Omnivore Viewer – FFmpeg Convert

With the release of Omnivore™ version 3.1 we introduced **FFmpeg Convert** to the Omnivore™ Viewer. **FFmpeg Convert** allows users to **Probe, Play & Process** any FFmpeg supported file! Interrogate the container & streams, save/view a frame analysis report, extract frames or convert/transcode to common formats, including Lossless H.264. You can even save your FFmpeg logs!


This means that now Omnivore™ users can take FFmpeg Convert with them everywhere and leverage it from any Windows PC!

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*IMPORTANT NOTE: Omnivore Viewer - FFmpeg Convert is provided for convenience only; it is the responsibility of the technician/analyst to confirm and/or validate any derivatives created via these processes. For more information on FFmpeg we recommend reviewing the Scientific Working Group on Digital Evidence's document **SWGDE Technical Notes on FFmpeg.***

Launching Omnivore Viewer – FFmpeg Convert

Omnivore Viewer's FFmpeg Convert capability can only be accessed when using the Omnivore Viewer directly from the Omnivore USB drive. In other words, if you copy the freely distributed viewer off from the drive, FFmpeg Convert will not be available in that copy.

To launch the Omnivore Viewer from your Omnivore drive, click the viewer icon in the Omnivore interface shown below or browse to the root of your Omnivore drive in Windows Explorer and launch *"Omnivore_viewer.exe"*.
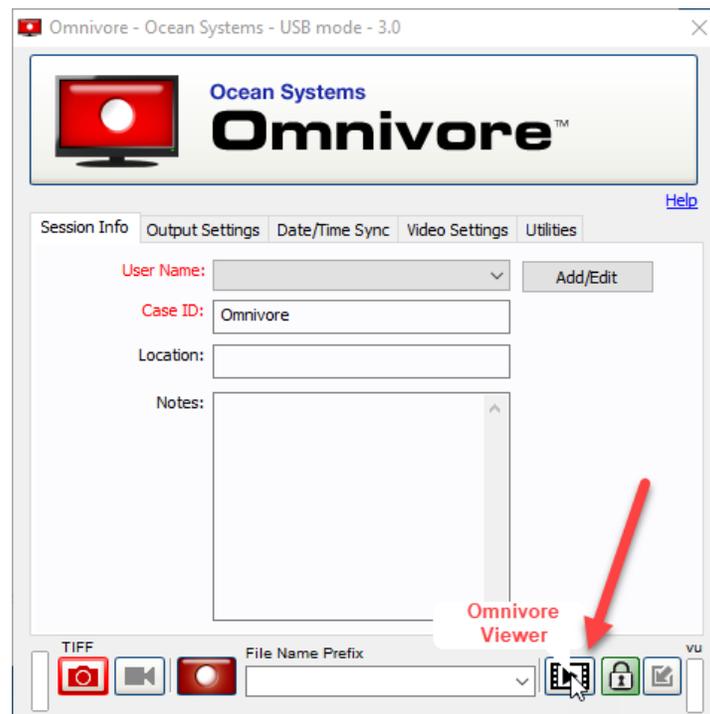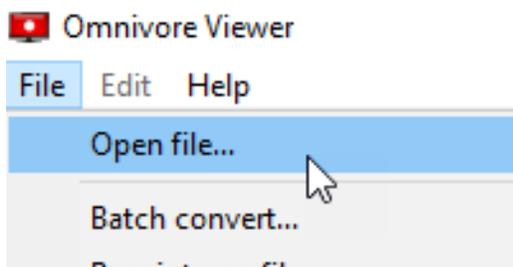
With the Omnivore Viewer open, select *File > Open file…*

When the open file window opens, you'll notice that in addition to **OMV and OMVA** Omnivore captures, you can now browse and select <u>ANY</u> FFmpeg supported file.

When you open anything other than an **OMV** or **OMVA** the FFmpeg Convert interface will open.

Files of Type Dropdown

You'll notice that by default **Omnivore Viewer** will allow you to browse and open any Omnviore or FFmpeg supported file.

