

Digitize Vinyl and Audiocassettes

by Kris Fong



WHAT YOU NEED

- Turntable with stereo receiver or preamp, and/or cassette deck
- Headphones or speakers (for monitoring)
- Records and/or audiocassettes
- Stereo RCA to 1/8-inch stereo miniplug cable (about \$5 at electronics stores)
- USB audio-input device if your Mac lacks an audio input (Griffin's iMic, \$35, www.griffintechnology.com)
- Audio-recording app such as Black Cat Systems' Audiocorder (donationware, www.blackcatsystems.com) or Felt Tip Software's Sound Studio (\$49.99, www.felttip.com)

If you're too cheap to shell out \$9.99 for a digital download of one of your ancient records, then record your album yourself onto your Mac's hard drive.



We've spent a small fortune over the past 15 years, slowly replacing some of our favorite vinyl records and audiocassette tapes with their CD equivalents just so we could play the albums at work or on the go. But what about all those old records and tapes that contain a single great song, or the ones that are out of print, or the ones we can't seem to justify buying again? Rather than wait for KTEL's next *Best of the Screamin'*



'80s *Hair Bands* compilation, we can simply record our old albums and tapes on the Mac and burn the files onto CDs for play in the car or office, or use iTunes to convert them into MP3s for our iPod.

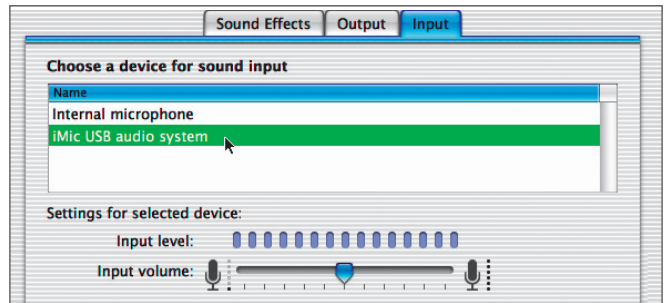
Digitizing analog recordings is easy, provided that you still have a turntable and/or cassette deck. If you're looking to turn your historic collection into CDs or MP3s, here's how. And for those interested in getting the best audio possible from a scratchy old record or hissy tape, we also show you how to clean up digital files.

1 Make the Connections If cassette dubbing is your task du jour, connect the audio cable's RCA connectors to your cassette deck's left and right audio-out jacks. If you're ripping vinyl, you can't connect your Mac directly to a turntable because you need a preamp to boost the signal to line level. Instead, hook up the turntable to your receiver as you normally would or to a preamp like Griffin's PowerWave (\$100, www.griffintechnology.com; see our review on p50) or a cheapie \$20 Radio Shack device. Then connect the audio cable's RCA connectors to the receiver's or preamp's left and right auxiliary, tape record, or similar audio out. Next, plug the stereo miniplug into your Mac's audio-in jack. If your Mac lacks an audio in, you'll need a USB audio-input device to make the connection. Plug the USB device into your Mac's USB port, and then plug the audio cable's miniplug into the USB device.



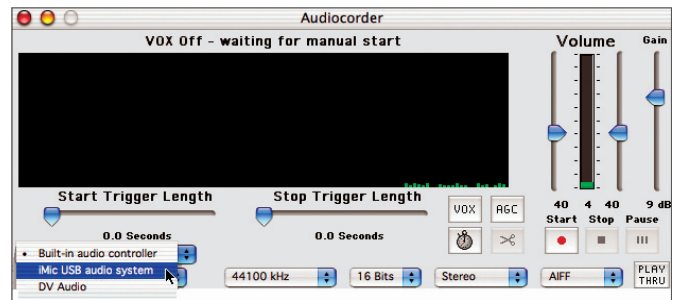
If your Mac lacks audio in, Griffin's iMic supplies the needed audio jack via USB.

2 Select Your Mac's Input To monitor the sound, either plug headphones into your cassette deck or stereo receiver, or connect a pair of speakers to your receiver. We don't recommend monitoring sound from your Mac due to possible latency (sound delay) problems—you could wind up chopping off a song's beginning. Set your Mac's input to record either from its sound input (if your Mac has an audio-in jack) or via a USB device. Classic users: From the Apple menu, select Control Panels > Sound. Click the Input tab and select the desired input from those displayed. OS X users: Select System Preferences from the Apple menu, and click Sound to display its preferences. Then click the Input tab and select the desired input from those displayed.



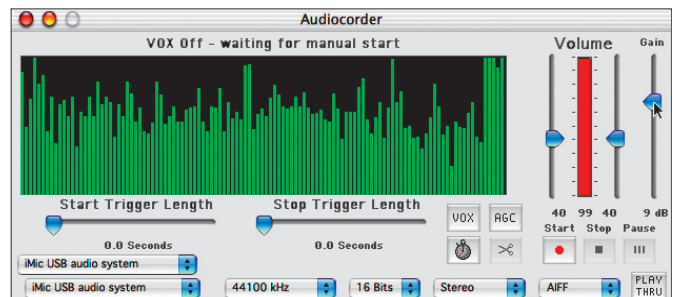
To get external audio into your Mac, choose the sound input for your setup in Preferences.

