Adobe Premiere Technical Guides

Finding an appropriate codec

Codecs are compression/decompression algorithms that are crucial for producing digital video and audio. Some codecs are more appropriate for certain kinds of work than others. Which codecs are available to you when editing digital video in Adobe® Premiere® 6.0 depends on your system and capture card. This choice is further constrained by the Editing Mode you choose in Premiere's Project Settings dialog box. For example, in Windows the video codecs you can choose in Project Settings will be different if you choose Video for Windows as your Editing Mode than if you choose Quicktime. When you export digital video, the available codecs are determined by the File Type you choose in the Export Movie Settings dialog box.

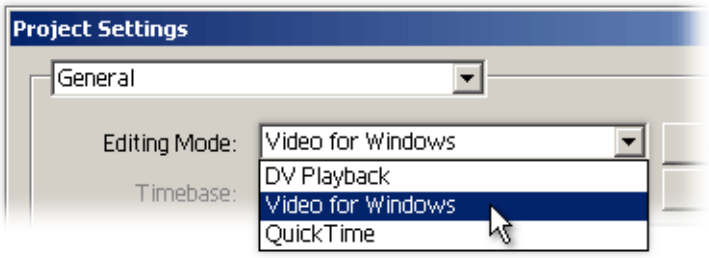
You can evaluate codecs by their intended uses, compression methods, and how they handle different kinds of pictures or sound. Video for Windows and QuickTime software are used for a wide range of video-related tasks, such as video conferencing, so they include many codecs which are not appropriate for video editing. Codecs intended for purposes other than video editing are identified in this section so that you can avoid them. If your video card provides hardware compression and its software is properly installed, its codec will appear in the Compressor menu in the Video Settings panel of the Project Settings dialog box. You can also access the codec in the dialog box for your video-capture hardware, which you can open by clicking the Video button in the Capture Settings panel of the Project Settings dialog box. See the following topic in the Premiere 6.0 online Help: Capturing and Importing Source Clips > Preparing for analog capture.

In all video and audio codec lists, the None or Uncompressed setting provides excellent picture and sound quality because no compression is applied. Working with uncompressed video is not recommended because the resulting data rate requires an extremely fast system and very large amounts of disk space. However, compressing audio is not usually necessary. The file size difference between compressed and uncompressed audio is not great and the benefit of compression is offset by a possible decline of quality.

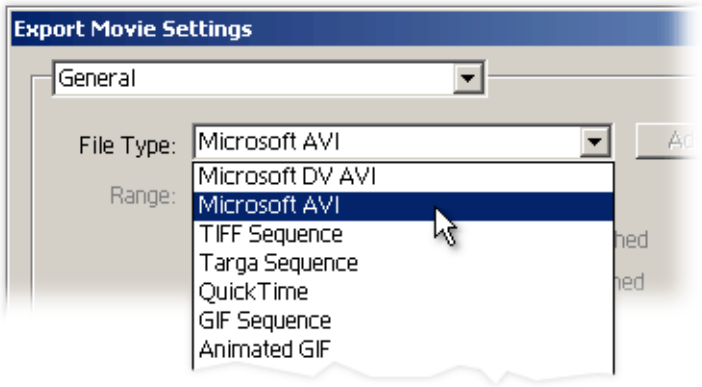
Note: The following codecs were available in the versions of Video for Windows and QuickTime that were current at the time this techguide was written. The actual list of codecs may change as Video for Windows and QuickTime are updated. Also, additional codecs may be available depending on the video and audio software and hardware you have installed.

Video for Windows video codecs (Windows only)

When editing, the following software codecs are provided if you choose Video for Windows from the Editing Mode menu in the General Settings panel of the Project Settings dialog box:



When exporting, the following software codecs are provided if you choose Microsoft AVI from the File Type menu in the General Settings panel of the Export Movie Settings dialog box:



Indeo® Video 5.10
Useful for video distributed over the Internet for computers with MMX or Pentium II processors. This codec includes features such as a quick compression option, flexible keyframe control, chroma keying (transparency), playback effects, and on-the-fly cropping that reduces the data load. Also, this codec employs a *progressive download* feature that adapts to different network bandwidths. Full use of these features requires utility software available separately from Intel. This codec is designed to work together with the Indeo Audio Software codec.

