unassign a key command, select the command, make sure Learn by Key Label is selected, and press Delete.

7 Close the Key Commands window.

Tip

To reset all key commands to their defaults, choose Logic Pro X > Key Commands > Presets > U.S. (or the language of your choice).

Punching on the Fly

You will now use the Record Toggle key command you assigned in the previous exercise to punch on the Vocals track (the bottom track in your Tracks area).

1 In the Vocals track header, click the R button to record-enable the track.

When punching on the fly, you may first want to play the performance to determine which section needs to be rerecorded, and to be ready to punch in and out at the desired locations.

2 Listen to the Vocals track and determine where you're going to punch in and out.

3 In the control bar, click the Go to Beginning button (or press Return).

4 Click Play (or press the Spacebar) to start playback.

Position your fingers on the keyboard to be ready to press your Record Toggle key command when you reach the point where you want to punch in.

Note

To be able to punch on the fly, make sure Record > Allow Quick PunchIn is selected.

5 Press Control-J (Record Toggle).

The playhead continues moving, but Logic is now recording a new take on top of the previous recording. Keep your fingers in position to be ready to punch out.

6 >Press Control-J again.

The recording stops while the playhead continues playing the project.

7 Stop the playback.

On the Vocals track, a take folder was created. It contains your original recording (Take 1) and the new take (Take 2). A comp is automatically created (Comp A) that combines the original recording up to the punchin point, the new take between the punchin and punch-out points, and the original recording after the punch-out point. Fades are automatically applied at the punchin and punch-out points. (You will learn more about fades in Lesson 3.) 8 Listen to your Vocals track.

In the next exercise, you will examine another punching technique, so let's undo this recording.

9 Choose Edit > Undo Recording (or press Command-Z).

The take folder disappears and you once again see the Vocals#01 region on the Vocals track.

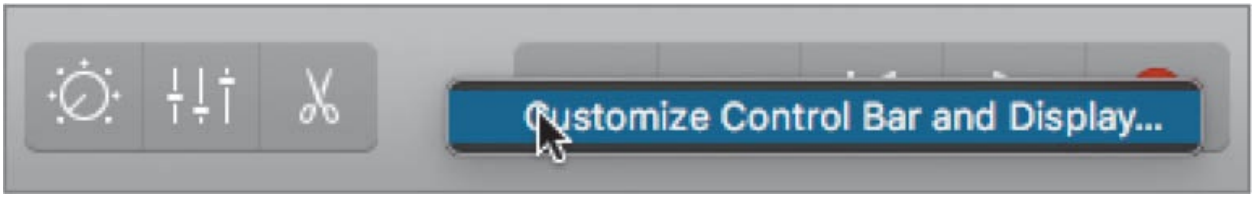
Punching on the fly is a great technique that allows the musician to focus on his performance while the engineer takes care of punching in and out at the right times. On the other hand, if you worked alone through this exercise and tried to punch in and punch out while playing your instrument or singing, you realize how challenging it can be. When working alone, punching automatically is recommended.

Punching Automatically

To prepare for automatic punching, you enable the Autopunch mode and set the autopunch area. Setting the punchin and punch-out points in advance allows you to focus entirely on your performance during recording.

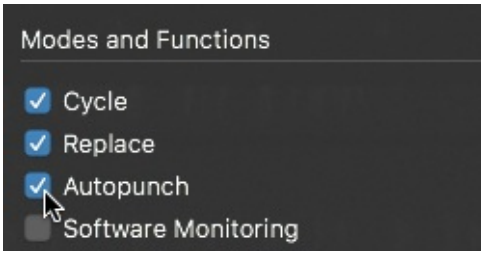
First, you will customize the control bar to add the Autopunch button.

1 Control-click the control bar, and choose Customize Control Bar and Display.



A dialog opens in which you can choose the buttons you would like to see in the control bar, and the information you'd like to see in its LCD display.

2 In the dialog's Modes and Functions column, select Autopunch to add the Autopunch button to the control bar.



Note

The control bar is customized independently for each Logic project file, which allows you to show different buttons and displays, depending on the specific needs of each project.

