

Video on the Web

Web Design in a Nutshell, Third Edition

Chapter 34

Video as internet medium

- Video on the web results in large file sizes that may or may not be playable on your target audience's bandwidth, computer or operating system.
 - A 1MB file may be perfectly acceptable for broadband users, but not for modem users
 - Files compressed with more modern codecs (compressor-de-compressor) may not be playable on older computers with slower processors
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Video as internet medium

- Windows Media 9 can be played on most operating systems, but Windows Media Video 10 and 11 files are only playable on Windows XP and above.
 - Windows recognizes old Quicktime formats, but the user must install software, such as iTunes, to play newer Quicktime formats, including MPEG-4.
 - Real Player can be installed on all operating systems, but now has less content.
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Video as internet medium

- Flash video is probably the most widely installed video format, but Flash MX and Flash MX 2004 use two different video codecs (Spark and On6) so it's not as universal as it could be.
 - MPEG-4 h.264 has great promise, but is very processor intensive and requires newer operating systems and playback software than other formats.
 - Video compression is always evolving.
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Digital Video Basics

- **Movie Length** — Obviously, the length of a movie in time affects the final file size of web video. Longer movies include more frames making the files larger.
 - **Frame Size** — Standard definition digital video is generally 720 pixels wide by 480 pixels tall with high definition formats going 1920 pixels wide by 1080 pixels tall. Common delivery sizes are 480x270, 320x240 or 240x180. So the bigger the frame size the larger the file size.
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Digital Video Basics

- **Frame Rate** — The number of frames per second also impacts file size. Standard video is about 30 frames per second, but that can be chopped to 15 frames or less for delivery on the web.
 - **Quality** — Like JPEG images, most codecs use a lossy compression method that allows you to set the image quality of video. Lower quality settings result in less visually appealing images.
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Digital Video Basics

- **Bit Rate** — Like audio, video files have a data rate or bit rate. It can be calculated by dividing the size of the file by the length in seconds. A 16 second clip that is 1.6MB has a bit rate of roughly 833 kbits per second or about half of a DSL line.
 - **Audio** — Keep in mind that most video clips also have audio so the number of channels (stereo vs. mono), quality, etc. of the audio clip also affects the final bit rate of the total clip.
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Video Formats

- **Quicktime** — Introduced by Apple in 1992, Quicktime started off as a video format for CD-ROMs and streaming was added in 1999. When MPEG-4 was introduced, it used the Quicktime file format as its basis.
 - **Windows Media** — Uses proprietary codecs, but is in the process of being opened for standardization in HD DVD video disc formats.
 - **Real Media** — Real added video to its product in the late 1990s, but it is used less and less because it requires proprietary commercial servers.
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Video Formats

- **Flash** — In 2002, Macromedia added video support in the form of the Spark codec designed by Sorenson in Flash MX. The Sorenson codec had previously been exclusive to Quicktime. In 2004, Macromedia adopted the On2 codec for higher quality and smaller file sizes with Flash 8. To use the newer On6 video, you have to test for the version of Flash the user has installed.
 - **MPEG** — From MPEG-1 (1989) to MPEG-4 (1995) is widely used in everything from video discs, to dvds to satellite set top boxes and the internet. Windows Media and Quicktime can both play many MPEG formats.
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Video Formats

- Flash is probably the most widely installed video player with Windows Media, Quicktime and Real following behind.
 - Quicktime has been downloaded more than 250 million times from Apple's web site, but it has also shipped with each of the more than 100 million iPods sold worldwide and with each of the 700 million iTunes downloads.
 - Windows Media ships with every computer sold, though different versions have different capabilities. Usually, you design content for one or two versions back.
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Delivering Video via the Internet

- As noted previously, video formats are more complicated in that they consume more network and computing resources and there is no one universally acceptable format that is pre-installed on every computer.
 - Like audio, if you have a relatively short clip where quality is the main factor, then a downloadable file is the way to go; if you have a longer form clip, streaming off a server can be the choice.
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Downloadable Video via the Internet

- To add downloadable video to your site, copy the file to your directory and then link to it using a standard anchor:

```
<a href="path/to/someaudiofile.mov">My Video  
File</a>
```

- For that to work, the server must be configured correctly for type of video files you are serving.
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Video On A Web Page

