Chapter 13

Creating Smaller Audio Files for iPods, E-Mail, and the Web

In This Chapter

- Understanding compression
- Making AAC and MP3 files
- Distributing your music

GarageBand exports exactly one file format — the one known as Audio Interchange File Format (with extensions of aif, aiff, AIF, or AIFF).

Fortunately, AIF files are the gold standard of audio files, the highest-of-high-quality uncompressed audio that you can save on a disc; you couldn't ask for better. AIF files sound great, but a cost is incurred: The files are huge — too big to send via e-mail or download or to stream from the Internet.

AIF files are, by definition, uncompressed. They're usually five to ten times the size of a song in its compressed form (that is, *encoded* or *ripped*). Other audio file formats, such as MP3 and AAC, are compressed and are much smaller — by 50–95 percent — than the same song uncompressed.

Compression, by its nature, takes away part of the sound. In theory, it's the part that people can't hear, but some people do notice a big difference between uncompressed audio and compressed audio, even on cheap stereo systems. Others can't tell any difference.

Some people can hear the difference between compressed audio files that are encoded (*ripped*) at bit rates of 160 and 192 Kbps. Others hear no difference.

The smaller compressed audio files sound good enough to most people most of the time and have become a de facto standard for consumer audio.

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iPods (and most other personal music players) and iTunes (and most other personal music-playing software not made by Microsoft) can play both uncompressed and compressed files. But most people store most of their music as compressed audio files, allowing five, eight, or even ten times as many songs to be stored in the same amount of hard drive space.

Compression is all about choices, so this chapter looks at those choices and describes how to compress an audio file to send via e-mail, use with an iPod (or other digital audio device), or put on the Web.

But first, consider the big picture: What is compression, and how does it affect audio quality and file size?

Choosing a Compression Type

The quality of an AIF file is top-of-the-heap because it, by definition, contains 100 percent *uncompressed* audio. Nothing has been added or removed; every note, breath, harmonic, overtone, string noise, buzz, hiss, and other sound in the master recording is in an AIF file.

AIF is the real deal. The songs on your store-bought audio CDs are AIF files (or at least your Mac thinks they are), as you can see in Figure 13-1.

Figure 13-1: Insert an audio CD, and your Mac sees AIF files.

Technically, the files on an audio CD are "Red Book Audio" files, which are slightly different from AIF files. The technical aspects aren't important; the important part is that when you shove an audio CD into your Mac, it sees Red Book Audio files and automatically thinks of them as AIF files, as shown in

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Figure 13-1. No conversion or translation is needed — to your Mac, Red Book Audio files are AIF files, and vice versa, even if the rest of the world says that Red Book and AIF are different.

The problem is, while uncompressed audio may be the right format for shiny silver discs, it's not the right format for e-mail or the Web, because as I've said before, AIF files are gargantuan.

Fortunately, if you have GarageBand, you also have the right tool for compressing AIF files, and in fact, that tool is already open and ready to rip. I'm talking, of course, about GarageBand's iLife brethren (or sisteren), iTunes. With iTunes, it's child's play to compress (*rip* or *encode*) AIF files into MP3, AAC, or even Apple's new high-quality lossless encoder, and it's all done behind the scenes using iTunes built-in (and very high-quality) encoders.

MP3 and AAC are the two most common compressed audio file formats on the Mac. MP3 came first and has essentially been the compressed audio standard for many years. Then, a couple of years ago, when Apple introduced the iTunes Music Store, it also introduced the AAC file format, which it uses for the store's rights-protected songs.

Figure 13-2 is worth a couple of thousand words — it shows the same song saved in all four formats and the size of each file. In Table 13-1, I give you a handy reference to the different file types and the common ways in which each type is used.

Figure 13-2: Compare the file size of the same song saved in four different file formats.

You find out how to save your own songs in those formats in the next section.

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Table 13-1 File Types Large and Small

File Type	*Compressed?*	*What's It Good For?*
AIF	No	Audio CDs, iTunes, and archiving music in the file format that retains the most audio information. Can be used with iPod, but files are 5–10 times the size of compressed formats.
WAV	No	The equivalent of an uncompressed AIF file on a Mac, this format is used for sharing files with Windows users. File sizes are 5–10 times the size of MP3 files, which is the compressed file format of choice among Windows users.
Apple lossless	No	iTunes and archiving music in the file format that retains the most audio information. Can be used with iPod but files are 3–7 times the size of compressed formats.
MP3	Yes	iTunes, e-mail, the Web, and sharing with Windows users. Files are much smaller than either uncompressed format, making MP3s ideal for iPods.
AAC	Yes	Same as MP3 but is Mac-only. Slightly smaller files than MP3 and slightly better sound quality in those slightly smaller files. Alas, most Windows users can't use AAC files.