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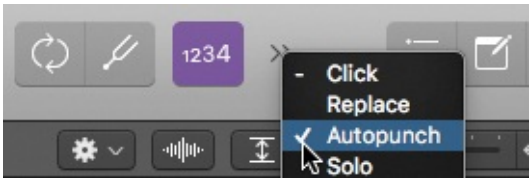
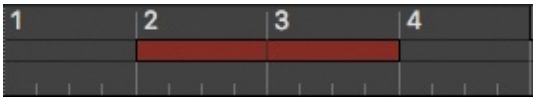
3 Click the Autopunch button (or press Command-Control-Option-P).

Note

When the main window is not wide enough for the control bar to display all the buttons selected in the control bar customization dialog, you can click the chevron (>>) to the right of the mode buttons to access the hidden functions in a shortcut menu.



The ruler becomes taller to accommodate for the red autopunch area.



The autopunch area defines the section to be rerecorded. You can define the autopunch area with more precision when you can clearly see where the mistakes are on the audio waveform.

Tip

Option-Command-click the ruler to toggle the Autopunch mode.

4 Click the background of the workspace to deselect every region.

5 On the Vocals track, click the Vocals#01 region to select it.

6 Press Z.

Logic zooms in, and the selected region fills the workspace.

7 Listen to the vocal recording and determine which section you're going to fix.

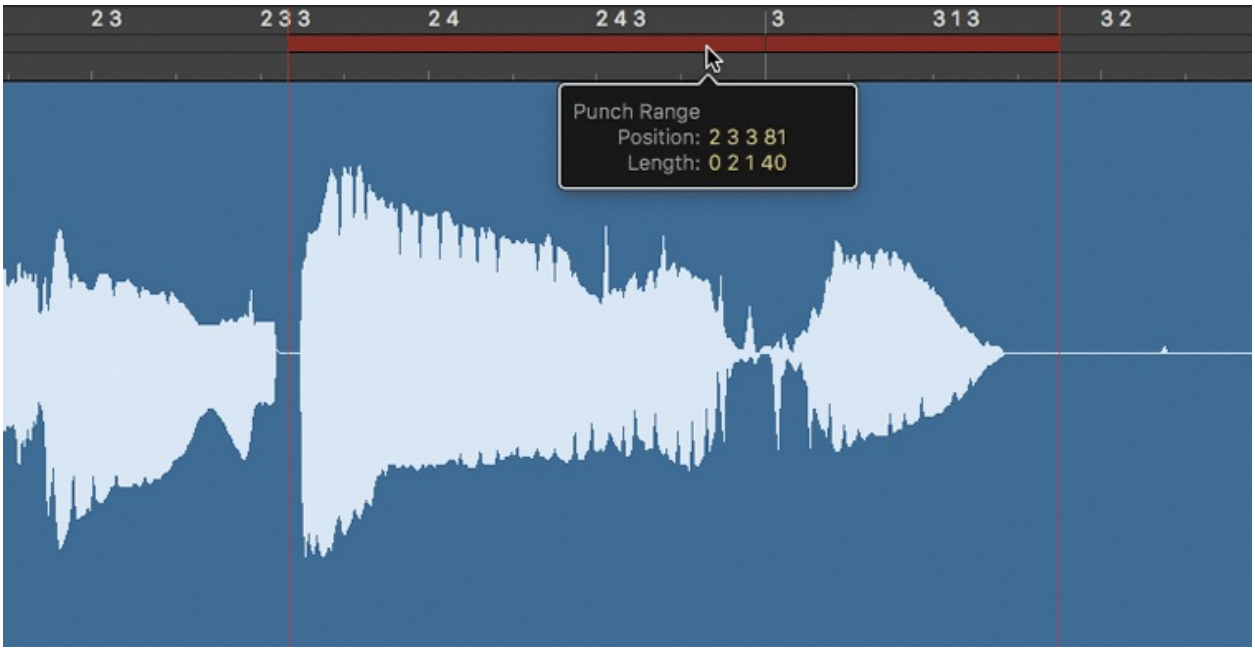
Here we have a vocal recording in which the two words around bar 3 need to be rerecorded. Listen while watching the playhead move over the waveform to determine which part of the waveform corresponds to the words you need to replace.

8 Adjust the autopunch area so that it encompasses the area you want to rerecord.

You can drag the edges of the autopunch area to resize it, or drag the entire area to move it. Red vertical guidelines help you align the punchin and punch-out points with the waveform. You may need to zoom in closer to make sure you're rerecording exactly what you want.

9 Control-Option-drag around the waveform below the autopunch area.

10 Fine-tune the position of the autopunch area.



11 Click Go to Beginning (or press Return).

12 Click Record (or press R).

Playback starts. In the control bar, the Record button blinks; Logic isn’t yet recording.