Microsoft RLE
Useful for compressing frames that contain large areas of flat color, such as cartoon-style animation. This codec uses a spatial 8-bit run-length encoding (RLE) compressor and is lossless at the 100% quality setting.

Microsoft Video 1
Useful for compressing analog video. This lossy, spatial codec supports pixel depths of 8 or 16 bits.

Intel Indeo® Video R3.2

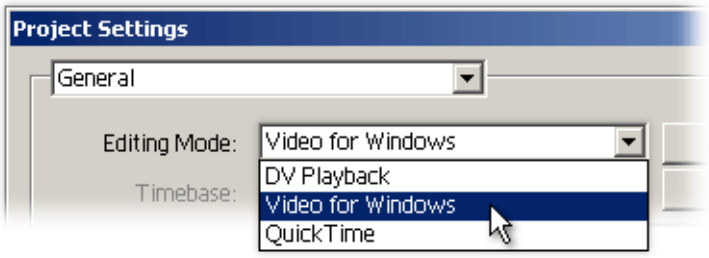
Useful for compressing 24-bit video for playback from CD-ROM discs. This codec attains higher compression ratios, better image quality, and faster playback speeds than the Microsoft Video 1 codec. For best results, use the Indeo Video codec on raw source data that has not been previously compressed with a highly lossy codec. When used with a data rate for playback, this codec produces movies that are comparable in quality to those compressed with the Cinepak codec.

Cinepak Codec by Radius

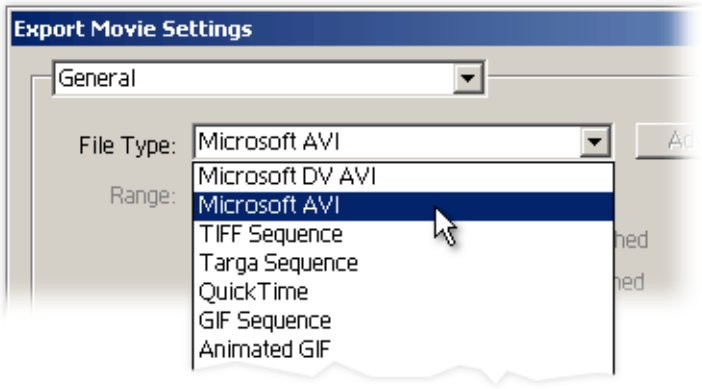
Useful for compressing 24-bit video intended for CD-ROM discs or for downloadable Web video files. This codec attains higher compression ratios and faster playback speeds than the Video codec. You can set the data rate for playback; picture quality drops more noticeably at data rates below 30 KBps. Cinepak is asymmetrical—it decompresses quickly, but compression is slow enough to make it impractical for editing. For best results, use Cinepak only for exporting the final version of a video file.

Video for Windows audio codecs (Windows only)

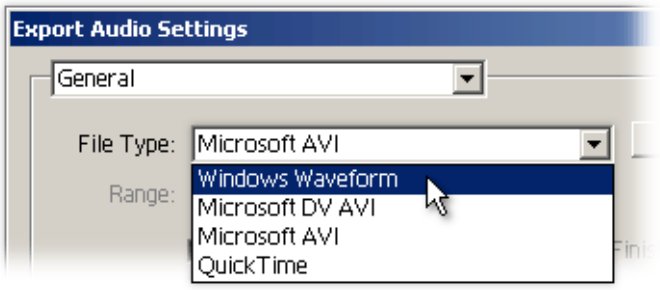
When editing, the following software codecs are provided if you choose Video for Windows from the Editing Mode menu in the General Settings panel of the Project Settings dialog box:



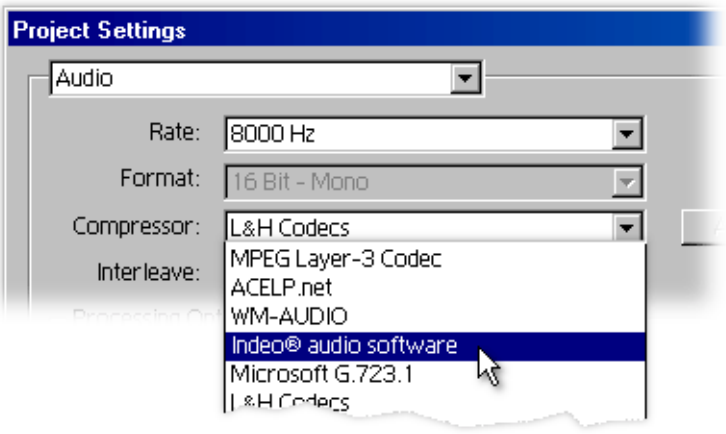
When exporting, the following software codecs are provided if you choose Microsoft AVI from the File Type menu in the General Settings panel of the Export Movie Settings dialog box,