- Downloadable files can be configured to play via a plug-in:

```
<embed src="path/to/somevideofile.move"  
autostart="true" hidden="true"></embed>
```

- The embed tag has been deprecated on the Windows platform because of its problems with computer viruses and malware.
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Streaming Video On A Web Page

- Streaming files pointing to a server that play via a plug-in:

```
<object width="425" height="350"><param name="movie"
value="http://www.youtube.com/v/v3Z0JdIrk0"></
param><param name="wmode" value="transparent"></
param><embed src="http://www.youtube.com/v/v3Z0JdIrk0"
type="application/x-shockwave-flash" wmode="transparent"
width="425" height="350"></embed></object>
```

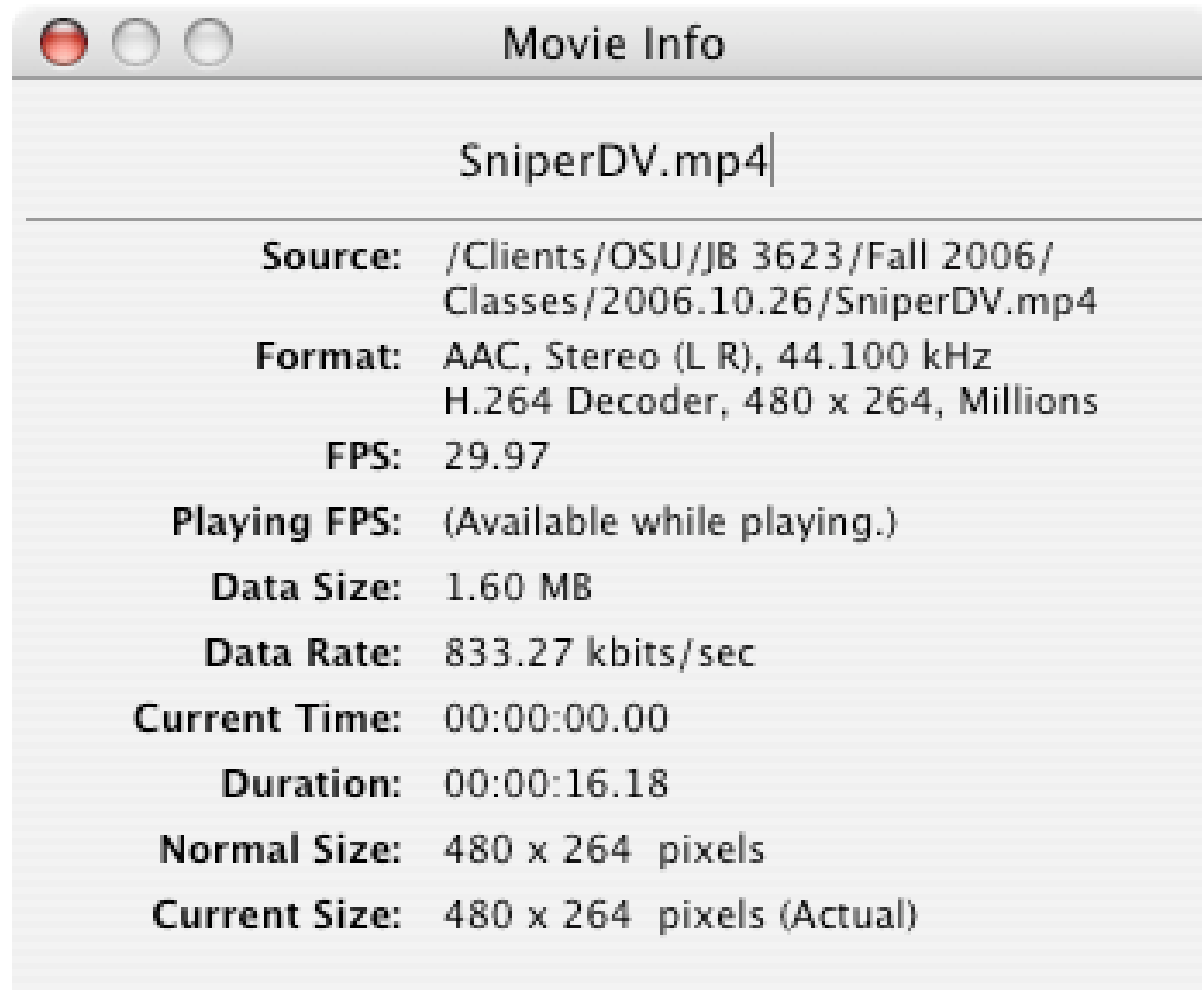
- That's a YouTube example, but similar coding could be used to point at a Quicktime, Real Media or Windows Media streaming server. YouTube uses Flash Spark for playback.
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Quicktime Player