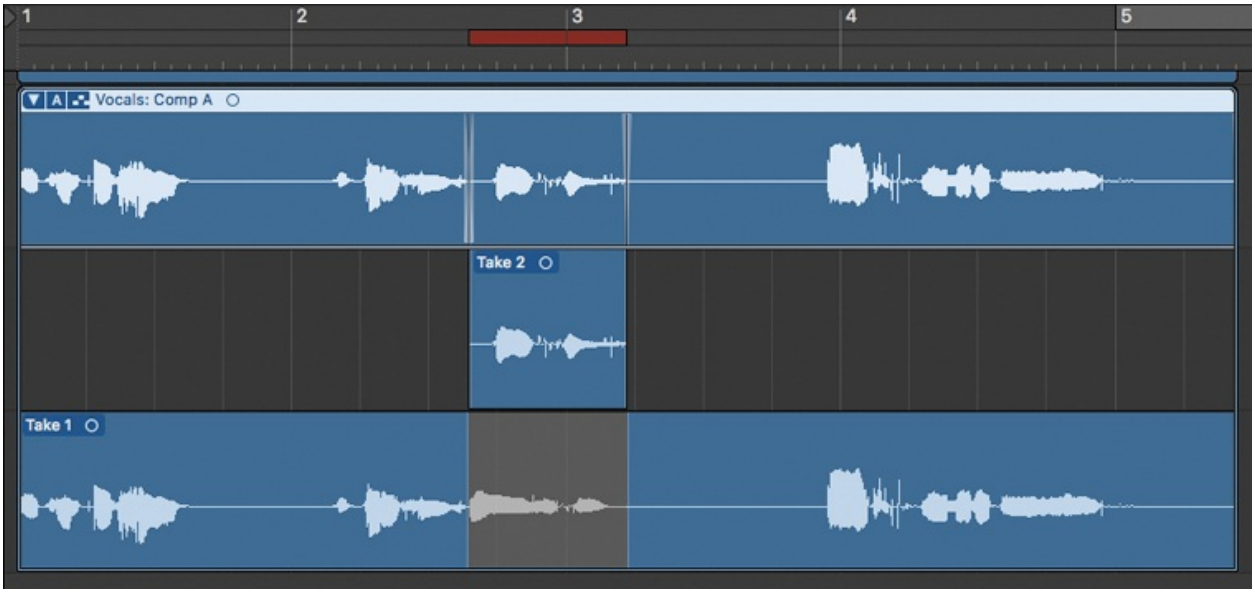
When the playhead reaches the punchin point (the left edge of the autopunch area), the Record button turns solid red and Logic starts recording a new take.

When the playhead reaches the punch-out point (the right edge of the autopunch area), the recording stops but the playback continues.

13 Stop playback.

A take folder, Vocals: Comp A, is created on the track.

14 Select the take folder, and press Z.



Logic zooms out so you can see the entire take folder filling the workspace.

Just as when you punched on the fly in the previous exercise, a comp is automatically created that plays the original recording up to the punchin point, inserts the new take between the punchin and punch-out points, and continues with the original recording after the punch-out point.

15 In the control bar, click the Autopunch button (or press Command-Control-Option-P) to disable Autopunch mode.

16 At the top left of the take folder, click the disclosure triangle to close the take folder.

17 Save your work.

Tip

You can speed up the Autopunch recording process by using the Marquee tool described in Lesson 3. When a marquee selection is present, starting a recording automatically turns on the Autopunch mode, and the autopunch area matches the marquee selection.

Changing Recording Settings

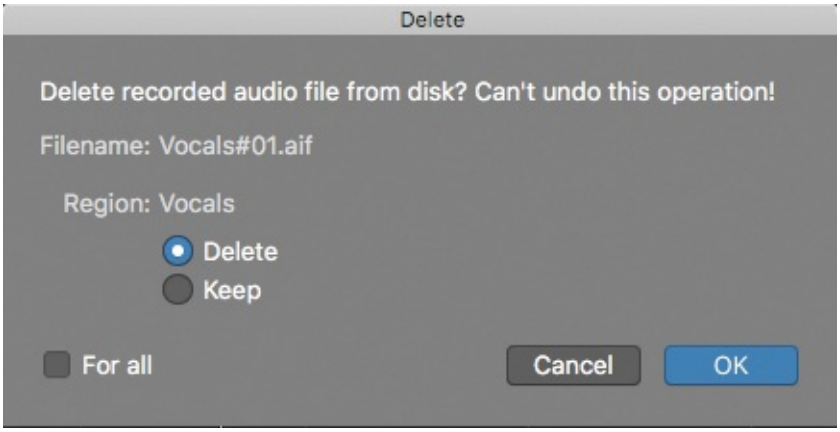
Although you can immediately record audio with Logic Pro X, sometimes you'll want to change its default recording settings. Some settings do not affect the quality of the audio recording but can alter the behavior of your project during recording or change the audio file format used for recordings. The next few exercises will show you how those settings affect the audio recording process.