3 Establish Quality Control Stick a record on your turntable or a cassette in your deck, power everything up, and then launch your audio app. We used Black Cat Systems' Audiocorder—if you're not, apply these instructions to your own app. To get CD-quality audio, set your app to record 44.1KHz, 16-bit stereo sound in AIFF format—we selected 44100 kHz, 16 Bits, Stereo, and AIFF from Audiocorder's respective pop-up menus. To set the sound input, we also selected iMic USB Audio System from the pop-up menu under the Start Trigger Length slider (this automatically changes the pop-up underneath to the same selection). Choose your own input device from these pop-up menus.



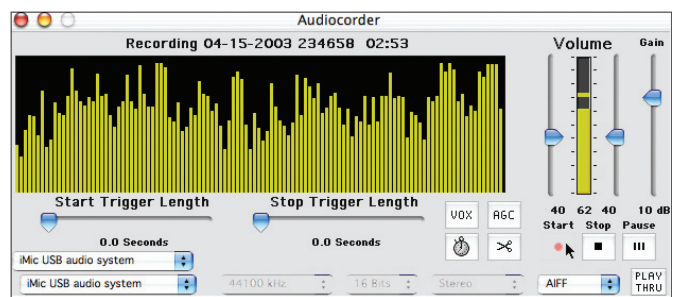
Because Audiocorder ignored our sound input preferences (other apps don't), we chose the iMic input manually from the pop-up menu.

4 Give It Some Gain To preview the volume level coming into your Mac, start playing your record or tape. Adjust the Gain slider so that the audio level is strong—the bar should dance predominantly in whatever level color the app supports (usually green, yellow, or both; Audiocorder displays green when previewing and yellow when recording), without going into the red, which will cause distortion. Don't set the gain too low or you may end up with a hissy recording.

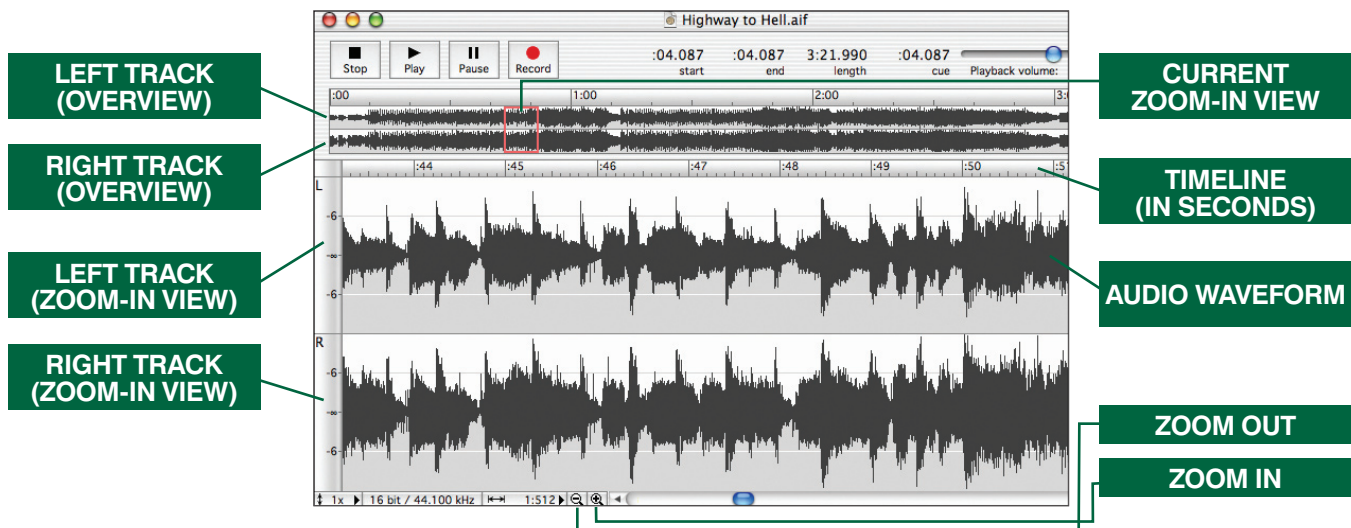


To prevent distortion, preview a bit of your album's volume level and take the Gain down a notch if the level spikes to red.