- Quicktime is the Operating System Level video component for Macs and the foundation for everything that is happening in iTunes for Windows and on the iPod.
 - Every Mac ships with Quicktime Player and you get Quicktime Player after you install iTunes on a Windows PC.
 - Quicktime Pro, which costs \$30, enables additional features, like exporting in various formats and presenting video in full screen.
 - Quicktime is also a good way to examine the properties of a Movie.
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Quicktime Player



Quicktime Player



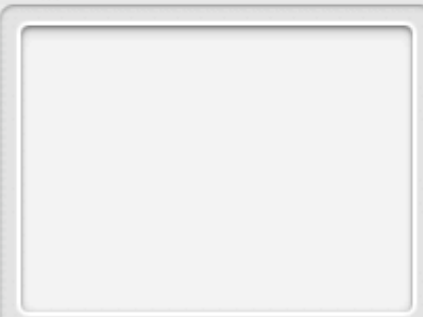
Properties for "SniperDV.mp4"

Extract Delete

Enabled ▲	Name	Start Time	Duration	Data Rate	Format
	SniperDV.mp4	0.00	16.18	833.27 kbits/sec	-NA-
<input type="checkbox"/>	Hinted Sound ...	0.00	16.18	8.86 kbits/sec	Hint
<input type="checkbox"/>	Hinted Video T...	0.00	16.18	40.02 kbits/sec	Hint
<input checked="" type="checkbox"/>	Sound Track	0.00	16.18	118.01 kbits/sec	AAC
<input checked="" type="checkbox"/>	Video Track	0.00	16.18	666.38 kbits/sec	H.264

Annotations Resources **Visual Settings** Other Settings

Mask



Choose... Clear Invert

Transformation

Normal Size: 480 x 264 pixels
Display Size: 480 x 264 pixels
Scaled Size: 480 x 264 pixels

Preserve Aspect Ratio

Offset: 0 x 0 pixels

Flip/Rotate:

Reset

Transparency: None (allow dithering)

Layer: 0

Layers with lower numbers are farther forward.