Making AAC and MP3 Files

After you export a song from GarageBand, iTunes launches itself so that you can listen to your masterpiece. Using iTunes, it's easy to create a much smaller AAC or MP3 file (or Apple lossless file, which is roughly 30 percent smaller than the AIF file and has the same sound quality) from this AIF file, as long as you know the secret. Although it would be easy enough to select the song and then choose Advanced➪Convert Selection to AAC in iTunes, that doesn't give you the opportunity to choose the file type and bit rate that you want to use. And, depending on how you want to use your file, those options are important.

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As I mention in the previous section, different file types work better for different purposes, whether that is playing a song on your iPod, e-mailing it to a friend, or making sure that as many people as possible can listen to your song however they want to.

And the compressed file formats can encode your song at different bit rates. The higher the bit rate, the better the song will sound. Alas, the higher the bit rate is, the bigger the file will be.

In the following steps, I go the extra mile for you, gentle reader, and explain how to change AAC files to MP3 files with a menu choice, as well as the secret of changing the bit rate for the converted song.

The secret, my friends, is in iTunes Preferences. So, to set the file type and bit rate before you convert, follow these steps:

1. **Open the Preferences window by choosing iTunes➪Preferences or by pressing ⌘-, (that's ⌘-comma).**
2. **In the Preferences window, click the Importing tab button at the top.**

   You see a window that looks like Figure 13-3. The three items at the top of the window — the Import Using and Setting pop-up menus and the Details summary — are the ones that you'll be working with today.

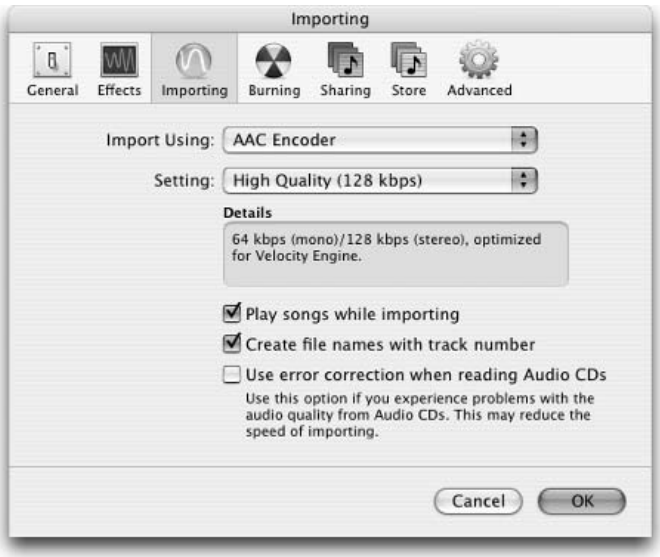

Figure 13-3: The iTunes Importing preferences tab.

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3. **Choose which encoder to use (AAC, MP3, Apple lossless, or WAV) from the Import Using pop-up menu.**

   Which encoder should you choose? That depends; read on:

   - **MP3:** If your song has a chance of encountering a Windows computer without a copy of iTunes, MP3 is the better and safer choice. Dozens of audio players for Windows can play MP3 files, but only iTunes for Windows can play AAC files.
   - **AAC:** AAC is a better choice than MP3 unless you intend to share your music files with a Windows user. AAC generates better-sounding audio files that are slightly smaller than their MP3 counterparts.
   - **Apple lossless:** Fitting somewhere between compressed and uncompressed file formats, Apple lossless encoding creates a file that is sonically identical to its AIF counterpart but is 10–30 percent smaller. AAC and MP3 files are still much smaller, but they've been compressed and have had some material — mostly things you can't hear — removed to reduce the file size. If you're an audio purist, you may prefer a lossless format (this one or the even-bigger AIF format) for long-term archiving of your songs.
   - **WAV:** This is the Windows equivalent of an AIF file on the Mac. If you want to provide a Windows user with an uncompressed audio file, convert it to a WAV file and she will have no problem playing it. Because WAV is an uncompressed format, though, it's not a great choice for music players or sharing on the Web.

   For my own personal listening enjoyment, which means iTunes through Tapco S-5 Reference Monitors at my desk and an iPod everywhere else, I use AAC files that are ripped at 160 Kbps. My ears tell me that AAC files sound better than MP3 files with similar sizes and bit rates.

   Here's the bottom line: If you're not sure whether the intended listener is hip to iTunes, MP3 is your best and safest bet.