It's important to note the ***"Files of Type"*** dropdown option in the File Open window interface *(shown above)*, as there you can even select & browse "All files", <u>if you'd like to attempt to open a non-standard multimedia file format.</u>
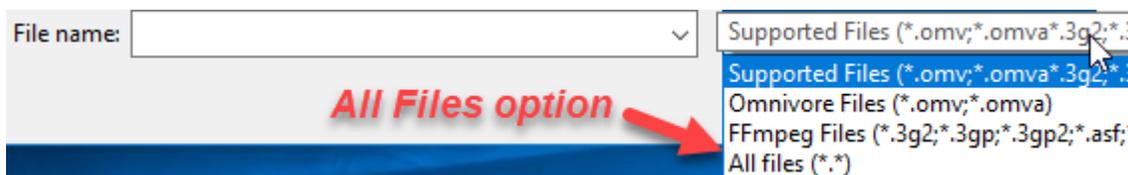
Browse to an FFmpeg supported file, select it and click "Open".

Drag & Drop

Additionally, you can simply drag & drop a FFmpeg supported file into the Omnivore™ Viewer interface to launch FFmpeg Convert.
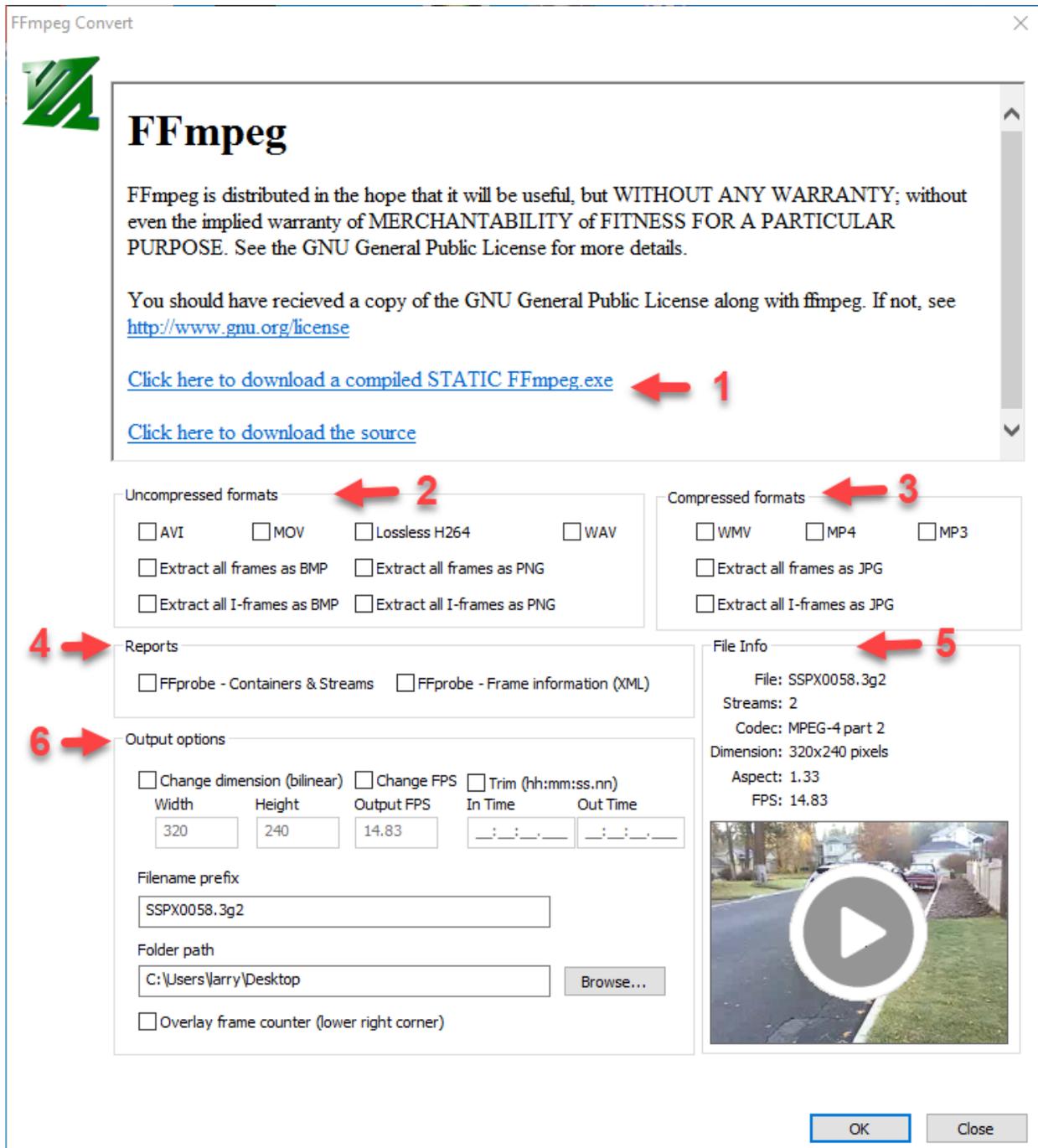
BATCH Processing

