Adobe Premiere Technical Guides

Factors that affect video compression

Digital video involves storing, moving, and calculating extremely large volumes of data compared to other kinds of computer files. The data rate and file size of uncompressed digital video can overwhelm many personal computers and hard disks. Use *compression* to lower the data rate of digital video into a range that your computer system can handle.

Applying the best compression settings can be tricky. Your goal is to apply the degree of compression that lets the clip stay within—but not too far below—the target data rate. If you apply too little compression, the data rate will be too high for the system, causing errors such as dropped frames. If you apply too much compression, lowering the data rate too far, you won't be taking advantage of the full capacity of the system and the picture quality may suffer unnecessarily.

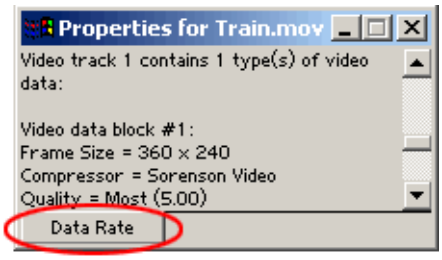
Analyzing files

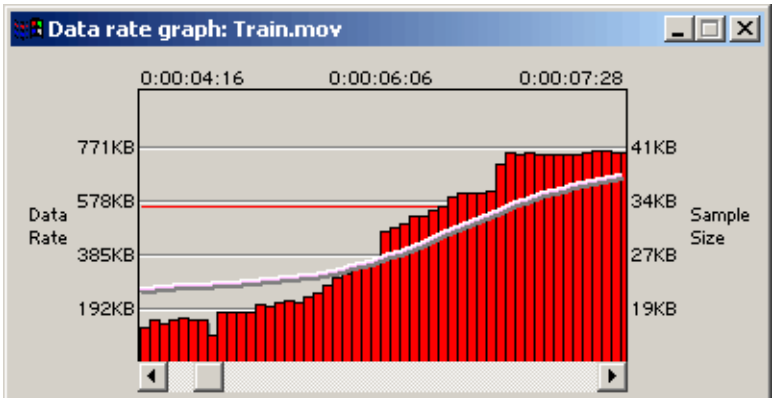
Adobe® Premiere® 6.0 includes clip analysis tools that you can use to evaluate a file in any supported format stored inside or outside a project.

The Properties feature provides detailed information about any clip. For video files, analyzed properties can include the file size, number of video and audio tracks, duration, average frame, audio and data rates, and compression settings. You can also use Properties to alert you to the presence of any droped frames in a clip you just captured.

You can use the Data Rate Graph to evaluate how well the output data rate matches the requirements of your delivery medium.

To display the Data Rate Graph, click the Data Rate button:





For more information about using the Data Rate Graph, see the Premiere 6.0 online Help topic: Capturing and Importing Source Clips > Analyzing clip properties and data rate.

Understanding scenarios that affect compression

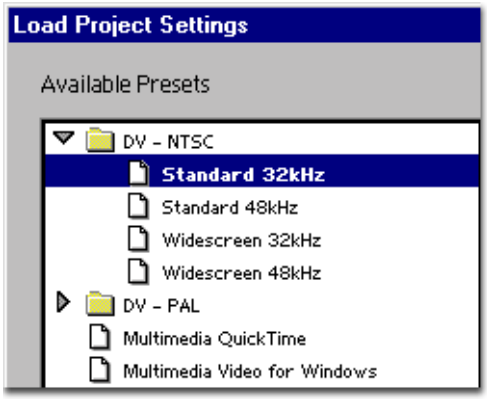
As you build your video program in Premiere, compression settings are most relevant when capturing source video, previewing edits, playing back the Timeline, and exporting the Timeline. In some cases, the settings you specify won't be the same for all situations. Normally, once you select the correct pre-defined settings for your capture card, you will not need to change your compression settings throughout production; however, when you do need to modify settings, the following guidelines can help you determine the proper compression settings for each scenario.

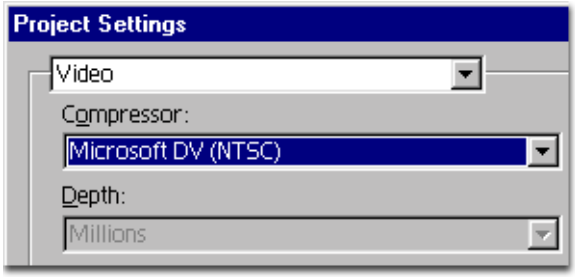
Capturing source video

When capturing source video, use compression settings that lower the data rate just enough to preserve maximum quality and play back smoothly on the editing computer. If you're using a video-capture card, use the codec included with the video-capture card. If your video capture card supports compression settings, you can specify them in the Capture Settings dialog box. For instructions, refer to the online Help topic, Capturing and Importing Source Clips> Preparing for analog capture.