4. **Choose the bit rate that you want to encode with:**

   - **If you chose MP3 in Step 3,** the Setting pop-up menu offers four choices: Good Quality (128 Kbps), High Quality (160 Kbps), Higher Quality (192 Kbps), and Custom.

     The settings menu for the MP3 encoder is shown in Figure 13-4.

     If you choose Custom, click the Default Settings button first, because the MP3 encoder's default custom settings are the right choice 99.9 percent of the time.

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- **If you chose AAC in Step 3,** the Setting pop-up menu offers but two choices: High Quality (128 Kbps) and Custom. Choose High Quality (128 Kbps) if that's what you want; otherwise, choose Custom. Leave the Sample Rate and Channels pop-up menus at their default setting of Auto. That will be the correct setting 99.9 percent of the time.

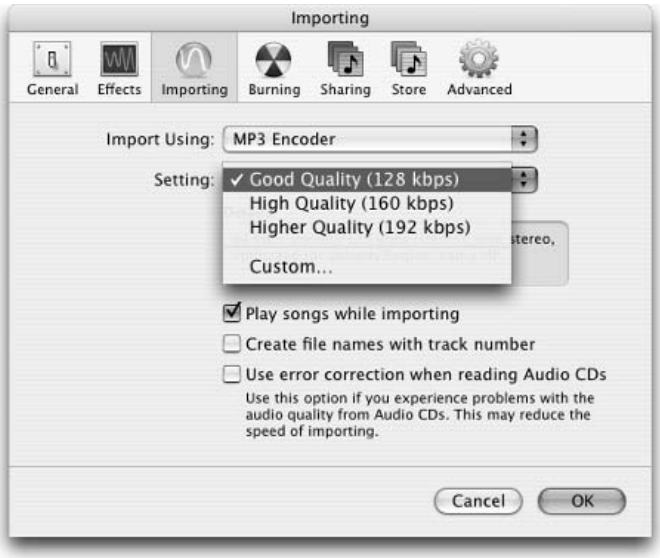

Figure 13-4: Choosing a setting for the MP3 encoder.

5. **Choose a bit rate from the Stereo Bit Rate pop-up menu, and then click the OK button.**

Before AAC came along, I ripped all my MP3s at the Higher Quality (192 Kbps) setting. Today, I believe my AAC files that are ripped at 160 Kbps sound better than MP3 files ripped at 192 Kbps. And, AAC 160-Kbps files are smaller than MP3 192-Kbps files.

Okay, to sum things up, files that are compressed at higher bit rates sound better and use more hard drive space; files that are compressed at lower bit rates sound worse and use less drive space. Got it?

6. **When you've selected the file type and bit rate, click the OK button to close the Preferences window.**

7. **Select the AAC file that you want to encode, and then choose Advanced➪Convert Selection to AAC, MP3, Apple Lossless, or WAV, depending on what you selected in the previous steps.**

Shortly thereafter, the compressed version will magically appear in your iTunes Library.

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How much compression can you stand?

Some ears are more sensitive or discerning than others. So how much different do songs that are ripped (*compressed* or *encoded*) at different bit rates sound to you?

Here's an easy way to find out:

The trick is to create an audio CD that has two or three songs in their pristine, uncompressed AIF versions, and the same songs as MP3 and AAC files that are ripped at three or four different bit rates.

With such a CD in hand, you can compare one rendition to any other on any stereo system with an audio CD player. The object is to figure out the maximum amount of compression that your ears can tolerate before the song starts to sound noticeably worse than the "CD-quality" version (that is, the AIF version).

To get started, think of two or three songs that you know real well and have on a store-bought CD. Songs with good dynamics and a combination of loud and soft passages will serve you better than songs that are just loud (or just soft).

When you have the songs selected and the store-bought CDs in hand, follow these steps:

1. **Open iTunes Preferences (choose iTunes➪Preferences or press ⌘-,), and then click the Importing button.**
2. **Select the AIFF Encoder in the Import Using pop-up menu, and choose Automatic in the Setting pop-up menu. Now click the OK button.**
3. **Insert a CD, and select it in the iTunes source list.**

   The songs appear with little check boxes in front of each song's title.
4. **Hold down ⌘ and click any of the check boxes to select or deselect the songs that you want to hear.**
5. **Release ⌘, select the check box next to the song that you want to import, and then click the big Import button at the upper-right corner of the window.**