exercises will show you how those settings affect the audio recording process and explain how to modify them.

Setting the Count-In

The count-in is the time you have to prepare yourself and get in the groove before the actual recording begins.

1 On the Vocals track at the bottom of the workspace, click the take folder to select it, and press Delete.



An alert asks you to confirm the operation. If you were only experimenting and wanted to remove the files you recorded during the two previous punching exercises, you could delete them now. Selecting the "For all" option allows you to apply the Delete operation to all the selected files (meaning all the recordings inside the selected take folder), which expedites the process when you want to delete multiple files.

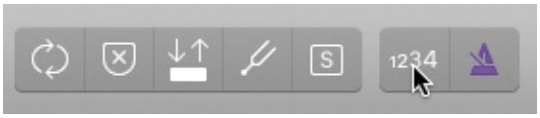
2 Select the Delete and "For all" options, and click OK (or press Return).

The take folder is deleted, and all the audio files it contained are moved to the Trash.

3 Go to the beginning of the project.

Until now, every time you pressed Record, the playhead jumped to the beginning of the previous measure so you could have a four-beat count-in. However, sometimes you may want to start recording without a count-in.

4 In the control bar, click the Count-in button to turn off count-in.



5 Start recording, and stop after a couple of bars.

The playhead starts from its current position, and Logic starts recording right away.

At other times, you may need a longer count-in, or you may want Logic to count in for a specific number of beats.

6 Press Command-Z to undo the recording.

The audio region is removed from the workspace, but the audio file is still in the project folder.

See the “Deleting Unused Audio Files” section later in this lesson to learn how to delete all unused recordings by using the Project Audio Browser.

7 From the main menu, choose Record > Count-in > 2 Bars.

8 Position the playhead at bar 5, and start recording.

The playhead jumps two bars ahead to bar 3, and playback starts. When the playhead reaches bar 5, Logic starts recording.

Note

When selecting a count-in between one bar and six bars, playback always starts at the beginning of a bar, even when you start recording in the middle of a bar.

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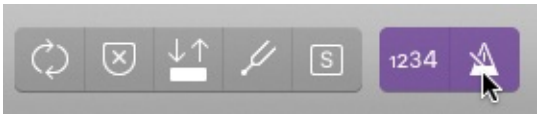
9 Stop recording and press Command-Z to undo the recording.

Setting the Metronome

By default, the metronome is turned off during playback and automatically plays during recording. In this exercise, you will change the default behaviors using the Metronome button and later go into the Metronome settings to adjust its sounds.

1 In the control bar, click the Metronome button to turn it on.



2 Start playback.

The metronome is on.

3 Stop playback and start recording.

The metronome is on.

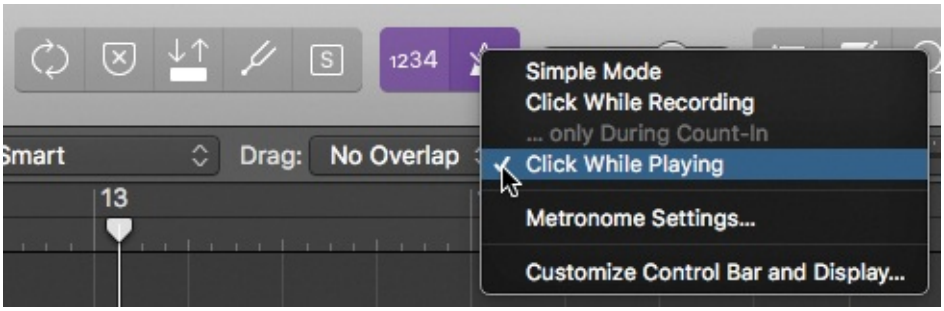
4 While Logic is still recording, turn off the metronome.