5 Ready, Set, Record You can record songs individually, or record an entire side of an album or cassette in one take and edit the file afterward. Cue up your first song, click Record in your audio app, and play the album or cassette. Keep an eye on the levels to make sure the audio doesn't peak to the red. If it does, stop recording, notch down the Gain a tad, and start again. When the song or side ends, click Stop, and then stop the song on your turntable or cassette deck. If the app doesn't save the file automatically, do so manually. Repeat for other songs. If you recorded songs individually and don't want to do cleanup work, you can burn these CD-ready files onto a CD-R as an audio CD, or use iTunes to convert them into MP3 files for play in iTunes or an MP3 player. If you need to do some editing, read on.



To digitize sound, just click Record, start playing your record or cassette, and keep an eye on those levels.



Clean Up Digitized Audio Files

by Kris Fong



WHAT YOU NEED

- For simple clip editing, any audio-editing app, such as Kumulipo's Jasmine (\$29.95, www.kumulipo.com), Apple's QuickTime Pro (\$29.95, www.apple.com), or Felt Tip Software's Sound Studio
- For editing and noise removal, any audio-filtering app, such as Bias's Peak (\$499, www.bias-inc.com), Arboretum's RayGun (\$99, www.arboretum.com), or Felt Tip Software's Sound Studio

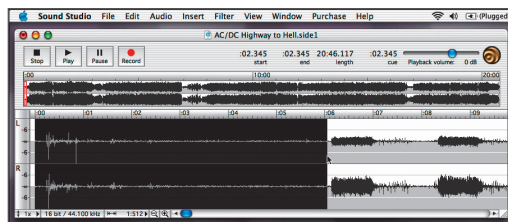


You've digitized your vinyl and tape collection, but your recordings sound more like a Rice Krispies jingle. While you should've thoroughly cleaned your records before taking them out for a spin, we won't make you redo the recording—you can't avoid a few clicks, crackles, and pops anyway. But you *can* clean up many minor noises and tape hiss after the fact.

Though you can't remove continuous noise without lowering sound quality, you can diminish it without making your music sound as if it were being piped in from a sewer. Here's how to do just that, as well as how to isolate individual songs from one collective recording and remove unwanted audio before and after a song. We used Sound Studio for everything—if you're not, just apply our instructions to your application of choice.

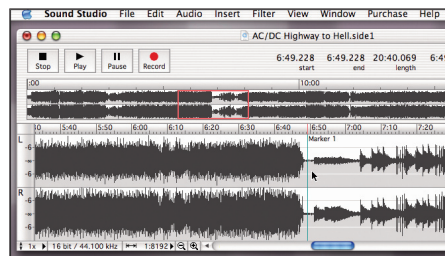
1 Remove Unwanted Extras To remove extra audio before a song, open the file in Sound Studio, click Play, and study the zoomed-in waveforms (bottom two tracks) as the playhead scrolls over them—the bigger the wave, the louder the sound. Silence appears as a straight, horizontal line. In our example, there are waveform spikes at the beginning where our turntable needle landed on the record, followed by some minimal noise before the song kicks in just after the 6-second mark. To get rid of the extra, click the left track's gray bar (this selects the left and right tracks simultaneously) and drag from the beginning to the point just before the song starts. From the Edit menu, select Cut to delete. If you recorded songs individually, repeat this process accordingly to remove stuff at the end, and then skip to step 3.

To get rid of a lengthy intro, just click and drag the waveforms to select and cut them.

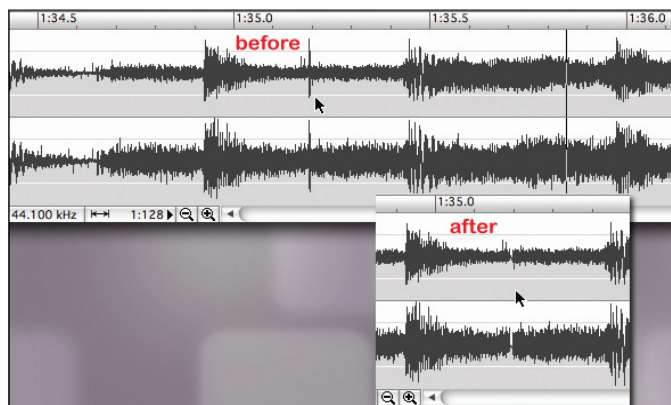


2 Isolate Songs If you recorded your songs collectively, isolate the songs by chopping up the file. Using the waveform overview (top two tracks), click an area where the waveform flattens (picture the waveform as a sausage and look for the tie-off point). In the zoomed-in tracks, click the flat portion of the wave, and click Play to hear whether you indeed landed between two songs. If not, keep looking. If so, click the left track's gray bar anywhere within the break. From the Insert menu, select Marker. Seek out all other breaks and mark these as well. Then select Split By Markers from the Edit menu. In the resulting dialog, choose where you want your individual songs saved, and click OK. Rename these files by song title and remove unwanted audio before and after each song as you did in step 1.

