

MPEG Streamclip 1.0.1 for Windows XP

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HIGH-QUALITY CONVERTER FOR MPEG-1/MPEG-2 FILES AND TRANSPORT STREAMS WITH PLAYER AND EDITING SUPPORT, SUITABLE FOR MPEG-2 CAMCORDERS, DVD AND DVHS RECORDERS, DVB SET-TOP BOXES; COMPATIBLE WITH MANY AUTHORIZING APPLICATIONS.
YOU CAN ALSO OPEN AND EXPORT QUICKTIME, DV, AVI, DIVX AND MPEG-4 FILES COMPATIBLE WITH APPLE IPOD!

Requirements: Windows XP; KL QuickTime Alternative 1.61 and later, or Apple QuickTime 7 and later. For MPEG-2, install QuickTime Alternative with the Extra QuickTime plugins.

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This software has been written by Squared 5 in Italy. All the code used in this application is absolutely original, including the AC3 decoder. No third party code has been used in this application, even when suitable open source code was freely available. And the design of this software is also original; no third party applications have been reverse engineered to make MPEG Streamclip work. This application works just because it's well written, and works well because it does not make use of recycled source code.

NEW IN VERSION 1.0.1

Added support for VDR files (Linux Video Disk Recorder), PVR, TP0 files (Homecast), and VID +AUD (Technisat).

VID files (Humax) can be edited directly now. Note that VID (Humax) and VID (Technisat) are different file formats with the same extension.

Added a "Convert to TS with" command which allows conversion to TS with MP2 (DreamBox), REC (Topfield) and VID (Humax).

Added full support for 23.976 fps streams with 3:2 pulldown.

Fixed a bug in the "Export to QuickTime" conversion, reported by Sony.

Fixed a frame rate bug which incorrectly reported 20fps for some 25fps streams.

Transport streams with misaligned packets are now supported.

The exporter window reopens automatically after preview.

OVERVIEW OF MPEG STREAMCLIP

MPEG Streamclip is a converter, an exporter, a player and an editor.

It can open many file formats: muxed files MPEG, MPG, VOB, PS, M2P, MOD, VRO, DAT; transport streams TS, M2T, MMV, REC, VID, AVR; demuxed files M2V, M1V, MPV, AIFF, AIF, M1A, MP2, MPA, AC3; QuickTime-compatible files MOV, DV, AVI, MP4, DIVX.

MPEG Streamclip supports MPEG-1 video, MPEG layer 1/2 audio, AC3/A52 audio and PCM audio. MPEG-2 video is supported if you have QuickTime Alternative (\$0) and you chose to install the Extra QuickTime plugins.

If you have Apple QuickTime, and do not want to replace it with QuickTime Alternative, you can buy the MPEG-2 Playback Component (\$19.99) from Apple Computer.

To open or encode DivX files, you have to install 3ivx for Windows (\$0). Audio playback/conversion for DivX is not supported yet.

Converter features:

- from MPEG, MPG, VOB, PS, M2P, MOD, VRO, DAT, TS, M2T, MMV, REC, VID, AVR to MPEG, TS, M2V, AIFF, MPA, AC3
- multiplexing of M2V, M1V, MPV files with AIFF, M1A, MP2, MPA, AC3 files to MPEG, TS, M2V, AIFF, MPA, AC3
(just open the M2V or M1V file, and the audio file with the same name will be multiplexed on the fly).
- very fast, no loss of video quality, perfect audio/video sync
- compatible with DVD authoring applications
- special Headed format to import unsupported frame sizes in DVD authoring applications

- special Unscaled demuxed files, for the QuickTime Pro media authoring application
- can automatically join multiple VOB or TS files
- manual command to scan the stream and fix timecode breaks

Exporter features:

- from MOV, DV, AVI, MP4, MPEG, MPG, VOB, PS, M2P, MOD, VRO, DAT, TS, M2T, MMV, REC, VID, AVR, M2V
to MOV, DV, AVI, MP4
- supports any QuickTime-compatible video codec available for Windows, and many audio formats
- very high quality encoding, all in YUV color space, either unscaled or with 2D-FIR scaling (better than bicubic)
- motion-adaptive deinterlacing and chroma reinterlacing, with perfect audio/video sync

Player features:

- playback of QuickTime-compatible files
- playback of muxed/demuxed MPEG/VOB files and transport streams with MPEG, AC3, PCM/AIFF audio
- playback of MPEG files larger than 4GB, or segmented in many files
- support for multiple audio tracks in transport streams and MPEG/VOB files
- full screen playback, zoom with arrow keys

Editor features:

- cut/copy/paste of MPEG files and transport streams, at keyframe (GOP) level
- frame accurate cut/copy/paste of QuickTime files
- trimming function, with unique "revert trimming" feature
- access to keyframes with arrow keys

And many more features are available!

IF YOUR FILE DOESN'T GET CONVERTED...

Please send a mail to Squared 5. The best way to help Squared 5 in improving MPEG Streamclip is, of course, making small samples of your files available (1 MB is usually enough). The preferred way is uploading samples to a web site. The MPEG file must not contain any personal information.

SETTING PREFERENCES

You can open the preferences window of MPEG Streamclip by choosing "Preferences..." from the Window menu. Preferences are stored on disk and you won't lose them when you quit MPEG Streamclip (presets are also stored on disk, but other settings are not). You can set the following options:

Fix streams with data breaks

When checked, this option enables a special stream processing, in order to repair audio and video and recover audio/video synchronization in streams that present data breaks. It works when you use Export, Convert, Demux. This option makes the conversion a little bit slower, however you would better enable it when you are converting transport streams from TV broadcastings or digital video tapes.