The metronome is off.

5 Stop recording.

The metronome is back on. You now have inverted the default behavior: the metronome is on during playback and is automatically turned off during recording.

6 In the control bar, Control-click the Metronome button, and deselect Click While Playing.



The metronome is now off regardless of whether you're playing or recording.

7 Control-click the Metronome button, and choose Metronome Settings.

The Metronome Settings window opens. There are settings for two metronomes: Audio Click (also known as Klopfgeist, which is German for

knocking ghost), which you are using, and MIDI Click, which is now off.

Note

If you want your metronome to play a specific sound on an external hardware MIDI synthesizer, sampler, or drum machine, use the MIDI Click. From the Port menu, choose a MIDI Out port, and connect a MIDI cable from that MIDI Out port on the MIDI Interface to the MIDI In port on your hardware sampler/synthesizer.

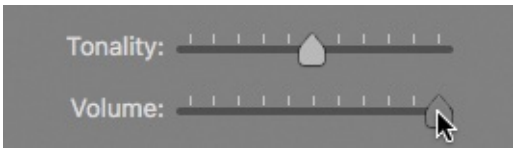
Under the name of each metronome, you can adjust the pitch and velocity of the notes playing on each bar and beat. You can play a sound on every division, which can be useful when you're working with very slow tempos.

8 In the Metronome settings window, select "Click while playing."

9 Go to the beginning of the song and start playback.

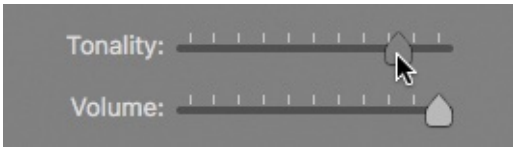
The metronome sounds a little low compared to the drum loop on track 1. In fact, you can hear it only when no drum hit occurs on that beat. At the bottom of the Metronome Settings window, you can drag a couple of sliders to adjust the sound of the metronome.

10 Drag the Volume slider all the way to the right.



Even with the volume turned all the way up, it's challenging for a dry metronome sound to cut through a busy mix, and you still have to strain to hear it, especially starting at bar 5, where the bass and drums come in.

11 Drag the Tonality slider slowly toward the right.

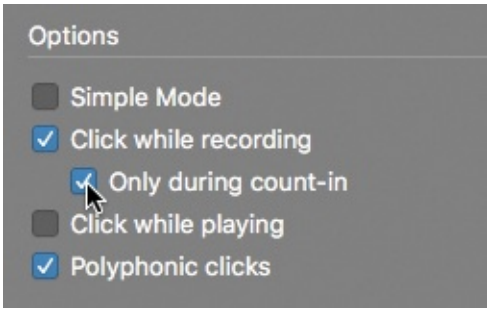


The metronome sound changes, and you can start hearing a pitch. Adjusting the tonality of the metronome is important: a pitched sound (slider to the right) will better cut through a busy mix, but it will also bleed through the musician's headphones into the microphone. A more muted sound (slider to the left) is more suitable for quiet mixes in which you can't tolerate any metronome bleed.

12 Adjust the metronome so that it is loud and clear.

When a project already contains a drum track, you may need the metronome only during the count-in to get into the groove before the song starts.

13 At the top of the Metronome Settings window, under Options, select "Click while recording" and "Only during count-in."



14 Close the Settings window, go to the beginning of the project, and start recording.

You hear the metronome for two measures, and then it stops playing as the song and the recording start at bar 1.

15 Stop and undo the recording.

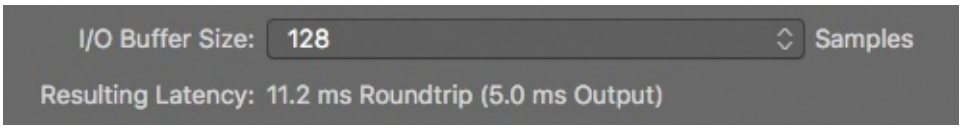
16 Click the Metronome button to turn it off.

Choosing the I/O Buffer Size

When communicating with the audio interface, Logic does not receive or transmit just one sample at a time. It places a number of samples in an input buffer for recording and in an output buffer for monitoring. When a buffer is full, Logic processes or transmits the entire buffer. The larger the buffers, the less computing power is required from the CPU. The advantage of using larger input and output buffers is that the CPU has more time to calculate other processes, such as instrument and effects plug-ins. The drawback to using a larger buffer is that you may have to wait a bit for the buffer to fill before you can monitor your signal. That means a longer delay between the original sound and the one you hear through Logic, a delay called *roundtrip latency*.

