

Compressing Video for Mobile Devices

You Can Take It with You

by Chris Cavallari

These days everyone seems to have a portable media device. A quick walk down any New York City street will reveal a veritable rat's nest of white iPod earbuds wringing the necks of pedestrians. And lest we forget, just about everyone – from the 5 year old kid on the schoolbus to your 75 year old grandma – has a mobile phone. These portable devices let you do more than listen to music or talk on the phone. Now you can catch the latest episode of *Heroes* or watch your buddy's \$100 horror flick anytime and anywhere. It's a miracle I tell ya!

But what about getting your own masterpiece on one of those gadgets? You have a bunch of vids that you want to share with friends or send down as a video podcast, but no idea how to get them to their media players. Compression is key.

Let's take a look at what compression is, and then we'll get into the nitty-gritty. According to Wikipedia, "Video compression refers to reducing the quantity of data used to represent video content without excessively reducing the quality of the picture. It also reduces the number of bits required to store and/or transmit digital media."

When you really look at it, compression is not difficult to understand. It's simply reducing the amount of unnecessary visual information in order to make the file smaller. This simplicity makes it pretty easy to apply compression to your video without compromising image quality. What it really boils down to is determining where you intend the final output to be delivered. Do you want it played on an iPod with video? That's one codec. Do you want it to play on a mobile device? That's a different codec. Pick a device, and I'll give you a codec for it.

My Main Squeeze

While there are many ways to compress video for mobile devices, and even more codecs from which to choose, here are three of the most popular devices and some corresponding codecs. Keep in mind I use Quicktime Pro for a lot of the following compressions, which makes it stupidly simple to encode your video for mobile devices. For the purposes of this article, I'll stick to Apple's

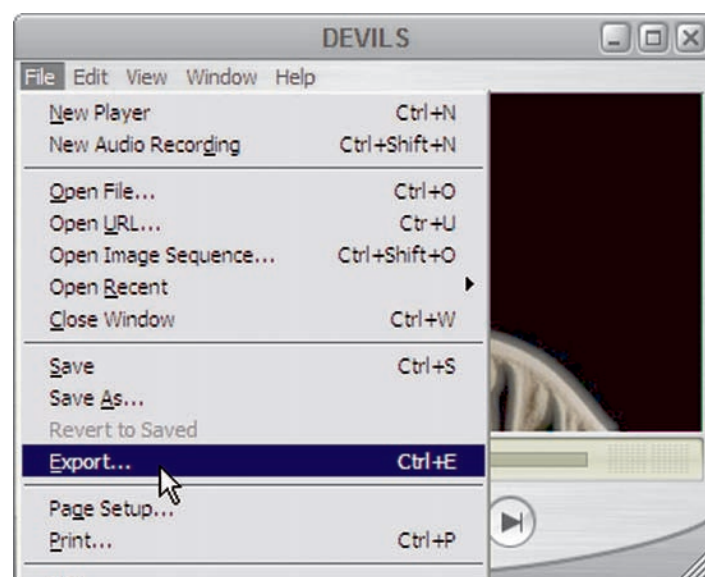
Quicktime Pro and Compressor applications for our encoding needs.