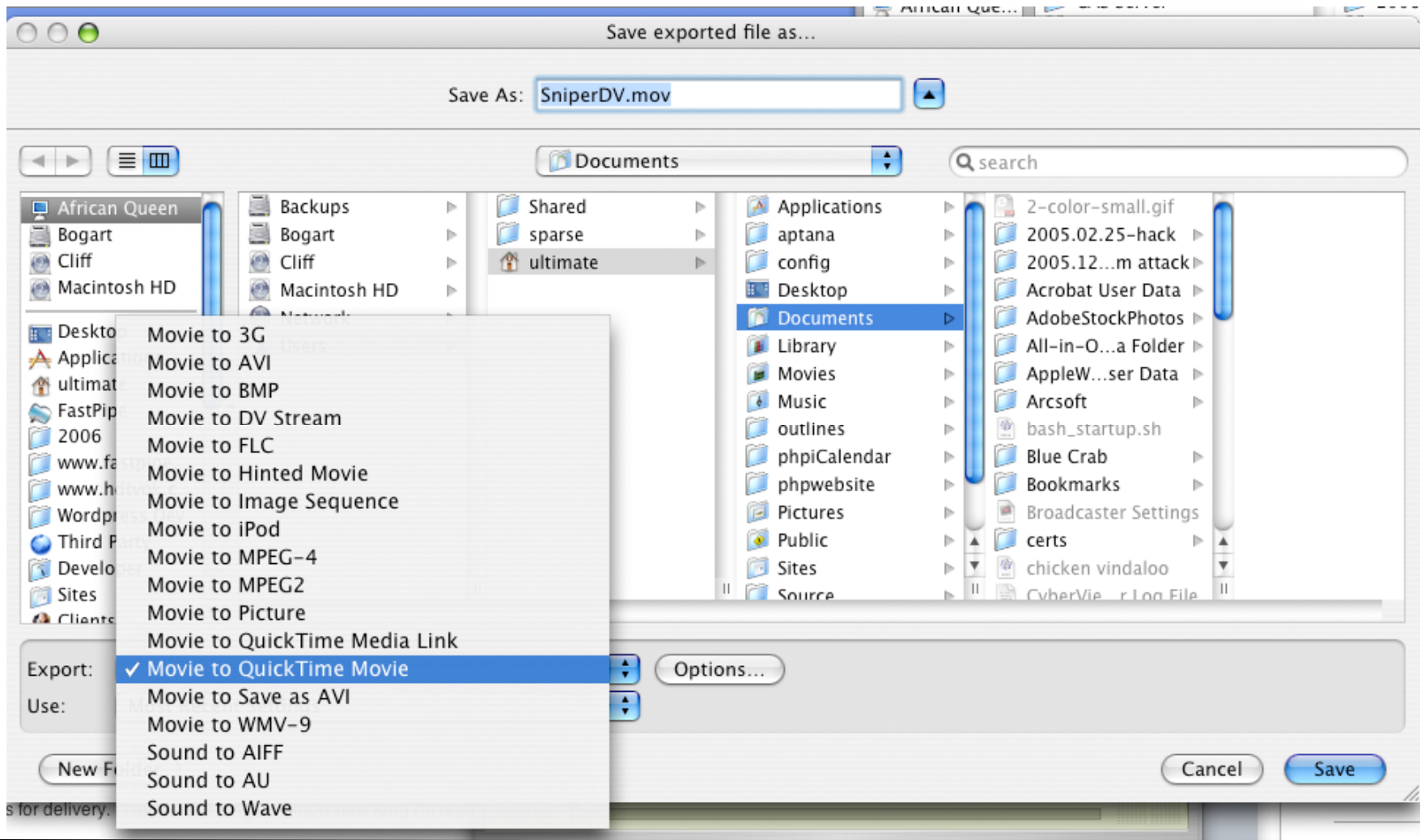
High Quality
 Single Field
 Deinterlace



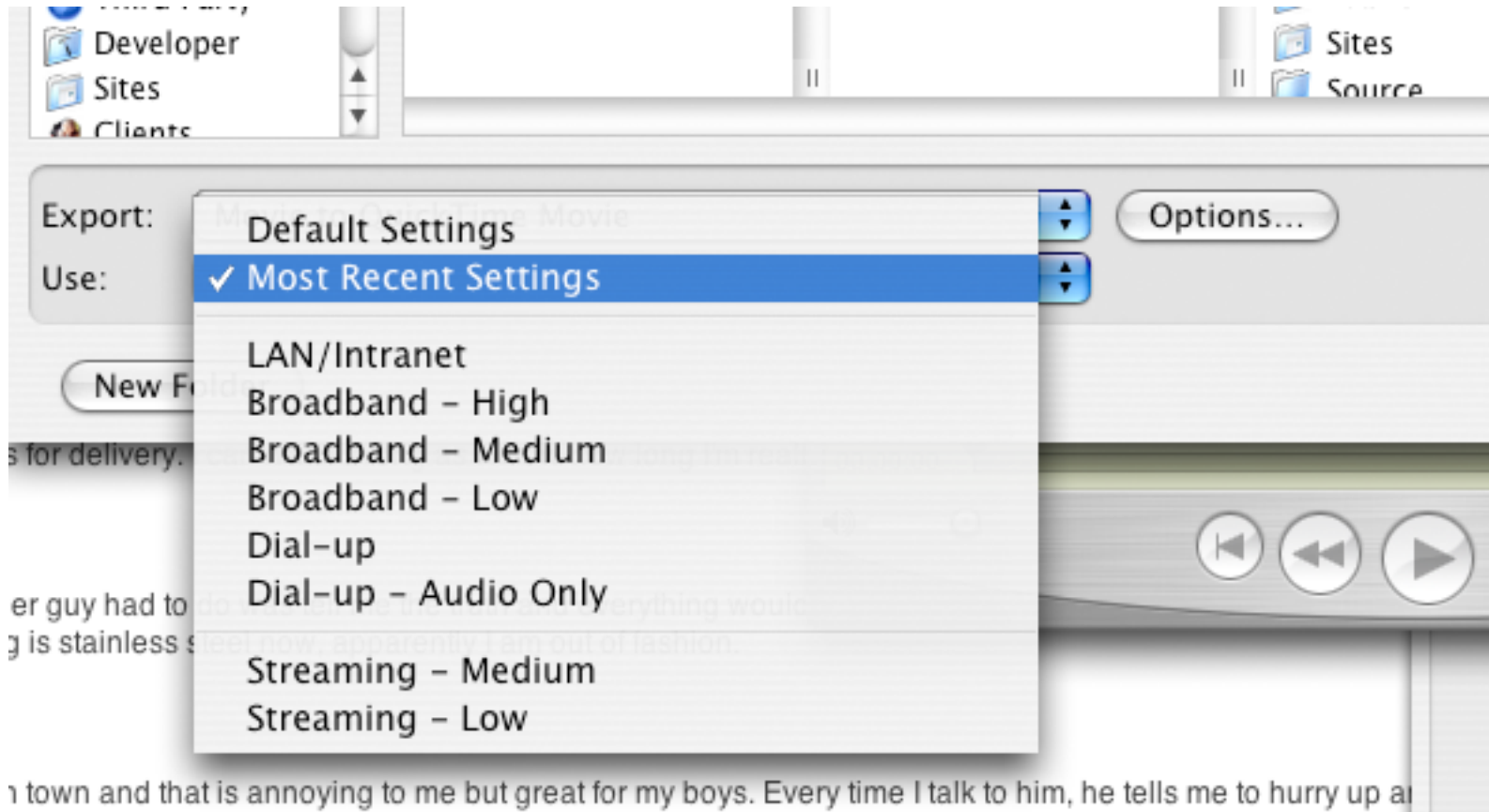
Exporting from Quicktime Player

- Choose Export from the File menu
 - From the first popup menu, choose the kind of file you wish to export to
 - From the second popup menu, choose either the most recent settings or the