Usually, you want the shortest possible latency when recording and the most available CPU processing power when mixing so that you can use more plug-ins. You can adjust the I/O buffer size depending on your situation.

1 Choose Logic Pro X > Preferences > Audio.



The Audio preferences pane opens. The default I/O Buffer Size is 128 Samples, which should have a latency of about 10 ms (milliseconds) or less for most devices.

Note

The driver used by your audio interface also influences the roundtrip latency. Depending on the audio device selected in your Audio preferences, you may see different latencies for the same I/O buffer size. When choosing a different audio device, make sure you click Apply Changes to update the Resulting Latency value displayed.

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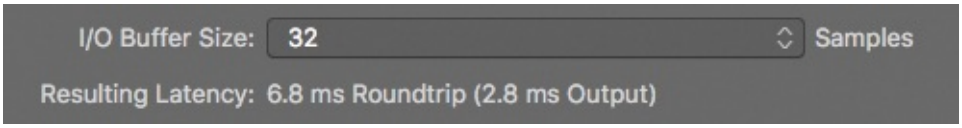
2 From the I/O Buffer Size pop-up menu, choose 32.



The latency is now shorter.

Note

Acoustic sound waves travel through air at roughly one foot per millisecond, so a guitar player whose ear is five feet from her guitar amp’s speaker will hear notes approximately five milliseconds after playing them.

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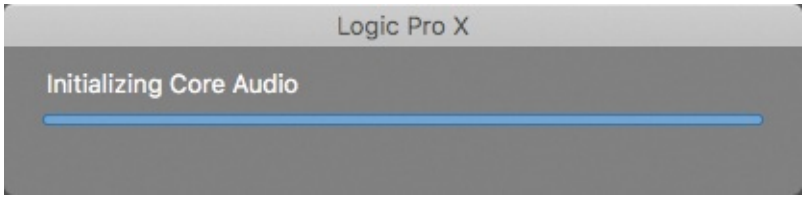
3 Close the Preferences window.

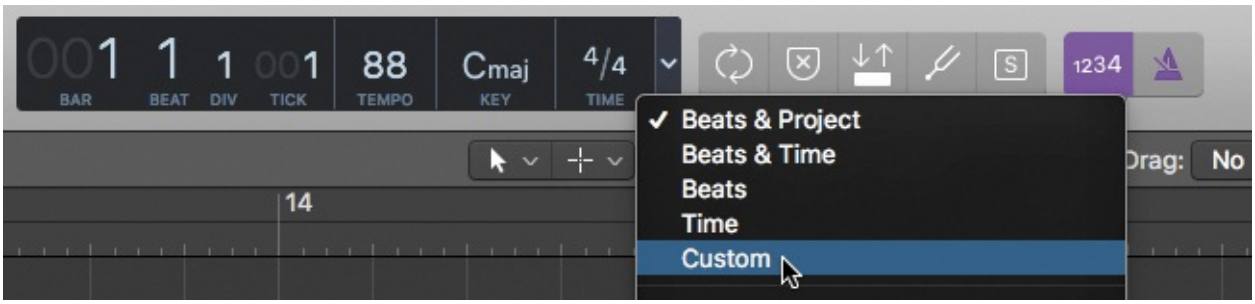


The Core Audio engine is initialized with a 32-samples I/O buffer.

To monitor the impact of the I/O buffer size on the CPU, you need to customize the control bar to display the CPU meter.

4 In the control bar, click the small arrow to the right of the LCD display,

and choose Custom.

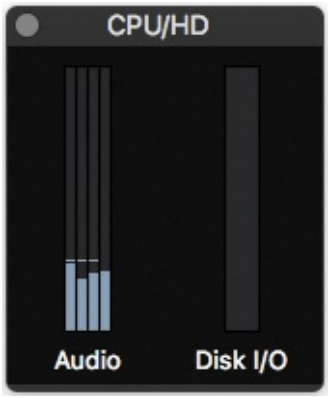


The LCD display now displays more information, including CPU and HD meters to the right.

5 Double-click the CPU or HD meter.

The CPU/HD window appears with more detailed meters. If your Mac has a multicore CPU, you can see a meter for each core.