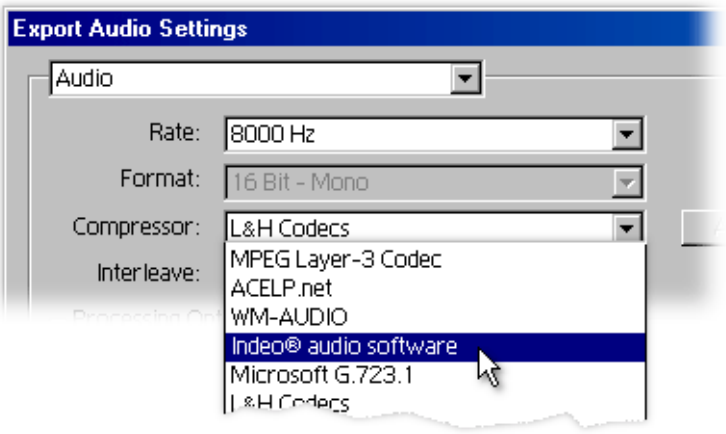
or Windows Waveform from the File Type menu in the General Settings panel of the Export Audio Settings dialog box:



You can choose the particular audio codec from the Compressor pop-up menu in the Audio Settings panel of the Project Settings dialog box,



or from the Compressor pop-up menu in the Audio Settings panel of the Export Audio Settings dialog box:



In general, use a codec specifically designed for the type of audio in your program, such as speech, music, or multimedia. Avoid codecs intended for telephony unless your audio is almost exclusively speech to be delivered over low-bit-rate media such as the Web.

MPEG Layer-3 Codec
Also known as MP3. This is the third coding scheme for MPEG audio compression. MPEG Layer-3 uses perceptual audio coding and psychoacoustic compression to remove parts of the audio signal that are imperceptible to the human ear. The result is a compression ratio up to 12:1 without loss of audio quality. MP3 is a common format for distributing music files over the Internet.

ACELP.net
A net-based codec using frame-concatenation and interlacing for improved music quality. ACELP.net allows a dual-rate bit-rate of 8.5/6.5 kbps or a fixed-rate bit-rate of 5.0 kbps.

WM-AUDIO
More fully known as Microsoft® Windows Media™ audio compression. This is the standard codec for Microsoft Active Streaming Format which combines fast encoding with high music quality and is optimized for Pentium II (MMX) and Pentium III (SSE/SIMD) processors. WM-AUDIO has a wide bit-rate range from 5 kbps to 128 kbps and offers high quality sound over the Internet even over 28.8 modems. WM-AUDIO is considered a future replacement for MP3.

Indeo® Audio Software
Useful for music and speech distributed over the Internet. Its maximum compression ratio is 8:1. This codec is designed to work together with the Indeo Video codec.

Microsoft G.723.1
A codec intended for use in video conferencing. It offers acceptable voice quality, but is a poor choice for music or sound effects. The audio quality is lower than other codecs that use the same data rate.

L&H Codecs
Speech and music compression algorithm developed by Lernout & Hauspie™.

TrueSpeech ™
Useful for speech over the Internet at low data rates.

Microsoft GSM 6.10
Useful for speech, used in Europe for telephony.

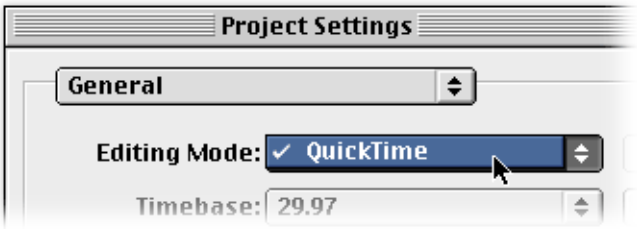
Microsoft CCITT G.711
This codec uses µ-Law encoding and is commonly used for digital telephony in North America and Japan.

MS-ADPCM
A Microsoft implementation of Adaptive Differential Pulse Code Modulation (ADPCM), a common digital audio format capable of storing CD-quality audio.

