

Using the ADOBE® FLASH® MEDIA SERVER 3.5 F4V Post Processor



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Adobe® Flash® Media Server 3.5 Technical Overview

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Using the F4V Post Processor

When to use the F4V Post Processor

About fragmented files

Adobe® Flash® Media Server versions 3.5 and later and Adobe Flash Media Live Encoder 3 can record content in MPEG-4 (F4V) format. The MPEG-4 standard is complex. Video editing tools and video players support different features of the MPEG-4 standard. MPEG-4 (F4V) files recorded on Flash Media Server use an industry-standard recording technology known as *fragments* or *moof atoms*. F4V files store information about the video in multiple moof atoms throughout the file. This practice guarantees that even if the server crashes there is always a valid file on disk. This practice also prevents memory from bloating on the server during recording.

Some MPEG-4 compatible tools and players do not support moof atoms, they support a single moov atom. These tools and players cannot recognize files recorded by Flash Media Server. The F4V Post Processor aggregates the information from all the moof atoms into a single moov atom and outputs a new file. The new file contains all the metadata of the original file.

Use the F4V Post Processor tool to prepare F4V files for:

- Editing in Adobe Premiere® Pro
- Delivery over HTTP as a progressive download
- Delivery in video players that support H.264 and AAC formats
- Delivery in Adobe Media Player

Note: *You do not need to use the F4V Post Processor tool to stream files from Flash Media Server 3.5 to Adobe Flash Player, Adobe AIR™, or Adobe Flash Lite™.*

Splitting files

F4V files recorded in “append” mode or recorded as a playlist can contain multiple formats. Each format has an entry in the stsd atom. Some editing tools and media players don’t support files with multiple formats. To work around this issue, the F4V Post Processor splits files into multiple files. Each format becomes a single file. The F4V Post Processor also creates a SMIL file containing the name of each new file. Use the SMIL file to play the split files in a playlist.

Note: *The F4V Post Processor does not transcode content. Any format in the input file is also in the output file. Some tools, such as Adobe Premiere Pro, support only H.264/AAC in F4V files. These tools do not support F4V files containing formats other than H.264/AAC.*

F4V files recorded by Flash Media Server in “append” mode or as a playlist can contain gaps. Each gaps has an entry in the ELST atom. Gaps are created when a recorded file is made from more than one of the following content types: audio and video, audio only, video only. For example, a playlist could have the following sequence: audio and video, audio only, audio and video. The recorded file of the playlist would have a gap in the video track because of the second file which was audio only. If there's a gap at the beginning or middle of a file, the F4V Post Processor splits the file.

Files also contain gaps when the server records live streams and one type of content starts late. For example, if the video starts after the audio, there would be an audio gap at the beginning of the file.

If the F4V Post Processor splits the input file, it names the output files “*output_filename_i*”. The variable *i* is an integer that increments. For example, if the tool splits the output file “myvideo” into three files, the filenames are “myvideo_1”, “myvideo_2”, and “myvideo_3”. If the tool splits the output file “myvideo.f4v” into three files the output filenames are “myvideo_1.f4v”, “myvideo_2.f4v”, and “myvideo_3.f4v”.

The following is the structure of the SMIL file:

```
<smil xmlns="http://www.w3.org/2005/SMIL21/Language">
  <head/>
  <body>
    <seq>
      <video region="content" src="rtmp://localhost/vod/myvideo_1.f4v"/>
      <video region="content" src="rtmp://localhost/vod/myvideo_2.f4v"/>
      <video region="content" src="rtmp://localhost/vod/myvideo_3.f4v"/>
    </seq>
  </body>
</smil>
```

Note: If the F4V Post Processor creates a corrupt file it generates an error message. The SMIL file does not contain entries for corrupt files.

Using the F4V Post Processor

Use the F4V Post Processor tool

The F4V Post Processor (f4vpp) tool is supported on Linux® and Windows® operating systems.

- 1 Open a command prompt and change directories to the location of the f4vpp tool.
- 2 Use the following syntax to run the tool:

```
f4vpp [-option]
```

The following example creates the file “myvideo_flat.f4v” from the fragmented file “myvideo.f4v”:

```
f4vpp -i myvideo.f4v -o myvideo_flat.f4v
```

Command-line arguments

The following table describes the command-line arguments:

Option	Description
-h [--help]	Describes the available options.
-u [--usage]	Displays a usage example.
-V [--version]	Prints a version string.
-v [--verbose]	Prints verbose output.
-i [--input] input_file	The name of the file to flatten.