Previewing edits

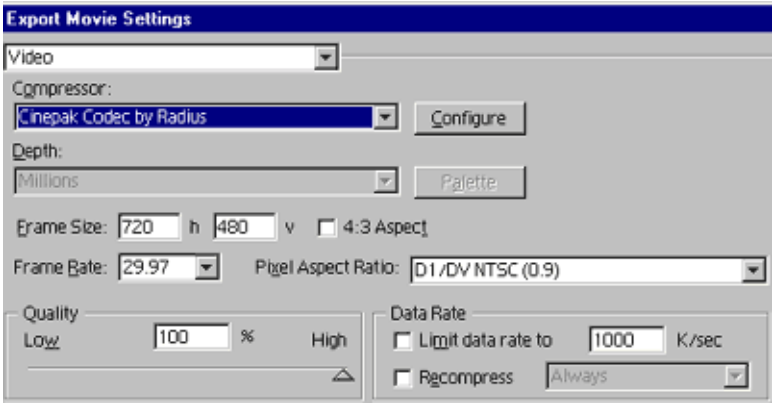
Compression settings affect how long you wait for edits to be processed before the Timeline is played back during preview. If you select the correct pre-defined setting for your capture card, you will also specify the correct video codec. If the project settings match the clip properties then Premiere will only have to render any transitions or effects.





Exporting video to a file

When exporting video to a file, use compression settings that play smoothly on the kind of computer system you expect your audience to use. For media such as the World Wide Web, it may be necessary to specify lower quality settings to minimize the data rate of the video or you can use the Save for Web option for exporting to the Web. You can specify compression settings for export when you choose Video options from the pop-up menu in the Export Movie Settings dialog box. For instructions, see the online Help topic, Producing Final Video > Choosing export settings.



Recompressing clips

When you play back or export a program consisting of compressed source clips, you can choose to recompress source clips that are already compressed or to leave them as they are. It's usually best to avoid recompressing the clips, because you cannot save additional space by compressing them again at the same settings. In fact, because many compressors are lossy, recompressing a clip degrades picture quality. (For information on lossy and lossless compression, see the "Video codec compression methods" technical guide.)

Premiere attempts to avoid recompressing when frames appear to be unchanged from the corresponding frames in the source clip, but there are situations where source clips must be recompressed. In general, recompressing is necessary when you've applied edits, effects, or output settings that cause significant changes to frames in a clip, such as the following:

- Reducing the Quality or Data Rate settings.
- Changing the frame rate, color bit depth, keyframe settings, Special Processing options, codec or codec options, and in most cases changing the video type.
- Changing the visual content, including frame size, transitions, filters, motion, transparency, field options, frame hold, or frame blending.

Selecting the Always Recompress option will always recompress clips regardless of whether or not frames changed. For information on setting recompression options for playback, see the Data Rate section of the online Help topic, Working with Projects > Specifying project settings > Video settings; for export, see Producing Final Video > Choosing export settings > Video export settings.

Other factors that affect file size

Some video characteristics can affect the size of a video file whether compression is applied or not, and regardless of the codec you specify.

Bit Depth

The bit depth determines the number of colors that will be used to export the movie. Higher bit depths create larger files. When you specify lower bit depths, you may be able to retain some control over color quality by specifying a custom color palette. If the option is not available, you've chosen a codec that doesn't support custom palettes or 8-bit color.

Frame size

For best picture quality, the frame size of the project should match the frame size of the final video file. Where file size or data rate are more important than picture quality, such as for Internet delivery, reducing the frame size may help compression by reducing the initial amount of data to compress.

Frame rate

For best motion quality, the frame rate of the project should match the frame rate of the final video file. Where file size or data rate are more important than the quality of motion, such as for Internet delivery, specifying a lower frame rate may help compression by reducing the amount of data to compress.

For more information about bit depth and setting the frame size and frame rate, see the online help topic, Working with Projects > Specifying project settings > Video settings. For more information about exporting video, see Producing Final Video > Choosing export settings > Video export settings.