Fast decoding of data breaks

When a transport stream has many data breaks, exporting it may take forever. With this option you can speed up decoding of data breaks and make export faster. This option has effect only on transport streams, not with other MPEG files: if you have a muxed MPEG file with many data breaks and you want to export it quickly, you can convert it in a transport stream using "Convert to TS...", then open the TS file, enable this option and export it.

Don't open preview when exporting

Does not open the preview window when exporting to QuickTime, DV, AVI. This speeds up conversion by about 1%. Anyway, you can open and close the preview window at any time, while and after exporting, with "Exporter Preview" from the Window menu and "Close" from the File menu.

Preview all frames

When this option is enabled, and you click "Preview", the exporter preview shows all encoded frames; when disabled, only some sample frames (typically, keyframes) are shown in the preview window. But when you click "Make" to export a file, only sample frames are shown regardless of this setting.

MP2 Encoding Bitrate

Sets the bitrate used for MP2 (MPA) encoding, it affects the commands "Convert to MPEG with MP2 Audio", "Demux to M2V and MPA", "Demux to MPA", "Demux to Headed M2V and MPA". It has no effect on the audio bitrate setting of the export window.

Play streams with "user data"

Some broadcasted transport streams (especially from CanalSatellite France) have junk "user data" that may prevent playback. But if you enable this option and reopen the stream, user data will be overwritten and you will be able to play and convert it without problems. This setting has effect only on transport streams; please enable it only if you have this problem.

Clear "composite display flag"

A very advanced setting, it makes a small change in the stream to fix a possible compatibility issue with some DVD players that use the Zoran chipset. Do not enable this option, unless you have one of these DVD players and you are experiencing small green squares during playback.

OPENING STREAM FILES

Choose "Open Files" from the File menu, select one or more source files and click Open.

If you want to open audio files you have to choose "Audio" in the pop-up menu below.

You can select files with the following extensions: (Video) .ts, .ps, .vob, .vro, .dat, .rec, .mpeg, .mpg, .m2p, .m2t, .m2v, .m1v, .mpv, .mmv, .mod, .vid, .avr, .mov, .dv, .avi, .mp4, .divx; (Audio) .aiff, .aif, .m1a, .mp2, .mpa, .ac3.

If your MPEG file comes with an unsupported extension, you can choose "All Files" in the pop-up menu and try to open it.

For .m2v, .m1v, .mpv video files, if a valid audio file with the same name and the .aiff, .aif, .m1a, .mp2, .mpa, .ac3 extension exists, it will be opened together with the video file. If more than one audio file with a valid extension exists, the first will be opened using the above search order (that is, .aiff first, .ac3 last). Opening a demuxed video or audio file may take time.

AIFF audio files must be 16-bit uncompressed big-endian and have a supported sample rate.

If you select more than one file, please make sure that all selected files are part of a single MPEG stream (perhaps larger than 1GB), and select them in the correct order in the open file panel (that is, select the first file before the last file). Note that the display order is not relevant; only the order in which you select the files will matter. Also note that in the file name field, the files appear in reverse order (this is the normal behavior of Windows).

If you select just one file and it is clear that the file is part of a longer MPEG stream, this application gives you the option to open all the files of the stream together. Examples are: VTS_01_1.VOB + VTS_01_2.VOB (DVD);

Recording.ts + Recording.ts.001 (DreamBox);

Movie_0501220105~0.vid + Movie_0501220105~1.vid (Humax).

Please contact Squared 5 if your device splits MPEG files using a different pattern.

READING STREAM INFO

You can open an info window for the current stream using "Show Stream Info" from the File menu.

All relevant data are reported in this window.

The "Video PID" pop-up menu lists, for MPEG files, the available video tracks and the "Audio PID" lists the available audio tracks; only the selected video and audio track will be converted.

The two times under "Trimming" indicate the portion of the movie shown in the player: they change when you trim the movie. The "In" and "Out" times indicate the portion of the stream to be saved, exported or converted: they represent the current selection.

Scrambled or encrypted streams are not supported. If you open these files, you may get unpredictable results. However, if a stream is just partially scrambled, this application attempts to find a portion of the stream which is not scrambled; if it succeeds, the Readable Size will be shown in the info window.

CHOOSING AUDIO AND VIDEO PIDS

A single MPEG stream can deliver more than one video and one audio track (e.g. more than one language). A single video or audio track (also called elementary stream) is identified by a number called PID (Packet Identifier) which is unique to that track.

Before playing a stream or doing a conversion, you should select the proper audio and video PIDs,

using the two pop-up menus, to specify the audio and video track to play or include in the destination file; otherwise, two default PIDs will be chosen for you.

Muxed MPEG files, unlike transport streams, have no PIDs but may still have more audio and video tracks, each identified by a different "start code". For muxed files, the PID menus will show the start code of each available video and audio track.

AUDIO MODES AND MULTICHANNEL AC3

AC3 audio tracks support up to 6 different channels (L, R, Center, LS, RS, LFE) but MPEG Streamclip can only play/convert two channels at a time. Using the "Audio Mode" pop-up menu you can choose the two channels to be used. If you have no special needs, you can use the default audio mode (Stereo Mix); otherwise, keep on reading for more detailed info.