Video for iPods

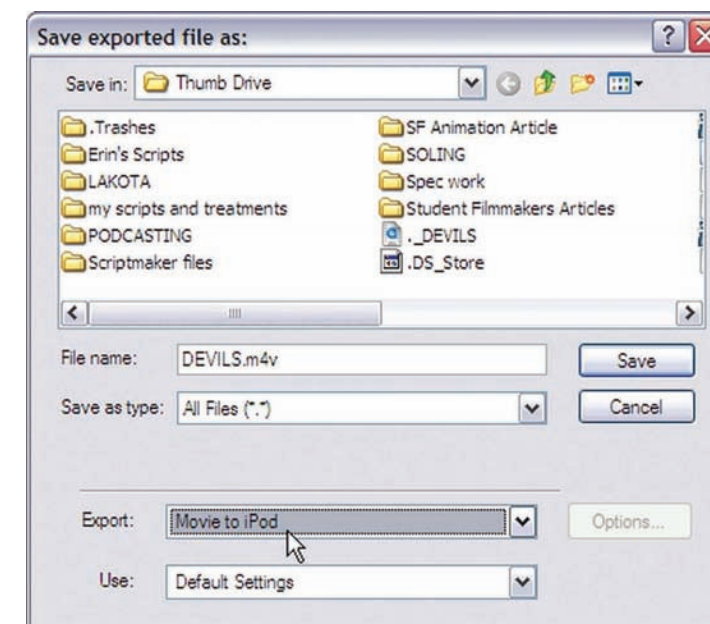
In the last two years, the iPod has become the premiere music player for those people interested in portable music players. When Apple introduced the iPod featuring video, sales skyrocketed, despite the relatively small screen size. Apple's engineers also created a new codec that would work only with iPod and iTunes. It's a variation of the MPEG format with the extension ".m4v". Apple slyly bundled iTunes and Quicktime together, creating a simple way to listen to music and watch video from a single application. With the more recent versions of the \$30 Quicktime Pro application, Apple allowed users to create their own compressed videos that are optimized for viewing on the iPod with video, whether running it on a Mac or a PC. So, here are the steps to get your latest and greatest film onto your iPod.

1. Open your video in Quicktime Pro. If you're using an editing program like Avid or FCP – which both edit natively in Quicktime – you can use a Quicktime Reference File for this step.

2. Here's the fun part.

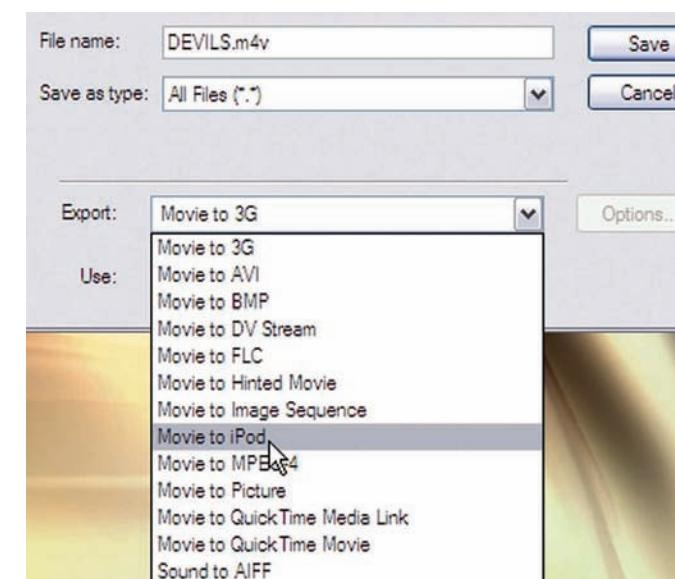


Choose File --> Export...



A dialog box appears asking you to save your movie to a place on your computer. Type in a name and a location in which to save your file, but before you click "Save," let's take a look at the options in the drop down menus.

3. The "Export" pull-down menu offers you a variety of options where you can convert your movie to a different type of file. Here, we're going to choose "Movie to iPod" which will give us an .m4v file encoded using the H.264 codec. Click the "Save" button, and let Quicktime Pro do the work. You'll end up with a video file that is 320 pixels wide.



That's it. It's pretty simple, so let's move on to another portable medium many people might find a bit confusing.