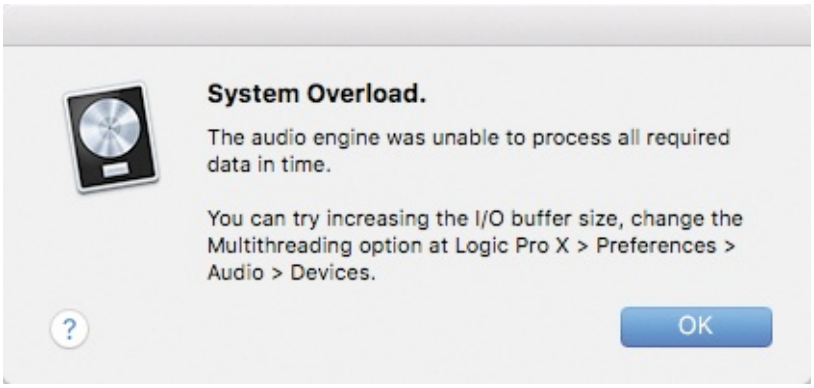
6 Start playback at bar 13.



Note

Depending on your Mac computer's CPU, you may not see the same number of cores or the same amount of activity on the meters.

You can monitor the amount of work each core is doing. When the CPU works harder, you might hear pops and crackles while the song plays. When playing the project becomes too much work for the CPU, playback stops and you will see an error alert.



When that happens, you can try raising the I/O buffer size and reinitializing the audio engine. However, if you try to record audio with a high I/O buffer size, you will hear a delay between the notes you play and the notes you hear. That's latency. If you intend to do more audio recordings, find the lowest I/O buffer size setting that still allows clean monitoring.

Note

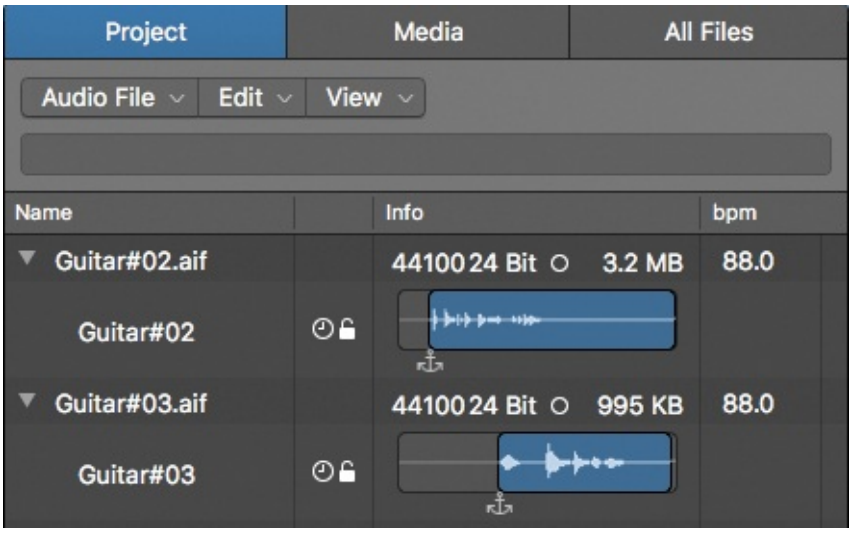
Some audio effect plug-ins can also introduce latency. Choose Record > Low Latency Mode to automatically bypass those plug-ins.

Deleting Unused Audio Files

The Project Audio Browser shows all the audio files and audio regions that have been imported or recorded in your project. During a recording session, the focus is on capturing the best possible performance, and you may want to avoid burdening yourself with the decision making that comes with deleting bad takes. You may also have several unused audio files in the Project Audio Browser that make the project package (or folder) bigger than it needs to be.

In this next exercise, you will select and delete all unused audio files from your hard drive.

1 In the control bar, click the Browsers button (or press F) and ensure that the Project tab is selected.



The Project Audio Browser opens, listing all the Apple Loops used on tracks 1 through 6, and all the audio files you've recorded during this lesson.

For each audio file, the Info column shows:

- Sample rate (44,100 Hz)
- Bit depth (24 bits)
- Format icon (a single circle indicates a mono audio file) ▸ File size

Clicking the disclosure triangle in front of the audio filename toggles the display of audio regions referring to that audio file.