Stereo Mix

Makes a mix of L, R, Center (the 3 front channels) plus LS and RS (the 2 surround channels), it takes the mixing coefficients from the AC3 stream and produces a stereo sound in conformance to the A52 standard. The LFE channel is not included.

Note that for AC3 2/0 (see below) this and the 3 following modes just pass the L and R channels unchanged.

Front Mix

It is the same as Stereo Mix, but it excludes LS and RS (the two surround channels) from the mix. Use it when the surround channels have bad sound.

If the surround channels are not present, or were already excluded from the Stereo Mix (due to a zero mixing coefficient from the AC3 stream) then Front Mix produces the same sound as Stereo Mix.

Surround

Makes a Dolby Surround-compatible stereo sound. Using this special stereo sound, a Dolby Pro Logic amplifier with 6 speakers (5+1 subwoofer) may be able to reconstruct and play all the 6 channels of AC3.

Use this mode only if your audio equipment has a Pro Logic decoder and can handle Dolby Surround.

L/R Ch.

Lets you play and extract the L and R channels as a stereo pair. All other channels are excluded. If both L and R channels are missing, the Center channel is used instead.

Center Ch.

Lets you play and extract the Center channel. All other channels are excluded. If the Center channel is missing, a mono mix of L and R is used instead.

LS/RS Ch.

Lets you play and extract the LS and RS (surround) channels as a stereo pair. All other channels are excluded. If LS and RS are missing but exists a S (center surround) channel, this channel is used instead. If LS, RS and S are all missing, the sound will mute.

LFE Ch.

Lets you play and extract the LFE (low frequency effects) channel, used to drive a subwoofer. This channel is optional even in AC3 3/2; if it's missing, the sound will mute.

You can use the last 4 modes to make 4 AIFF files holding all the content of the AC3 track.

The number of channels that are present in an AC3 stream can be deduced from the AC3 coding mode (shown using two digits separated by a slash or a plus sign). This is a list of all AC3 coding modes with their channels:

- AC3 1/0: Center (mono)
- AC3 1+1: L, R (dual mono)
- AC3 2/0: L, R (stereo)
- AC3 3/0: L, R, Center (3 front channels)
- AC3 2/1: L, R, S (stereo + 1 surround)
- AC3 3/1: L, R, Center, S (3 front + 1 surround)
- AC3 2/2: L, R, LS, RS (stereo + 2 surround)
- AC3 3/2: L, R, Center, LS, RS (3 front + 2 surround)

Note that the LFE channel may be optionally present in all of these AC3 modes.

AUDIO MODES AND MPEG AUDIO

For MPEG audio tracks (MP1, MP2) two different audio levels are available for playback and conversion to MOV, DV, AVI, MP4 and AIFF: "High Level" and "Low Level". You can choose one of these two levels using the "Audio Mode" pop-up menu. The default level is "High Level". Use "Low Level" if, and only if, the converted movie or AIFF file shows an excess of volume.

MAKING A SELECTION

The selection is the part of the movie included between the In and Out points.

You can set the In and Out points, and therefore make a selection, in one of these alternative ways:

- drag the playhead (from In to Out or from Out to In) while holding down the Shift key;
- move the playhead to the In (or Out) point, then hold down the Shift key and move the playhead to the Out (or In) point;
- move the playhead to the In point and hit the I key, then move the playhead to the Out point and hit the O key.

The selection will be highlighted in the player.

To cancel a selection, you can use the X key, or choose "Cancel Selection" in the Edit menu.

Remember these commands because there is no other way to cancel a selection.

Please note that, while the In point is included in the selection, the Out point is not included.

You can also move the playhead to the desired In and Out points using JKL navigation (an explanation of JKL navigation can be found later in the section "Playing the stream"), and use the left and right arrow keys to step the playhead through single frames, or the up and down arrow keys to step through keyframes. If you hold down the Alt key, you can use the left and right arrow keys to jump directly to the In and Out times.

TRIMMING THE STREAM

Once you have made a selection, you may choose to trim the selected portion, temporarily cutting away anything before the In point and after the Out point. Use "Trim" from the Edit menu, and the movie will be trimmed to the selected portion (or something less, according to keyframe positions); you can then perform further (and finer) selections. "Trim" does not affect source files in any way. If you want to undo the last trimming operation, you can use "Undo" from the Edit menu. If you want to undo all trimming operations you've done, you can use "Revert Trimming" from the Edit menu.

Trimming is not part of movie editing; it's just a way to temporarily restrict the part of the stream shown in the player and available for conversion and editing. You can use trimming without worries since you can revert it at any time without losing any editing you may have done to the stream. Also if you edit a part of the stream and then trim that part away, editing is not lost but just hidden; you can get it back at any time if you use "Revert Trimming".

So you can take advantage of trimming to make fine editing on smaller parts of the stream. E.g. with a long stream, you can select and trim the first 20 minutes, cut commercials, then revert trimming, select and trim the next 20 minutes, cut commercials, revert trimming and so on.

EDITING THE STREAM

Using "Cut" from the Edit menu, you can remove the selected portion of the stream (from In to Out; or something more, according to keyframe positions). This is useful if you want to remove commercials from the stream. You can make any number of cuts you want, and even cut a part that already contains one or more cuts.

You can locate each cut using the edit list (read "Using the edit list" below for more details).

With "Copy" and "Paste" you can copy a part of the stream and paste it in the same stream or in another compatible stream. You can also use "Cut" and "Paste" to move a portion of the stream. The part of the stream copied with "Copy" is, like for "Cut", the selection from In to Out (or something more); if there is no selection, "Copy" does a copy of the whole stream (if you trimmed the stream, only the trimmed part will be copied).