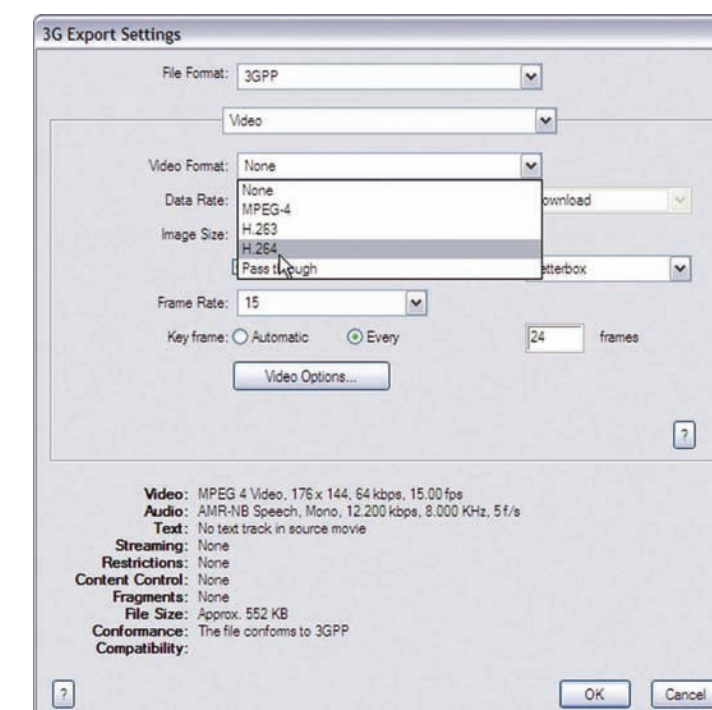
Video for Mobile Phones

Mobile cell phone sales have skyrocketed over the past decade, and it seems every man, woman, and child has one. It only stands to reason that, at some point, these devices would become much smaller and more feature rich as engineers and marketers grasp for that elusive sale. These days, not only can you make a call on your cell phone, but you can also send Short Message Service messages (a.k.a., SMS or Text Messages), listen to the latest and greatest music, and even watch streaming video right from your handset. What makes the last bit possible is the Third Generation Platform, or 3GP. It's a multimedia container format designed specifically for third generation, or 3G, mobile phones. 3GP compresses video down to a very small size, reducing the resolution, image size, and frame rate down to something a cell phone can handle. Let's use Quicktime Pro again to get our video to our cell phone.

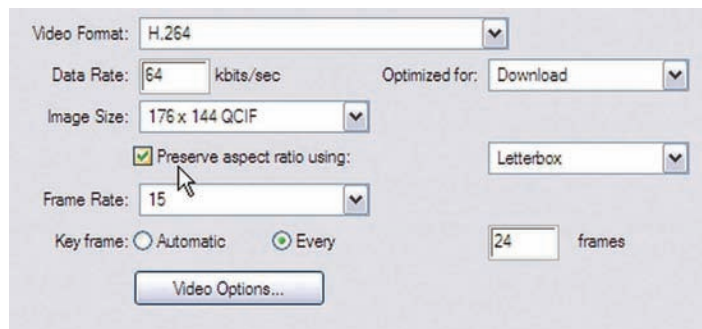
1. Go to the Export setting in the File menu.

2. This time, in the pull-down menu, select "Movie to 3G." Click on the Options button, where you can change all kinds of settings for the video.

3. Under the "Video Format:" pull-down menu, you can choose among several options, including MPEG-4 and H.264. Select H.264 for good quality compression with a small file size. Click the "Video Options..." button, and select "Multi-pass," which will take a longer time to encode but yields a much better video image.



4. If your movie has an image size that's different from something that's not a divisor of the standard 320x240 aspect ration, make sure you check the "Preserve aspect ration using:" checkbox. So here is what your settings for a cell phone video should look like:



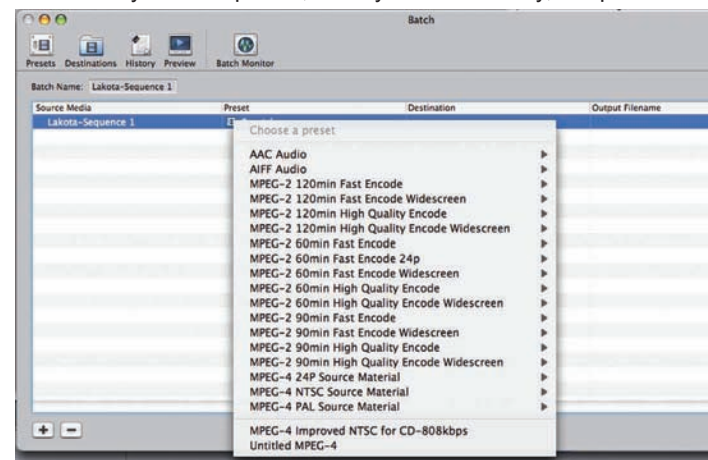
Video for PDAs

One of the easiest ways to get your video compressed for PDAs and other handheld media player devices is by using Final Cut Pro with it's sister application, Compressor. These two programs work together nearly flawlessly, and yield high quality images with small file sizes. Perhaps the best features of Compressor are its built-in presets, which make compressing video nearly effortless. Here's how.

1. In FCP, select the Sequence you want to compress, then click File-->Export. Now click on "Using Compressor..." This opens Apple's Compressor application, and automatically imports your sequence into the Batch List for processing. There you'll see several columns, including "Source Media," "Preset," "Destination," and "Output Filename."

2. Click on the drop down arrow next to your clip in the "Preset" column. See the Preset menu (pictured below).

3. Here's where you choose your preset. You can always customize your own preset, but if you're in a hurry, the presets



are great. Mouse over "MPEG-4 NTSC Source Material" to see its options. For PDAs and other mobile devices, choose "MPEG-4 Improved NTSC Small Progressive." This preset gives you a 240x180 MPEG-4 file at 15 frames per second and 168kbps, which is perfect for viewing on a PDA. But you're not done. You'll notice the other columns have filled in with information.

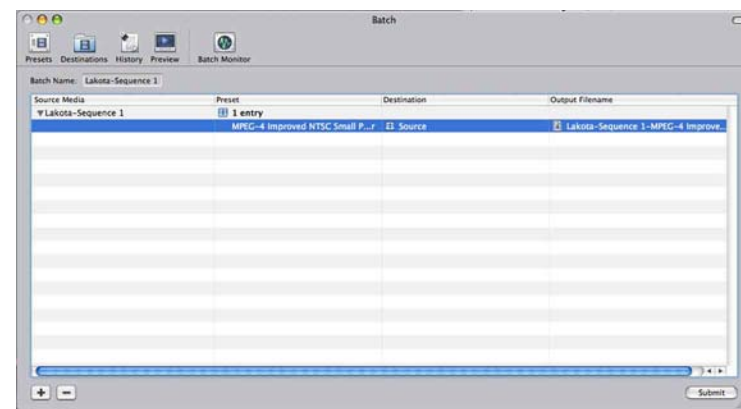
4. In the Destination column, click the pull-down arrow to select where you want your new file saved. It's good practice to save this to an external hard drive.

5. In the Output Filename column, you can either leave the name as is, or change it to something custom.

6. Click the "Submit" button, and Compressor submits the one-item batch for processing. That's it!

Compression for portable media devices can at times seem an impossible puzzle to solve, but with a little understanding of what codecs to use for which situation, the final image easily comes into focus. Bear in mind that compressing video automatically means a loss in quality. In fact, if you've captured footage from just about any DV camera, your footage has already gone through a compression phase as it was laid down to tape. Frame rate, image size, bit rate, codec; these are all factors that will affect your final video, so a careful plan and some good tests with different settings will yield a portable video you'll be proud to show.

Chris Cavallari has been working in television, video, and film for 11 years as a cameraman, lighting director, video editor, and grip. By day, he is the Lead Television Studio Technician for an Internet Webcast TV Network; by night, he writes and directs films and podcasts for his company Filmosity Productions, produces the podcast, "The Martini Shot: Moviemaking for Beginners," and runs the New Jersey Podcasters Association. His website is www.filmosity.com.



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