settings appropriate to the audience you are trying to reach
 - If you click the options button, you can change the codec, the number of frames, set a limit on the bit rate and set other settings appropriate to the codec you've chosen.
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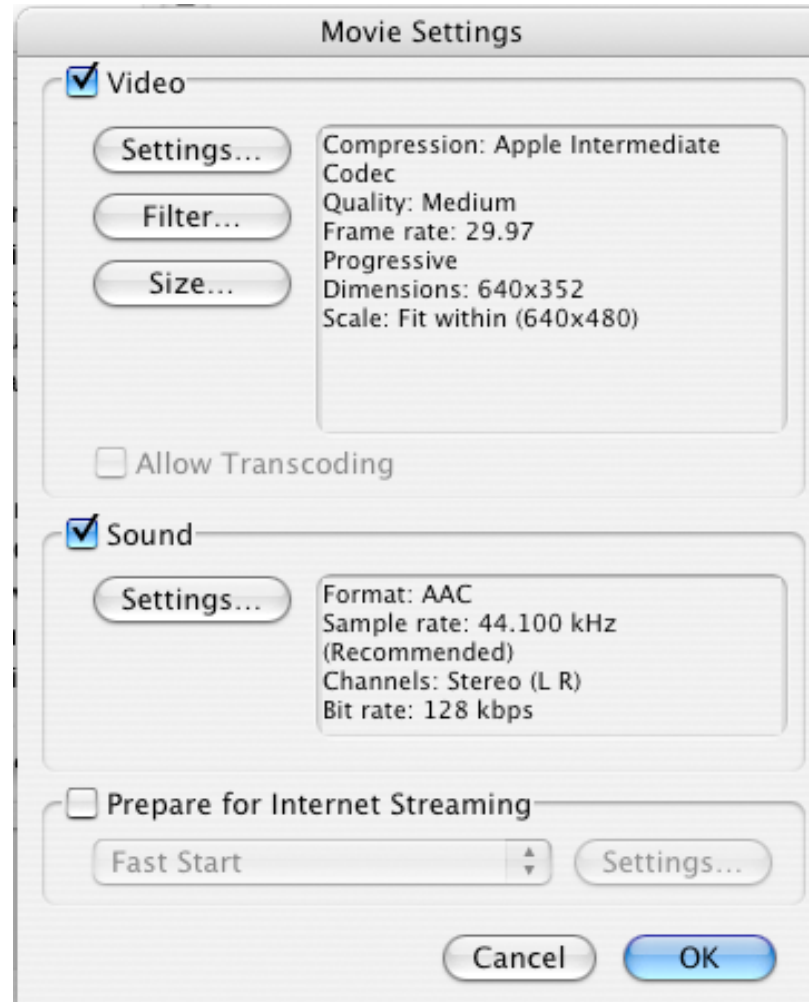
Quicktime Player