The part of stream copied with "Copy" or "Cut" is preserved when you close the stream, so you can use "Copy", close the stream, open another stream and use "Paste". This is the preferred method to join two or more streams; however all the streams must have the same PIDs, the same start codes, and the same audio/video properties (that is, they must come from the same source or channel).

For MPEG files, editing is performed at MPEG level; video is reassembled and audio is resynchronized. Audio/video sync is ensured even when a large number of cuts is present in the same stream.

Editing does not alter the source files; you must use Save As to save the edited movie into another

file.

You can undo the last "Cut", "Copy", "Paste" or "Trim" using "Undo" from the Edit menu ("Undo" works only once, multiple undo is not supported). You can undo all your editing and trimming using "Revert All Changes" from the Edit menu.

For QuickTime files, editing and trimming operations are frame-accurate. But for MPEG files, these operations are not frame-accurate since MPEG packs pictures into GOPs (Group Of Pictures) usually with a duration of half a second. MPEG Streamclip does not split GOPs, so the accuracy of editing is about 1/2 second; but the accuracy of audio/video sync after editing is much higher, and usually less than 1/2 frame, regardless of the number of cuts. Please note that in this version, Trim leaves "at most" the selection, while Cut removes "at least" the selection and Copy copies "at least" the selection. Editing and trimming can be accurate only if In and Out are both on keyframes; you can go to keyframes using the up and down arrow keys or the "Go to Keyframe" command in the Edit menu.

NOTE: sometimes, with some MPEG files, the Cut command may slightly corrupt one of the pictures that precedes the cut. This issue does not happen with most MPEG files.

FIXING TIMECODE BREAKS

Some MPEG streams may have discontinuous time code (this is particularly true for VOB files). You can use "Fix Timecode Breaks" from the Edit menu to make MPEG Streamclip handle these streams correctly.

All the timecode breaks found will be listed in the log window.

In some cases, you can use this command to join two or more MPEG files into a single stream; but again, the files being joined must have the same PIDs, the same start codes, and the same audio/video properties. Using "Convert to MPEG" before joining the files can be helpful, because it changes PIDs and start codes to a default value.

If the video transition between two files looks bad, you can use the Cut command to improve it.

THE LOG WINDOW

You can open the log window using "Log Window" from the Window menu. The log window records the start and stop time of each conversion, and all error messages. The window also shows the position of all data breaks found during a conversion, and all timecode breaks found by "Fix Timecode Breaks"; when the option "Fix streams with data breaks" is enabled, the window may also show messages like "fixing video" or "fixing audio" that indicate where the stream has been fixed.

If you click "Check Stream" you can start a stream check; like a conversion, this will find and list in the log any data break found. With the "Clear Log" button you can clear the log.

SAVING THE STREAM

Use "Save As..." in the File menu to save a copy of the stream. If you set the In and Out points or trimmed the stream, only the part of the stream between the In and Out points will be saved; otherwise, the whole stream will be copied.

If you have edited the stream, it will not be copied but it will be saved with editing instead.

Multiple source files will be joined into a single destination file, which may be larger than 2GB, if needed.

All the video and audio tracks will be saved, regardless of the selected video and audio PIDs.

Unless you have edited the stream: in this case, only the selected video/audio tracks will be saved.

For QuickTime, DV, AVI, and MPEG-4 files you can choose the destination format among MOV, MP4, and AVI, by choosing "All Files" and typing a valid file extension. Every movie can be saved as MOV, but only some movies can be saved as MP4 or AVI.

To save DivX files as AVI, you have to install the 3ivx codec. Some DivX files, when edited and saved as AVI, may not play well.

NOTE: Squared 5 assumes that you have the legal rights to make a copy of the stream!

EXPORTING TO QUICKTIME, AVI, MPEG-4

Select "Export to QuickTime..." or "Export to AVI..." or "Export to MPEG-4..." from the File menu and the Movie Exporter or the AVI/DivX Exporter or the MPEG-4 Exporter window will appear. It will let you export the part of the stream between the In and Out points (or the whole stream if In and Out points have not been set). If you have edited the stream, it will be exported as it appears after editing.

These are the available settings:

Compression

Using the Compression pop-up menu, you can choose the video compressor to use. The menu shows a list of all QuickTime video compressors installed in your computer; you can choose any compressor from this list (for MPEG-4 you can only choose between MPEG-4 and H.264). The default compressor is different for each exporter (Motion JPEG A for MOV, Photo-JPEG or 3ivx for AVI, MPEG-4 or H.264 for MP4).

Quality

You can use the Quality slider to set the quality of compression, from 0% (lowest) to 100% (highest or lossless). Some compressors may ignore this setting.

Options

If the video compressor has custom options, you can use the Options button to set them.

iPod

This button takes the place of the Options button in the MPEG-4 exporter. It lets you quickly set the parameters to make MP4 files that are compatible with Apple iPod.

2-Pass

If the video compressor is 3ivx D4 or H.264, by enabling this option you can make MPEG Streamclip automatically perform two-pass encoding. For H.264, more than two passes will be performed.

Sound

With the pop-up menus you can set the sound format, choose between mono or stereo, set the sample rate and, if supported, the bit rate. Supported sound formats are Uncompressed, IMA 4:1, MPEG-4 AAC (MP4), AMR Narrow (AMR-NB), MPEG Layer 2 (MP2). If you choose "Pass Thru" the original audio track of the stream (MP2, PCM or AC3) will be copied without changes in the MOV or AVI file. If you choose "No Sound", the exported file will have no sound.