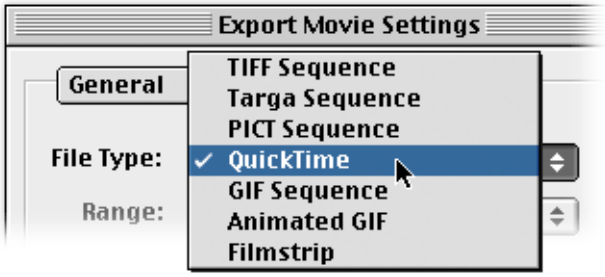
Microsoft IMA ADPCM
An implementation of ADPCM, useful for cross-platform audio for multimedia, developed by the Interactive Multimedia Association (IMA).

QuickTime video codecs

When editing, the following software codecs are provided if you choose QuickTime from the Editing Mode menu in the General Settings panel of the Project Settings dialog box:



When exporting, the following software codecs are provided if you choose QuickTime from the File Type menu in the General Settings panel of the Export Movie Settings dialog box:



Component video
Useful for capturing, archiving, or temporarily storing video. It has a relatively low compression ratio, so it requires relatively high amounts of disk space.

Graphics
Useful for good picture quality with 8-bit color. The Graphics codec is intended primarily for use with 8-bit still images but is sometimes useful for video. Because this codec does not achieve high video compression ratios, it is suitable for playback from hard disk, but not from CD-ROM.

Video
Useful for capturing and compressing analog video. This codec results in high-quality playback from hard disk and moderate quality playback from CD-ROM. It supports both spatial and temporal compression of 16-bit video. Data can be recompressed or recompiled later for higher compression ratios with minimal or no quality degradation.

Animation
Useful for clips that use large areas of solid colors, such as cartoon animation. The settings determine the degree to which the compression is lossy; 100% quality is lossless. The Animation codec employs an Apple compression algorithm based on run-length encoding. When set for lossless compression, it can be useful for storing title sequences and other motion graphics.

Motion JPEG A and Motion JPEG B
Useful as transcoders, for transferring video-capture files to other computers equipped with video-capture cards, particularly across platforms. These codecs are versions of JPEG implemented by many video-capture cards. Some video-capture cards include chips that accelerate Motion JPEG so that you can edit faster. See the documentation for your video-capture card to determine its degree of support for these codecs.

Photo–JPEG
Useful for still images that contain gradual color changes or that do not contain a high percentage of edges or other sharp detail, like many photographic still images. Photo-JPEG is lossy, but at high quality settings, a compressed image is nearly indistinguishable from the original. Photo-JPEG is symmetrical—compression time is nearly equal to decompression time, but compression time is too slow for real-time video.

Photo-JPEG is not recommended for images that will be edited later because it is relatively lossy. However, its high compression ratio and picture quality can make it useful for moving files between systems, or for archiving finished projects.

Note (Mac OS only): Many hardware compression cards use JPEG. With QuickTime 2.5 or higher, the codecs for these cards may not be listed in the Compressor menu unless you hold down the Option key when you click the menu. If you select Photo-JPEG, the correct codec will automatically be used. Also, additional options for some cards are found by holding down the Option or Control key while choosing the codec.

H.263
Useful for video conferencing at low data rates; not recommended for general-purpose video editing.

DV - PAL and DV - NTSC
Digital video formats used by PAL and NTSC digital video hardware. These codecs let you transfer clips from a connected DV deck or camera directly into Premiere. They are also useful as *transcoders*, for transferring digital video across platforms and between computers equipped with digital-video capture cards.

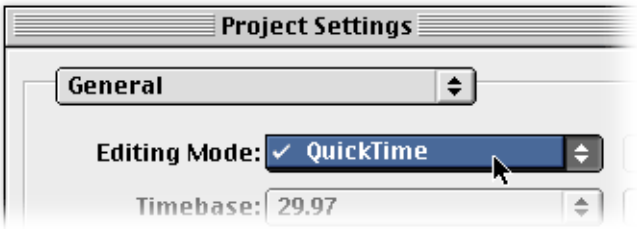
Cinepak
Useful for compressing 24-bit video intended for CD-ROM discs or for downloadable Web video files. This codec attains higher compression ratios and faster playback speeds than the Video codec. You can set the data rate for playback; picture quality drops more noticeably at data rates below 30 KBps. Cinepak is asymmetrical—it decompresses quickly, but compression is slow enough to make it impractical for editing. For best results, use Cinepak only for exporting the final version of a video file.