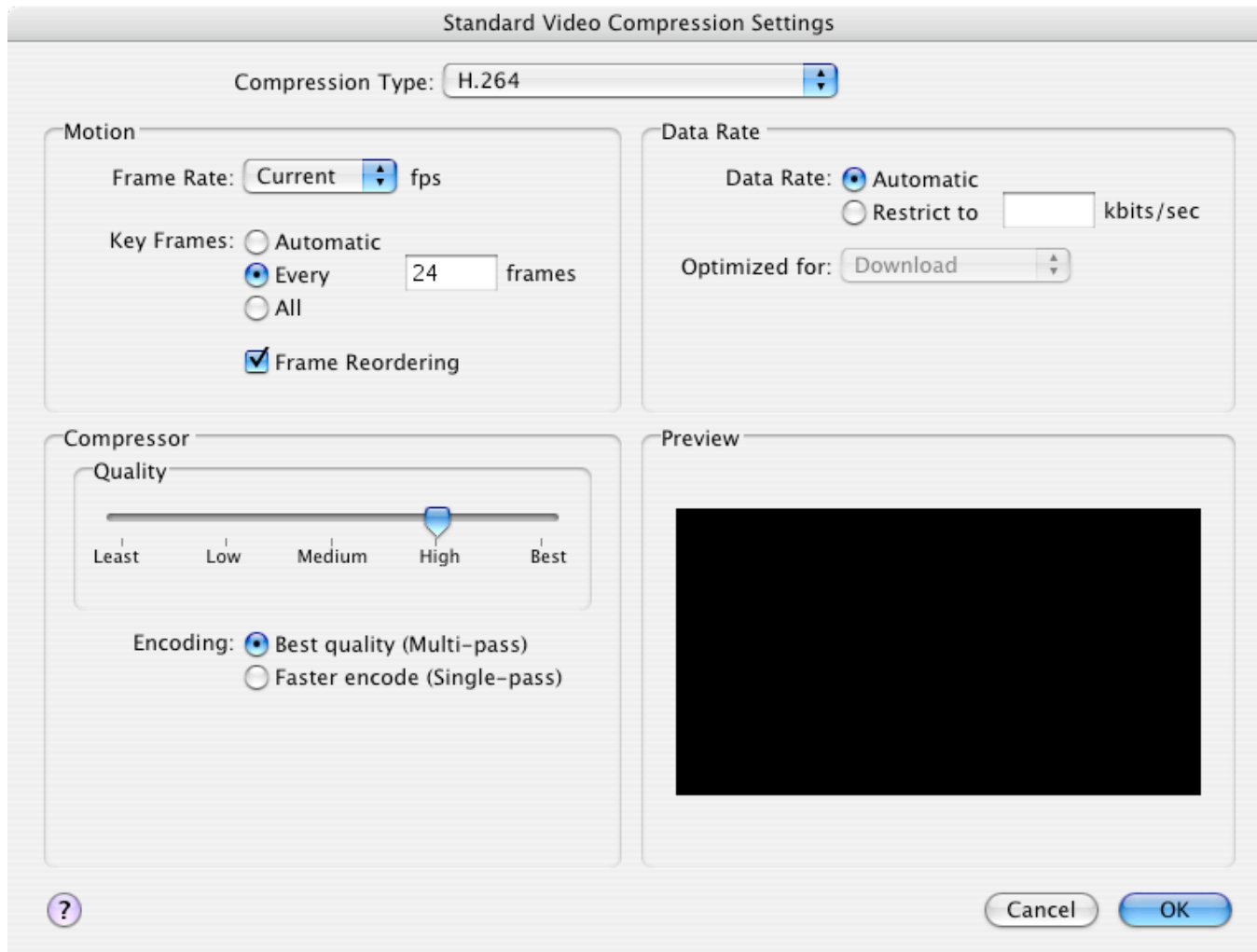
Quicktime Player



Quicktime Player



Quicktime Player

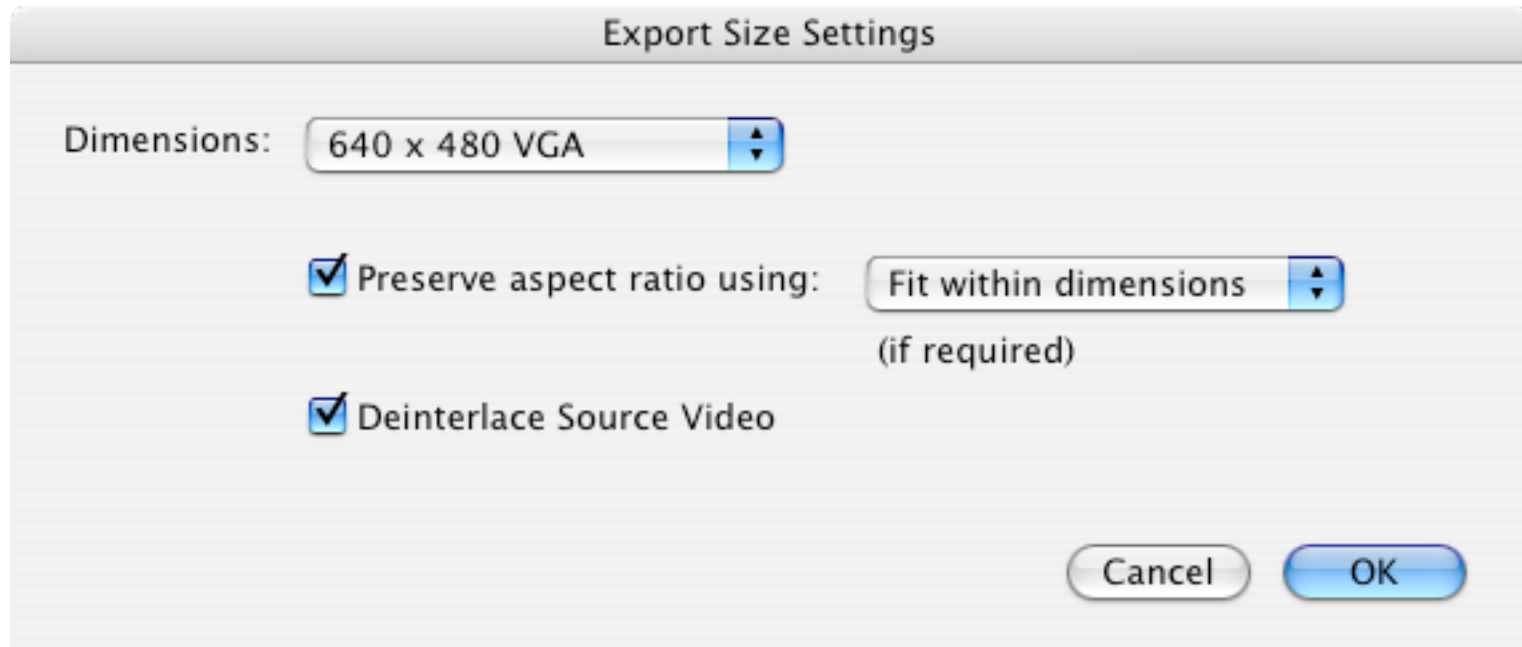


Exporting from Quicktime Player

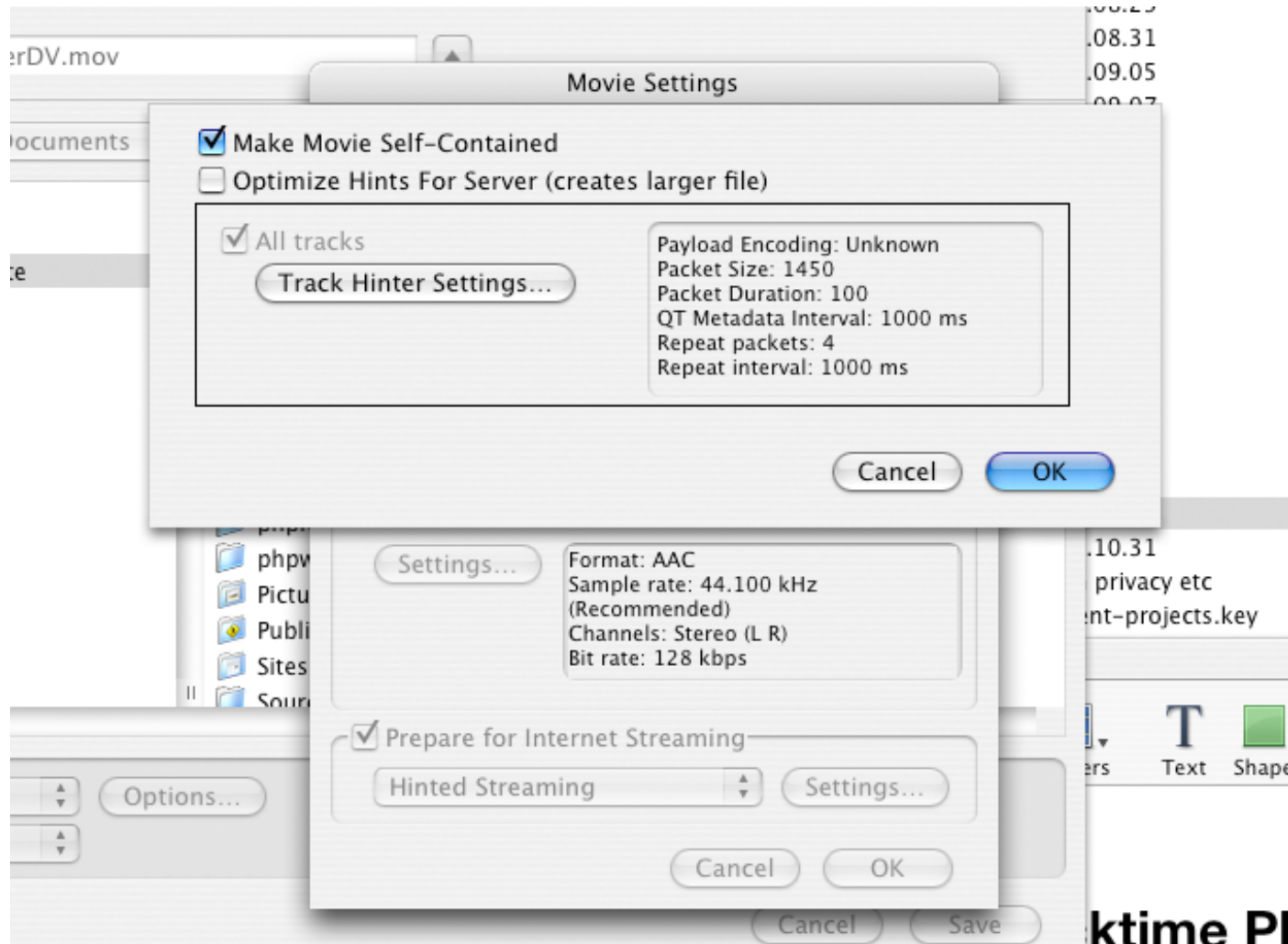


- From the Movie Info dialog, you can change the size, which is probably the quickest way to reduce the size of your movie.
 - You can also set up your movie for streaming, either from the web server or from a dedicated real time streaming protocol server.
 - Finally, you can set the audio settings for your movie.
 - When exporting to Flash, you have different settings appropriate for that format.
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Quicktime Player



Quicktime Player



Quicktime PI

Quicktime Player



Sound Settings

Format: AAC

Channels: Stereo (L R)

Rate: Recommended kHz

Show Advanced Settings

Render Settings:

Quality: Normal

AAC Encoder Settings:

Bit Rate Format: Constant Bit Rate

Target Bit Rate: 128 kbps

Precedence: Bit Rate

Cancel OK

iMovie



iMovie HD

- iMovie was introduced in 1999 as Apple's consumer level video editing software. It was the first easy to use software for working with footage shot with DV cameras.
 - iMovie was introduced before Mac OS X and only ran under Mac OS 9. It was also one of the first applications included when Mac OS X shipped in March 2001.
 - In 2004, iMovie was added to the iLife suite that ships with every new Macintosh and became a paid upgrade.
 - In 2005, support HDV cameras was added.
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