Frame Size

A default frame size for the exported movie, based on the chosen video compressor and the aspect ratio of the source stream, will be proposed to you. If you don't like it, you can click and select a different frame size, and even enter any custom size between a small 32 x 32 and a huge 2048 x 2048.

Scaling is performed in the YUV color space, using a powerful 2D-FIR scaler. This scaler outperforms the built-in bicubic scaler of most video editing applications, bringing quite sharper pictures in less time. So, if scaling is required, it is recommended that you use MPEG Streamclip to make a scaled movie, rather than import the unscaled movie into the video editing application and scale it there.

FIR scaling has excellent quality but it slows down the conversion. When scaling is not enabled, the conversion is fast; it is slow when either horizontal or vertical scaling is enabled; when both horizontal and vertical scaling is enabled, it's even slower. You can disable FIR scaling by choosing the "unscaled" frame size; however, DV codecs may still need to scale the picture using their own faster, low-quality scaling algorithms, resulting in a very bad video quality.

Scaling also includes some advanced TV standard processing. For instance, when MPEG Streamclip scales a 320 x 240 stream up to 720 x 480, it adds two 8-pixels wide black bars at each side of the picture, to conform to NTSC and PAL standards.

Frame Rate

In this field, you can set the frame rate of the exported movie. If you leave this field empty, the frame rate will be the same as the original movie's frame rate (shown in the "Stream Info" window).

Frame Blending

If you set a frame rate for the exported movie which is different from the original movie's frame rate, you can enable this option to improve motion. Each frame in the exported movie will be a mix of two successive frames of the original movie.

If you left the Frame Rate field empty, this option has no effect unless the original movie has a

variable frame rate (that is, when in the "Stream Info" window the symbol "~" appears before the frame rate, e.g. ~20 fps, or when two video tracks are listed with different frame rate).

Field Dominance

This setting lets you choose the field dominance for the destination movie; it is automatically set to "Lower Field First" for DV and to "Upper Field First" for other codecs. Field dominance conversion is performed when the dominance of the destination movie is different from the dominance of the original file (visible in the Stream Info window).

The field dominance is the order in which the two fields that form NTSC and PAL pictures, are displayed in a TV set. You may need to change the default setting, if the converted file has bad motion when played on TV.

Field dominance is not changed for progressive files, and for files whose height is up to 288 pixels (like most MPEG-1 files) because these files can't have a field dominance.

Limit Data Rate

You can enter a data rate limit for any codec that supports this feature. Select a proper unit (Kbps, Mbps, KB/sec, MB/sec) and enter a positive number. Decimal numbers are allowed.

For most codecs, the data rate limit overrides the Quality setting.

Use B-Frames

This option enables B-Frames (Bidirectional Frames) when encoding with H.264 and HDV. Using B-Frames yields better quality for the same data rate, or lower data rate for the same quality. Note that Apple iPod does not support B-Frames.

Zoom

In the field "%" you can optionally set a magnifying factor for the picture. With the field "X/Y" you can change the aspect ratio of the picture: the value 1.333 is good for 16:9 to 4:3 conversion, while the value 0.75 is good for the opposite conversion, from 4:3 to 16:9. A letterbox will be added, but you can remove it by entering in the field "%" a magnifying factor of 133.3 %. Finally, with the two fields "Center" you can move the picture center horizontally and vertically.

Cropping

With this feature, you can crop any edge of the frame: you just have to enable it and enter the amount of pixels you want to crop from each edge. Even numbers are preferred. Negative numbers are allowed: in most cases, they will add a black border to the picture.

When you use cropping, the frame size of the resulting movie will be changed; unless you enable the "Scale" option: in this case, the picture is stretched to fit the destination frame size. If you choose a DV frame size, the "Scale" option has no effect because the picture is always stretched.

Interlaced Scaling

If you are scaling an interlaced file to a different height, you can tell MPEG Streamclip to preserve interlacement and scale each video field separately by checking "Interlaced Scaling". If you don't, interlacement will be lost in the scaled movie, and, worse, you will get many visual artifacts. This setting is now enabled by default; remember to disable it with progressive files.

Interlacement requires a frame height of more than 288 pixels. If the frame height of the source file is up to 288, interlaced scaling will not be enabled. If the frame height you have chosen for the exported movie is up to 288 and you check "Interlaced Scaling", MPEG Streamclip discards the lower field before scaling the picture (i.e. it performs a fast deinterlacing by dropping one field).

Better Downscaling

If you are scaling the file to a smaller frame size, by checking "Better Downscaling" you can tell MPEG Streamclip to use a wider 2D-FIR scaler, providing even better picture quality. However this wide 2D-FIR scaler is quite slow and the resulting picture (although perfect) may have less sharpness. This option is disabled by default: enable it only if you need a perfectly scaled movie.

If you are scaling the file to a larger size, this option has no effect; the standard 2D-FIR scaler already provides the best scaling quality.

Reinterlace Chroma

If you are converting an interlaced MPEG-1/MPEG-2 file, you may wish to "reinterlace" chroma. By checking "Reinterlace Chroma" you can enable a special remapping of 4:2:0 chroma lines so they will be split correctly between the two video fields. This is a very advanced option: only professional users may see the difference in the output movie. This option is enabled by default;

disable it when you are sure your file is not interlaced.

This option has no effect if the source stream is not an MPEG-1/MPEG-2 stream.