Sorenson Video
Useful for compressing 24-bit video intended for CD-ROM discs or for downloadable World Wide Web video files. Similar to Cinepak, this newer codec is designed for high quality at data rates under 200 KBps. This codec is capable of better picture quality and smaller files than Cinepak. It requires more compression time than Cinepak, so it is suitable for final export but not for editing. It supports *temporal scalability*, which lets a movie exported for a high-end computer play back smoothly on a low-end computer.

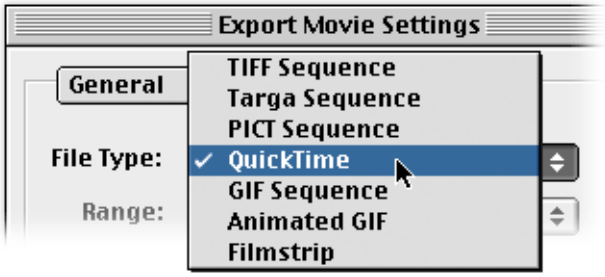
Planar RGB
A lossless codec effective for frames that use large areas of solid colors, such as animation. It uses run-length encoding and is an alternative to the Animation codec.

QuickTime audio codecs

When editing, the following software codecs for audio are provided if you choose QuickTime from the Editing Mode menu in the General Settings panel of the Project Settings dialog box:



When exporting, the following software codecs are provided if you choose QuickTime from the File Type menu in the General Settings panel of the Export Movie Settings dialog box:



The audio codecs themselves appear in the Type menu in the Audio Settings panel of either dialog box. Some of the codecs below use a specific compression ratio (such as 2:1). When they do, the compression ratio is listed after the codec name. In general, use a codec specifically designed for the type of audio in your program, such as speech, music, or multimedia. Avoid codecs intended for telephony unless your audio is almost exclusively speech to be delivered over low-bit-rate media such as the Web.

µ-Law 2:1
Useful for exchanging audio with applications on platforms (such as many UNIX workstations) where µ-Law is a standard audio format. µ-Law is used for digital telephony in North America and Japan. (The first letter of the codec name is a Greek letter pronounced Mu.)

16-bit Big Endian and 16-bit Little Endian
Useful when audio must be stored using Big Endian or Little Endian (byte order) encoding, such as when preparing microprocessor-specific audio. These codecs are useful for hardware and software engineers but are generally not useful for video editing.

24-bit Integer and 32-bit Integer
Useful when the audio data must be stored using 24-bit or 32-bit Integer encoding, such as when preparing micro-processor-specific audio. These codecs are useful for hardware and software engineers but are generally not useful for video editing.

IMA 4:1
Useful for cross-platform audio for multimedia. IMA 4:1 was developed by the IMA using ADPCM.

32-bit Floating Point and 64-bit Floating Point
Useful when audio must be stored using 32-bit or 64-bit floating point encoding, such as when preparing microprocessor-specific audio. These codecs are useful for hardware and software engineers but are generally not useful for video editing.

ALaw 2:1
Similar to µLaw, but used primarily for digital telephony in Europe.

MetaSound/MetaVoice Codecs (Mac OS only)
A wide series of codecs developed by Voxware. These codecs discard parts of the audio signal that are imperceptible to the human ear so the compression provides high music quality with high compression. The codecs cover a wide range of bit rates from AC06 V2.0 at 6,000 bps to the ACS96 V2.0 at 96,000 bps i order to accommodate varying bandwidths.

Qualcomm PureVoice
Intended for speech; works best at 8 kHz. Based on the Code Division Multiple Access (CDMA) technology standard for cellular telephony.

QDesign Music Codec
Useful when compressing high-quality music for Internet distribution. It is capable of delivering CD-quality (16-bit, 44.1 kHz) audio over a 28.8 Kbps line.

MACE 3:1 and MACE 6:1
Useful as a general-purpose audio codec. The Macintosh Audio Compression and Expansion codec (MACE) has been built into the Mac OS Sound Manager for many years. MACE 3:1's lower compression ratio provides higher quality than MACE 6:1. Because it is provided with QuickTime 3.0 and later, it is also accessible in Windows when QuickTime is installed.