

# 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 input_name + "_f" (for "flattened"). For example, if the input filename is myvideo, the default output filename is myvideo_f.</p> <p>If the input file must be split, the output files are named output_filename_i where "i" is an integer that increments. For example, if the output file myvideo is divided into three files, the filenames are myvideo_1, myvideo_2, and myvideo_3. In the same scenario, if the output file is myvideo.f4v, the output filenames are myvideo_1.f4v, myvideo_2.f4v, and myvideo_3.f4v.</p> |
| -s [--split]              | 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.  |
| -f [--force]              | 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.  |

## 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. |