Deinterlace Video

If you have an interlaced file, you may also want to deinterlace it, usually to convert into a progressive format, get a "film" effect and have a better playback on the computer's display. When you check the option "Deinterlace Video", MPEG Streamclip enables a special motion-adaptive deinterlacer, and it deinterlaces the lower field in the parts that contain motion, and preserves video quality of all parts that do not contain motion; the upper field is left unchanged. This option slows down the conversion.

Please note that if you are changing the height of an interlaced stream (that is, you are telling MPEG Streamclip to perform vertical scaling) then you must enable either "Interlaced Scaling" or "Deinterlace Video" (at your own choice), otherwise you will see bad video artifacts in the converted movie.

Adjustments

The Adjustments panel lets you adjust brightness, contrast, saturation and volume. Adjustments take effect only if you click OK.

Presets

The Preset Manager lets you save on disk all the settings in the export window (including Options and Adjustments), and reuse them later. You can make a new preset with the button "New...", load the settings of a preset with "Load", store the current settings in an existing preset with "Save", and also rename and delete a preset, or move it up and down in the list with the Up and Down buttons.

Reset All

This button will reset all the parameters of the current exporter to default, including custom options for all video compressors. Parameters that are shared with other exporters will be reset as well.

Make Movie - Make AVI - Make MP4

When all your settings are OK, you can finally click the "Make Movie" or "Make AVI" or "Make MP4" button, choose the name and location of the MOV or AVI or MP4 file, and MPEG Streamclip writes the movie to the specified location. While writing the movie, MPEG Streamclip takes sample pictures from it and decompresses them immediately. This lets you check the compression quality while encoding goes on: so you can stop the encoding and change some settings if the quality is lower than expected. You can disable the preview window in preferences, if you want.

To be clear: the pictures you'll see during the movie encoding are taken from the exported movie, not from the source MPEG file: so you can really check the video quality of the QuickTime or AVI or MPEG-4 movie you're making.

Preview

If you just want to check the video encoding quality without actually writing the movie, you can click the "Preview" button instead of "Make Movie". MPEG Streamclip simulates the encoding process and takes sample pictures from the "virtual" destination movie. With this feature, you can fully adjust your compression settings before writing anything to disk.

AUDIO AND VIDEO FORMATS SUPPORTED IN AVI FILES

MPEG Streamclip can make AVI 1.0 files, with all the limitations of this format (for example, the file cannot exceed 4GB). And many video and audio codecs are not supported in AVI files.

- Supported video codecs are DV, Cinepak, 3ivx D4.
- You can download 3ivX D4 (version 4.5.1 at the time of this writing) from <http://www.3ivx.com>. This codec can play and encode DivX and MPEG-4 video.
- The Motion JPEG codec is supported only in AVI 2.0, so if you select it for AVI, this codec will be automatically replaced with Photo-JPEG.

- Supported audio codecs are Uncompressed, MPEG Layer 2 (MP2), AC3.
- MOV and AVI files with MPEG Layer 2 (MP2) or MPEG Layer 3 (MP3) audio can be played in MPEG Streamclip, but sound is not heard.
- You can put AC3 sound in AVI file with the "Pass Thru" option, only if the sound of the source MPEG file is in AC3 format. Again, you can't hear AC3 sound from AVI files when you play back them in MPEG Streamclip.

- The codec Apple IMA 4:1 is not supported in AVI files: if you select it, the µlaw 2:1 codec will be used instead (at least in this version of MPEG Streamclip). And the codecs MPEG-4 AAC and AMR Narrow are not supported in AVI, too.

EXPORTING TO DV STREAM

Select "Export to DV..." from the File menu and the DV Exporter window will appear. This will let you export the part of the stream between the In and Out points (or the whole stream if In and Out points have not been set) as a DV stream. Again, if you have edited the movie, it will be exported with all your editing.

The Compression pop-up menu lets you select the video compressor to be used. You have two options: DV (DV25), and DVCPRO25. For most uses, choose DV (DV25).

The Standard pop-up menu lets you select the standard to be used for the stream: PAL or NTSC. It is automatically set to PAL for 24, 25, 50 fps, and to NTSC for other frame rates, but you can change this default if you need to match the standard used in your DVD authoring application. The frame size is set to 720 x 576 for PAL and 720 x 480 for NTSC; the 2D-FIR scaler will be used if necessary.

The Aspect Ratio pop-up menu lets you choose whether the DV stream should be considered as a 4:3 or a 16:9 movie. This setting does almost nothing, except that it changes a bit in the DV stream, making it easier to import in some applications.

Field dominance for DV streams is always lower field first, so there isn't a setting for this. Dominance conversion is performed when the original MPEG file is upper field dominant.

The "Frame Blending", "Interlaced Scaling", "Better Downscaling", "Reinterlace Chroma" and "Deinterlace Video" options have been already described in the previous paragraph. The setting "Resample Audio to 48 kHz" changes the sample rate of the audio track to the highest rate available for DV; it does nothing when the sample rate of the source stream is already 48 kHz. The option "Split DV Stream in Segments" splits large DV streams in 1.9GB files; a 3-digit suffix is automatically added to the name of DV files following the first one.

The settings "Zoom", "Cropping" and the buttons "Presets" and "Adjustments" have been described in the previous paragraph. For "Cropping", the option "Scale" is not available because it does not apply to DV.