6. **Reopen iTunes Preferences and click the Importing button again. This time, choose the MP3 Encoder in the Import Using pop-up menu and select Custom in the Setting pop-up menu.**
7. **When the Custom MP3 Encoder Settings dialog box appears, click the Use Default Settings button first and then choose 64 Kbps from the Stereo Bit Rate pop-up menu. Without changing any other settings, click the OK button to close the dialog box.**
8. **Click to select the AIFF rendition of the song (the one that you just imported). Choose Advanced➪Convert Selection to MP3, and wait a minute or two while it rips.**

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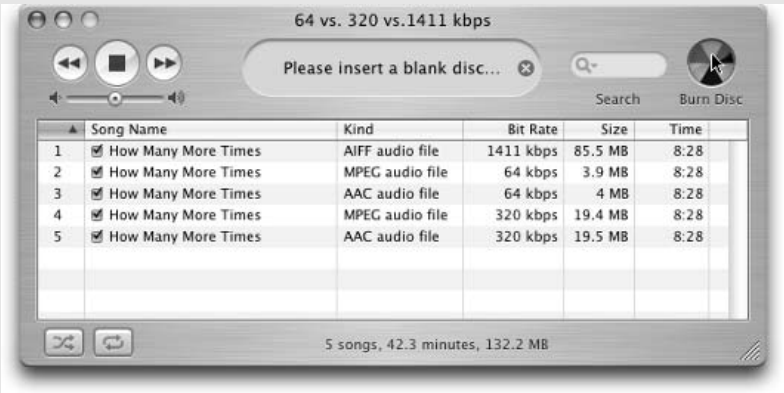
One down; a few more to go.

9. **Open iTunes Preferences and repeat Steps 6 through 8, but choose 320 Kbps in the Custom dialog box instead of 64 Kbps. Click the OK button when you're done.**
10. **Click the AIFF rendition, choose Advanced⇨Convert Selection to MP3, and wait a minute or two while this one rips.**
11. **Repeat Steps 6 through 8 two more times, this time choosing AAC Encoder (instead of MP3 Encoder) from the Import Using pop-up menu. Now create 64- and 320-Kbps AAC versions as before.**

    When you're done, you should have five versions of the same song: an AIF version, MP3 and AAC versions at 64 Kbps, and MP3 and AAC versions at 320 Kbps.
12. **Create a playlist, drag all five versions of the song to it, make a note of the order in which they will play, and burn an audio CD.**



Now listen to this CD in all the usual places — in your car, on your Mac audio system, in the den, and so on. Listen to the first track for a moment and then skip to another track and compare.

The disc that you just made illustrates the extremes — 64 Kbps is a lot of compression, and most people can hear the difference between the 64-Kbps files and the higher-bit-rate files. The bigger question is whether you hear any difference between 320 Kbps and 1411 Kbps (uncompressed). Unless your ears are pretty darned good, you probably can't.

You may want to make a disc or two with less difference between the bit rates. I like to try to hear the difference between 128, 160, and 192, which are three common bit rates.

I've listened to the same song at different bit rates a few times and settled on AAC at 160 Kbps as my everyday setting. I couldn't hear much or any difference between 160 Kbps and 192 Kbps, and even if there was a difference, it wasn't enough to justify the bigger (192 Kbps) files.

One last thing: Feel free to put additional songs or bit-rate variations on your CD if you have enough space for them.

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Distributing Your Music

You may want to send this song that you made in GarageBand and compressed in iTunes to your friend via e-mail, or you may post the compressed version on a Web page. You know where that song is located in iTunes. It's in the iTunes Library, right?

But where is the actual file on your hard drive?

The easy way to find the actual file for any song that's in your iTunes Library is to select the song (click it) and then choose File➪Show Song File or press ⌘-R. Thinking of this command as "Reveal Song File (in Finder)" helped me memorize this shortcut quickly.

The Finder becomes active, the appropriate window opens, and the song file is selected.

That's where it is on your hard drive.

Of course, you can also use the search field in the Finder windows to search your iTunes Music folder, but using the iTunes Show Song File command is faster if iTunes is open; if it's not open, the search field in the Finder windows may be faster.

E-Mailing AAC or MP3 files

There's nothing special about compressed audio files (AAC or MP3). Well, there's something special — they sound almost as good as files ten times their size — but there's nothing special about enclosing an MP3 or AAC file in an e-mail message.

Just as you would with any other type of file, to send a music file to someone, create an e-mail message, address it to your friend, and then drag the song file right onto it, as I'm doing in Figure 13-5.

If you're sending the file to a PC user, it's safer to send an MP3 file than an AAC file. See the section, "Choosing a Compression Type," earlier in this chapter, for details about the different file types and the ways that you can use them.

Windows users can play AAC files if they have a copy of iTunes for Windows, which they can download for free. In that case, send the AAC file, which provides more sound in a smaller package.