Option	Description
-o [--output] output_file	<p>The name of the flattened file the tool generates. If you do not specify a filename, the filename is <code>input_name + "_f"</code> (for "flattened"). For example, if the input filename is <code>myvideo</code>, the default output filename is <code>myvideo_f</code>.</p> <p>If the input file must be split, the output files are named <code>output_filename_i</code> where "i" is an integer that increments. For example, if the output file <code>myvideo</code> is divided into three files, the filenames are <code>myvideo_1</code>, <code>myvideo_2</code>, and <code>myvideo_3</code>. In the same scenario, if the output file is <code>myvideo.f4v</code>, the output filenames are <code>myvideo_1.f4v</code>, <code>myvideo_2.f4v</code>, and <code>myvideo_3.f4v</code>.</p>
-s [--split]	<p>Indicates whether to split files that contain multiple formats. Generates the split files and a SMIL file that lets you play the files in a playlist.</p>
-f [--force]	<p>Indicates whether to overwrite an existing file. If you do not specify this option and the destination file exists, the destination file has the current time appended to the specified filename.</p>

Error Messages

The following table describes the error messages:

Code	Type	Message
-2	General error	Invalid file system path.
-3	General error	File not found.
-4	General error	Cannot open file.
-5	General error	File read error.
-6	General error	Cannot create corrected file. Verify that the directory has write permission.
-7	FLV error	Invalid FLV signature.
-8	FLV error	Invalid FLV data offset.
-9	FLV error	Invalid FLV message footer.
-10	FLV error	Unrecognized message type.
-11	FLV error	Found backward timestamp.
-12	FLV error	Unparsable data message.
-13	MP4 error	File does not contain a movie box.
-14	MP4 error	File does not contain any valid tracks.
-15	MP4 error	Too many tracks. The maximum number is 64.
-16	MP4 error	Only one sample type allowed per track.
-17	MP4 error	Box too large.
-18	MP4 error	Truncated box.
-19	MP4 error	Duplicate box.

Code	Type	Message
-20	MP4 error	Invalid box version.
-21	MP4 error	Invalid movie time scale.
-22	MP4 error	Invalid number of data entries in box.
-23	MP4 error	Invalid sample size.
-24	MP4 error	Invalid chapter time.
-25	MP4 error	Too many tag boxes. The maximum size is 256.
-26	MP4 error	File appears to be FLV with wrong extension.
-27	MP4 error	Unsupported DRM scheme.
-28	MP4 error	Error reading MP4 tables
-29	MP4 error	File contains unexpected movie fragments.
-30	MP4 error	File contains out-of-order movie fragments.
-100	General warning	Metadata duration is incorrect.
-101	MP4 error	The canSeekToEnd field in the metadata message is false.
-102	MP4 error	Unrecognized box.
-103	MP4 error	Found incomplete track.
-104	MP4 error	Found duplicate video track. Ignoring...
-105	MP4 error	Found duplicate audio track. Ignoring...
-106	MP4 error	Found duplicate data track. Ignoring...
-107	MP4 error	Track has unsupported sample type.
-108	MP4 error	Invalid video codec.
-109	MP4 error	Invalid audio codec.
-110	FLV warning	Video may appear stalled due to lack of audio data.
-111	MP4 error	File has unsupported metadata format.
-112	MP4 error	Box has extraneous bytes at end.
-113	FLV warning	Video messages found but video flag not set.
-114	FLV warning	Audio messages found but audio flag not set.
-115	FLV warning	Video flag set but no video messages found.
-116	FLV warning	Audio flag set but no audio messages found.
-117	MP4 error	File is truncated. Will only be partially playable.
-118	MP4 error	Track contains unsupported edit list.
-119	FLV warning	Missing FLV metadata.
-120	MP4 error	Bad NellyMoser Frequency. Sample(s) skipped....
-121	MP4 error	Invalid track extends box.
-121	MP4 error	Track contains unsupported sample flags.

Code	Type	Message
-201	MP4 recording error	Unknown error.
-202	MP4 recording error	Unable to create the file.
-203	MP4 recording error	No space left in the stsd box.
-204	MP4 recording error	No space left in the elst box.
-205	MP4 recording error	Received unsupported video format.
-206	MP4 recording error	Received unsupported audio format.
-207	MP4 recording error	Received unsupported data format.
-208	MP4 recording error	Received audio-specific configuration of unsupported length.
-209	MP4 recording error	Received AVCDecoderConfigRecord of unsupported length.
-210	MP4 recording error	Received an audio packet of an unknown type.
-211	MP4 recording error	Received a video packet of an unknown type.
-212	MP4 recording error	Splitting of the file failed.
-300	MP4 recording warning	OnTextData packet has been dropped.
-301	MP4 recording warning	OnImageData packet has been dropped.
-302	MP4 recording warning	Invalid H264 packet has been dropped.
-303	MP4 recording warning	Backward timestamp packet has been dropped.
-304	MP4 recording warning	Audio ender not received before termination of recording
-305	MP4 recording warning	H264 sequence ender not received before termination of recording.