With the Preset Manager you can save the settings of the DV exporter. DV presets are listed together with MOV/AVI presets but you cannot load a DV preset in the MOV/AVI exporter and vice versa. Some settings are shared by all exporter windows (for instance, "Zoom", but not "Cropping"): if you load a preset in one exporter, these shared settings will be changed in all exporters.

The "Preview" and "Make DV Stream" buttons work in the same way as the "Preview" and "Make Movie" buttons of the Movie Exporter window; of course "Make DV Stream" writes a DV file and not a MOV file.

You can preview the video compression quality for a DV stream, too, and, if needed, change your settings before writing the DV stream.

EXPORTING A FRAME

You can export the frame shown in the player in a TIFF file using "Export Frame..." in the File menu. You can change the frame size (or choose the original size with "Unscaled") and you can set the options "Interlaced Scaling" and "Deinterlace Video" for interlaced streams. As usual, the picture will be resized with the 2D-FIR scaler.

The two options in "Pixel Aspect" make a little (nearly unnoticeable) correction to the picture aspect. Choose "Computer Graphics" if you want to use the picture in a computer graphics or photo application. Choose "Industry Standard" if you want to use the picture in a video application. These options have effect only if the frame size is 4:3 or 16:9.

CONVERTING THE STREAM

The following commands are available only if the source stream is in MPEG-1 or MPEG-2 format. Choose one of the "Convert to" or "Demux" commands from the File menu to perform the desired conversion or demuxing. Again, only the part of the stream between the In and Out points will be converted or demuxed; also, editing will always be included in the converted files.

These conversions run as fast as possible and they are just limited by the hard disk speed and the audio conversion speed. When no audio conversion is required, they usually perform at the same speed of a file copy; with audio conversion they will run slower, depending on the processing speed of your PC.

Destination files may exceed 2GB, and will not be split. However you can change the In and Out points to make smaller destination files, if you need.

All the files written by these commands (when In and Out points are the same) have the same duration, the same start and end time, and they are kept synchronized by a special time-detection technology. So you can perform multiple conversions and use the resulting files together.

This is a brief description of the available commands:

Convert to MPEG...

converts the stream into a muxed MPEG (program stream) file; if the frame size is suitable, you can import this file in a DVD authoring application and burn it directly, with no encoding time and no loss of quality. Audio is left in its original format (MPEG, AC3 or PCM).

Suitable frame sizes for DVD are 720x480, 720x576, 704x480, 704x576, 352x480, 352x576. If the frame size is not suitable, please try the "Convert to Headed MPEG" command instead.

If the authoring application stops with an error before burning the file, please enable the option "Fix streams with data breaks" in preferences and try again.

Convert to MPEG with MP2 Audio...

same as "Convert to MPEG", but converts AC3 and PCM audio into MP2 (MPEG) audio so you can play the converted MPEG file using QuickTime Player (to play MPEG-2 in QuickTime Player you must have the MPEG-2 Playback Component).

Convert to Headed MPEG...

same as "Convert to MPEG" but adds a special header to the MPEG file that lets you import unsupported frame sizes into a DVD authoring application and skip recompression. However, DVDs made from "headed" MPEG files are not guaranteed to work with all players. Please DO NOT TRY to open "headed" MPEG files in QuickTime Player (it will crash).

NOTE: Headed formats have been tested with the following DVD authoring applications: Pegasys TMPGEnc DVD Author; Ulead DVD MovieFactory; Ahead Nero Vision.

For Nero Vision, the Headed conversion is required even for supported frame sizes (if you use a normal conversion, Nero may encode the file again); it doesn't work with unsupported frame sizes because Nero checks the whole content of the MPEG file (not just the header).

Convert to TS...

converts the stream into a transport stream file; the TS file can be uploaded and played in most PVR devices.

Convert to TS with MP2 Audio...

converts the stream into a transport stream file and turns AC3 and PCM audio into MP2 (MPEG); so the TS file can be played in PVR devices (like the DreamBox) that do not support AC3/PCM playback.

Convert to TS with REC Header...

converts the stream into a transport stream file for Topfield PVR, with the REC header and extension, and MP2 sound. The REC file can be played with the Topfield 5000 devices.

Convert to TS with VID Header...

converts the stream into a transport stream file for Humax PVR, with the VID header and extension, and MP2 sound. The VID file can be played with the Humax 8000 devices.

Demux to M2V and AIFF...

demuxes the stream and creates an M2V video file and an AIFF audio file; if the frame size is suitable, you can import these two files in a DVD authoring application, and burn them directly, with no encoding time and no loss of quality. The video and audio files have the same exact duration, the same start and end time, and are perfectly synchronized.

If you use the same name for the two files, you can double-click the M2V file and open both files in QuickTime Player (again, to open MPEG-2 files in QuickTime you need the MPEG-2 Playback Component).

If the frame size is not suitable, please try "Demux to Headed M2V and AIFF".

Demux to M2V and MPA...

demuxes the stream and creates an M2V video file and an MPA audio file (which holds MP1/MP2 audio); if the frame size is suitable, you can import these two files in a DVD authoring application, and burn them directly with no encoding time and no loss of quality. For muxed files that have MPEG audio, this command runs faster than "Demux to M2V and AIFF", because no audio conversion is performed; also, the resulting files take less space in the DVD. If the frame size is not suitable, please try "Demux to Headed M2V and MPA".

Demux to M2V and AC3...

demuxes the stream and creates an M2V video file and an AC3 audio file; if the frame size is suitable, you can import these two files in a DVD authoring application, and burn them directly with no encoding time and no loss of quality. For muxed files that have AC3 audio, this command runs faster than Demux to M2V and AIFF, because no audio conversion is performed; and again, the resulting files take less space in the DVD.