Note

Resizing, cutting, or copying regions in the workspace is called *nondestructive editing*. The audio data in the audio file stays intact, and the regions merely point to different sections of the audio file. You will learn more about nondestructive editing in Lesson 3.

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2 In the workspace, select any audio regions you don't want to keep, and then press Delete. If a Delete alert appears, select Keep and click OK.

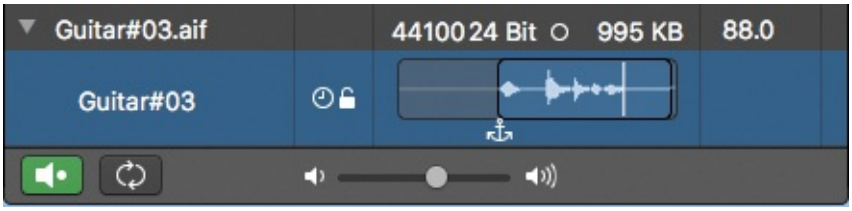
The regions are removed from the workspace, but their parent audio files are still present in the Project Audio Browser.

3 From the Project Audio Browser menu, choose Edit > Select Unused (or press Shift-U).

All the audio files that do not have an associated region in the workspace are selected.

Note

If you're not sure about deleting the files, preview a region by selecting it and clicking the Prelisten button (or press Control-Spacebar). While the region plays, a small white playhead travels through the regions.

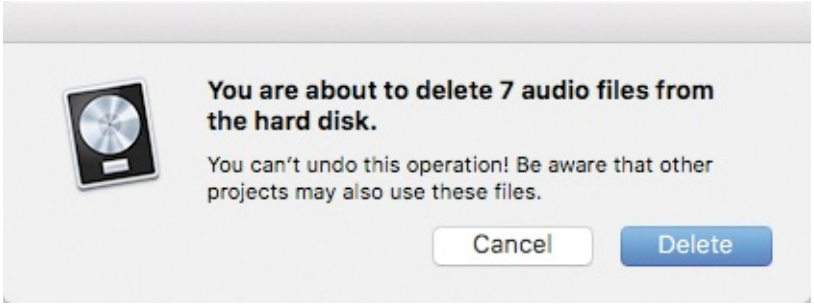


Tip

In the Project Audio Browser, to play a region from a specific point, click and hold down the mouse button over its waveform at the desired location.

Once you feel satisfied that the selected audio files do not contain any useful material, you can delete them.

4 From the Project Audio Browser menu bar, choose Audio File > Delete File(s).



An alert asks you to confirm the deletion.

5 Click Delete.

The audio files are removed from the Project Audio Browser. In the Finder, the files are moved to the Trash.

You are now ready to tackle many recording situations: you can record a single track or multiple tracks, add new takes in a take folder, and fix mistakes by punching on the fly or automatically. You know where to adjust the sample rate, and you understand which settings affect the behavior of the software during a recording session. And you can reduce the file size of your projects by deleting

unused audio files—which will save disk space, and download and upload time should you wish to collaborate with other Logic users over the Internet.

Lesson Review

1. What two fundamental settings affect the quality of a digital audio recording?
2. In Logic, where can you find the sample rate setting?
3. What precaution must you take before record-enabling multiple tracks simultaneously?
4. In Autopunch mode, how do you set the punchin and punch-out points?
5. Describe an easy way to access your Metronome settings.
6. Describe an easy way to access your count-in settings.
7. What happens when you raise the I/O buffer size?
8. In the Project Audio Browser, when selecting unused files, what determines whether a file is used or unused?

Answers

1. The sample rate and the bit depth
2. The sample rate is found under File > Project Settings > Audio.
3. Make sure the tracks are assigned different inputs.
4. Adjust the left and right edge of the autopunch area in the middle of the ruler.
5. Control-click the Metronome button, and choose Metronome settings.
6. In the main menu, choose Record > Count-in, and choose the appropriate setting.
7. The CPU works less hard so you can use more plug-ins, but the roundtrip latency is longer.
8. An audio file is considered unused when no regions present in the workspace refer to that file.

Keyboard Shortcuts

Recording	
R	Starts recording
Command-Control-Option-P	Toggles Autopunch mode
Option-Command-click the ruler	Toggles Autopunch mode
Tracks	
Command-Option-N	Opens New Tracks dialog
Key Commands	
Option-K	Opens Key Commands window
Project Audio Browser	
F	Opens or closes the Browser pane
Shift-U	Selects unused audio files