Isolate songs from a collective recording by first marking the break points, and then splitting the clip at each marker.

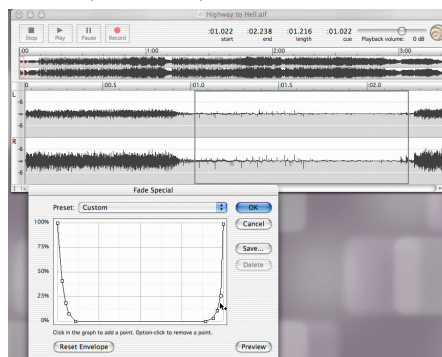


3 Clean Out Clicks If you recorded from vinyl, your recording probably has a few clicks and pops in it. To get rid of these sounds, open a song in Sound Studio, click Play to listen, and click Stop when you hear a click or pop. The noise should appear as a spike in the waveform. To get rid of it, click the left track's gray bar just before the spike starts and drag to the point where it ends. Then select Interpolate (Repair) from the Filter menu to knock it out. To review your handiwork, click the wave before the repaired area, and then click Play. Repeat for all other pops and clicks.



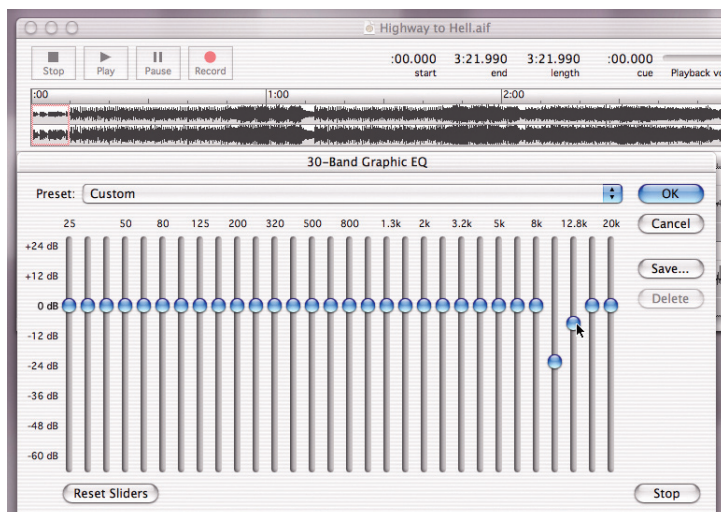
Our cursor in the before shot points to a click; once we interpolate it, the noise disappears (after).

4 Remove Crackle and Hiss from Silent Passages Removing noise that plays throughout a clip is difficult. Pro packages like Peak, along with expert audio-engineering skills, can yield good results, but there are quick-and-dirty methods. To get rid of crackling and hiss in a silent part of a song, highlight the affected area, and then select Fade Special from the Filter menu. In the resulting dialog, click Preview to hear the passage. Then click in the grid to draw a U shape so that the sound volume fades quickly at the start of the affected area, remains silent through it, and quickly returns to normal volume at the end. Click OK, click the waveform before the repaired spot, and click Play to review your work.




This area between guitar riffs should be silent, but it's not. Using the Fade Special filter, we dropped the volume on this spot.

5 Lower Noise It's almost impossible to remove continuous crackles and hiss without sacrificing sound quality (unless you're a pro with a pro app). Expect to live with a bit of residual noise if you want your song to sound good. To diminish noise presence a bit, though, click the left track's gray bar anywhere and press Command-A to select all. From the Filter menu, select Graphic EQ, then 30-Band EQ to open the filter. Click Preview to start playing the song, and then experiment by selecting a high-frequency slider and notching it down to hear if it lessens the noise. Listen and experiment. Most hisses and crackles peak in the 10KHz to 12KHz range—start here, but listen carefully to sound quality, too. When you find a happy medium, click OK.



We got rid of the severe crackle in our song by taking these two frequency sliders down a notch.

 Kris Fong is sorry to report that no amount of EQ will silence a hissing cat.

PREAMP PROBLEMS

If you're recording from a turntable-and-preamp combo instead of a turntable and stereo receiver, your music may sound like it was recorded in a tin can. This is because vinyl is recorded with reduced lower frequencies and boosted higher frequencies, known as the RIAA curve. This technology was an industry-standard way of getting better sound from and fitting more recording time on a record, while keeping the needle from jumping off it during play. Stereo receivers boost these frequencies back

to normal levels when you play a record, but preamps won't. However, you can reintroduce and rebalance the frequencies in your digitized music by altering the EQ settings in your audio app.

One other turntable trouble spot: If you hear a low-frequency hum when you try to preview a record, you're hearing ground hum. This is caused when a preamp amplifies sound from an ungrounded device, such as your turntable. To get rid of it, just take your turntable's grounding wire and wrap it around the bottom prong of a three-prong plug (like the one on your power strip), and plug it into a grounded outlet.