You can't use this command if the audio track is not in AC3 format.

If the frame size is not suitable, please try "Demux to Headed M2V and AC3".

Demux to M2V...

demuxes the stream and creates an M2V video file. Use this command if you want to extract just the video track.

Demux to AIFF...

demuxes the stream and creates an AIFF audio file. Use this command if you want to extract just the audio track.

Use this command 4 times (changing the Audio Mode to "L/R Ch", "Center Ch", "LS/RS Ch", "LFE Ch") if you want to extract all the channels of AC3 audio.

Demux to MPA...

demuxes the stream and creates an MPA audio file. Use this command if you want to extract the audio track of a file with MPEG audio, and use it in a DVD authoring application.

Demux to AC3...

demuxes the stream and creates an AC3 audio file. Use this command if you want to extract the audio track of a file with AC3 audio, and use it in a DVD authoring application. You can't use this command if the audio track is not in AC3 format.

Demux to Unscaled M2V and AIFF...

demuxes the stream and creates an "unscaled" M2V video file and an AIFF audio file; you can import these two files in QuickTime Pro and convert them (with audio) to another format using QuickTime's exporters.

The "unscaled" M2V file is a demuxed file which tells QuickTime to not prescale it, e.g. to 720 x 540; it preserves its original size e.g. 720 x 576 or 720 x 480 so you won't lose quality when you encode it. This is a special feature of MPEG Streamclip.

Demux to Headed M2V and AIFF...

same as "Demux to M2V and AIFF" but adds a special header to the M2V file that lets you import unsupported frame sizes into a DVD authoring application and skip recompression. Again, DVDs made from "headed" M2V files are not guaranteed to work with all players. Please DO NOT TRY to open "headed" M2V files in QuickTime Player (it will crash).

Demux to Headed M2V and MPA...

same as "Demux to M2V and MPA" but with the "headed" M2V file that lets you import unsupported frame sizes in a DVD authoring application.

Demux to Headed M2V and AC3...

same as "Demux to M2V and AC3" but with the "headed" M2V file that lets you import unsupported frame sizes in a DVD authoring application. You can't use this command if the audio track is not in AC3 format.

Demux to Headed M2V...

same as "Demux to M2V" but with the "headed" M2V file that lets you import unsupported frame sizes in a DVD authoring application.

A warning message will tell you if there are data breaks in the stream. A data break means that the stream is corrupted.

If the file being converted has data breaks, audio/video sync may be lost. In this case, please enable "Fix streams with data breaks" in preferences before doing the conversion, and MPEG Streamclip will try to recover A/V sync.

PLAYING THE STREAM

You can use this application to play (even at full screen) QuickTime, DV, AVI, MPEG-4 files; but above all, you can play MPEG-1 and MPEG-2 (if you have QuickTime Alternative, or Apple QuickTime with the MPEG-2 Playback Component) muxed files with MPEG, AC3, PCM audio, demuxed M2V files with AIFF audio, and transport streams with MPEG or AC3 audio. Playback of MPEG-2 files requires a PC with a fast processor (especially when playing files with AC3 or PCM audio); please do not expect to get full frame rate playback on a 500MHz computer. Open a stream, and then start playing it in the usual ways: double-click the picture, or hit the space bar on keyboard, or click the play triangle on the player.

You can also start playback using the L key, since the player supports JKL navigation. This is a quick explanation of JKL navigation: the L key starts forward play at 1x, 2x, 4x, 8x... doubling forward speed (or halving backward speed) each time you hit L; the J key starts backward play at -1x, -2x, -4x, -8x... doubling backward speed (or halving forward speed) each time you hit J; the K key stops playback.

With the "Full Screen" command in the Window menu, or with Ctrl+0 (zero) you can start full screen playback. You can zoom the picture in and out with the up and down arrow keys; you can go back to normal playback by clicking the mouse or pressing Esc or 0 (zero) or Ctrl+0 or even Ctrl+W. Most navigation keys can be used in full screen mode.

You can use the up and down arrow keys to reach the previous or next keyframe (for MPEG files, the first I-frame of the GOP); also, you can use the command "Go to Keyframe" in the Edit menu to get to the nearest keyframe. The other two arrow keys, as usual, move the playhead by one frame.

You can also use the up and down arrow keys to set the sound volume. Ctrl + Up/Down increases/decreases the volume; Shift + Up raises volume above its maximum; Ctrl + Alt + Up/Down turns sound on/off.

If you use Page Up/Page Down, the playhead moves by 10 seconds backward/forward (by 1 minute if you hold down Alt).

You can play a file or stream even while you are exporting, converting or saving it: however, in this case, both the playback and the conversion will slow down.

Please select the correct audio and video PIDs before playing a stream with multiple audio or video tracks; if you don't, a default audio and video track will be played.

SUPPORT

There is no support for this free application, however you can write and ask your questions to Squared 5 (squared5@mpeg-streamclip.com). I will answer only if I have time.

Please don't forget to mention the operating system (Windows) in your e-mail.

Even if you have no questions to ask, please give your feedback because this will be helpful for me in order to improve this application.

BUGS?

Please report any bug you find in this application to Squared 5 (squared5@mpeg-streamclip.com). Even if you get no answer, the bug will be investigated and possibly fixed in the next version. Again, indicate the operating system version in which the bug appeared, and the version of MPEG Streamclip too.