Here's the bottom line: If you have any doubt, send an MP3.

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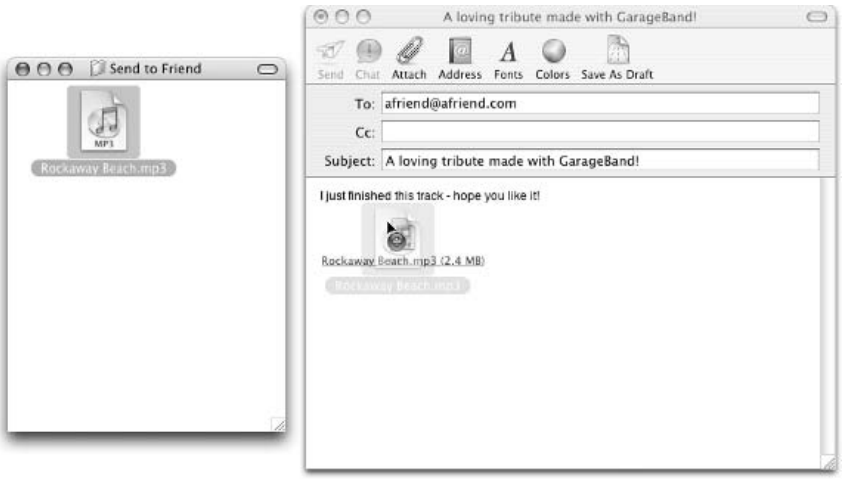

Figure 13-5: Drag the song onto the message and drop it, and then send the message.

Posting your song on the Web

This is going to be a short section. If you're Web-savvy and know how to make and modify a Web page, you already know how to do what I describe in this section.

If you don't make Web pages regularly, I'm sorry to inform you that I can't possibly teach you enough about coding in HTML and Web servers in the space that remains in this chapter.

Heck, I don't think I could do that even if I could use the whole rest of the book! However, to get the nitty-gritty on this popular subject, check out *HTML 4 For Dummies,* 4th Edition, by Ed Tittel and Natanya Pitts (published by Wiley).

But never fear, gentle reader, I do have a couple of suggestions that will almost certainly appeal to you non-Web slingers — and may even be of interest to those who code in HTML.

If you aren't comfortable coding your own Web pages, there's still hope. It will cost you $100 a year, but you'll have the ability to create very nice Web pages in just minutes and without learning a thing about HTML, code, servers, or other complicated stuff.

I'm talking about Apple's .Mac (that's "dot Mac") online service, which, among other things, allows anyone to create Web pages like mine quickly and easily. See Figure 13-6.

That's really one of my .Mac pages. Feel free to call yourself a friend and download a song or two. The URL is as follows:

```
http://homepage.mac.com/boblevitus/FileSharing17.html
```

Enjoy!

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Figure 13-6: My .Mac Web page offers song files for my friends to download and (hopefully) enjoy.

To create a page like the one that's shown in Figure 13-6, merely drag any files that you want to offer for downloading into the Public folder on your iDisk. What's an iDisk? It's a 100MB virtual disk that's free with every .Mac membership. When you copy files to specific folders on your iDisk, the files become available to use in your Web pages. The files in Figure 13-6 are in my iDisk's Public folder; I just picked a template to use, and .Mac did the rest, populating the download list with the names of the files in the Public folder.

Here's another cool .Mac trick: Drag a movie file into your iDisk's Movies folder, and you can create a Web page that streams the movie for viewing with a Web browser, as shown in Figure 13-7.

I made the page in Figure 13-7 in literally 2 minutes. You'll find this one at the following URL:

```
http://homepage.mac.com/boblevitus/
```

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Figure 13-7: I made this page by dropping the movie (Dreams-StreamHQ.mov) into the Movies folder on my iDisk and then choosing a template for it.

The point is, for a hundred bucks, you can not only share your music, movies, and much more without having to learn how to code Web pages, but the pages also look great and are fast and easy to make. I know how to make Web pages the old-fashioned way, by coding HTML, but to be honest, I use the .Mac templates most of the time for quick-and-dirty pages and file sharing.

There's more to .Mac than easy Web pages. I mean, it would be a great value if the Web pages were the whole package, but they're only a fraction of what $100 a year buys for you. In addition to the Web tools, you get free utilities and games, free training materials, free music and sound effects to use with iMovie or Final Cut Pro, discounts on some Apple (and third-party) products and services, and much more.

Let me put it this way: I had a free .Mac reviewer's subscription. When it expired, I renewed and paid for two more years.

That says something about how much I like it; you can find out more at `www.mac.com`.

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