Drag & drop a folder into the Omnivore™ Viewer interface to process all files in that folder. It's that simple!

The FFmpeg Convert Interface

The FFmpeg Convert window opens and displays the FFmpeg licensing info and related links, as well as various options for processing the file.

Please be sure to review the FFmpeg license information.

FFmpeg Convert ✕

FFmpeg

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You should have recieved a copy of the GNU General Public License along with ffmpeg. If not, see http://www.gnu.org/license

Click here to download a compiled STATIC FFmpeg.exe **← 1**

Click here to download the source

2 → Uncompressed formats **3** → Compressed formats

Uncompressed formats:
- ☐ AVI
- ☐ MOV
- ☐ Lossless H264
- ☐ WAV
- ☐ Extract all frames as BMP
- ☐ Extract all frames as PNG
- ☐ Extract all I-frames as BMP
- ☐ Extract all I-frames as PNG

Compressed formats:
- ☐ WMV
- ☐ MP4
- ☐ MP3
- ☐ Extract all frames as JPG
- ☐ Extract all I-frames as JPG

4 → Reports

- ☐ FFprobe - Containers & Streams
- ☐ FFprobe - Frame information (XML)

5 ← File Info

File: SSPX0058.3g2
Streams: 2
Codec: MPEG-4 part 2
Dimension: 320x240 pixels
Aspect: 1.33
FPS: 14.83

6 → Output options

- ☐ Change dimension (bilinear) ☐ Change FPS ☐ Trim (hh:mm:ss.nn)

Width	Height	Output FPS	In Time	Out Time
320	240	14.83	__:__:__.___	__:__:__.___

Filename prefix
SSPX0058.3g2

Folder path
C:\Users\larry\Desktop   Browse...

☐ Overlay frame counter (lower right corner)

OK   Close

1. FFmpeg License & Links
2. Uncompressed OUTPUT Options
3. Compressed OUTPUT Options
4. Reports
5. File Information & Playback
6. Output options

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File Information & Playback

Basic information about your file will be displayed in the "File Info" section, as shown to the right.

When BATCH processing, a File List will be displayed above the thumbnail area, as shown below; simply select a file from the list to view its thumbnail & basic metadata information.
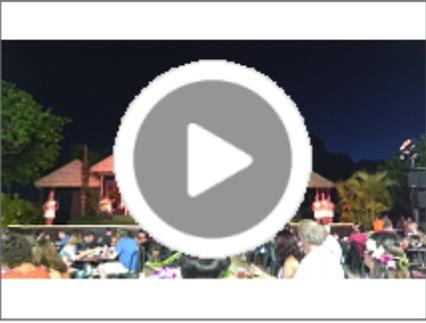
Playback Controls

Click the thumbnail image to play your file with FFplay. Standard FFplay keyboard shortcut controls are available during playback. Below are a few of the commonly used keyboard shortcuts, which are displayed in place of the thumbnail image when playing back a file:

- **A** = Cycle Audio Channel
- **F** = Toggle Full screen
- **M** = Mute
- **P** or Space = Pause
- **Q** or ESC = Quit
- **S** = Step to the next frame
- **T** = Cycle Subtitle Channel
- **V** = Cycle Video Channel

Additionally, double left-clicking in the player will force it full screen.

Uncompressed & Compressed Format Options

These FFmpeg Convert options provide several standard functions and features for processing your multimedia file. Simply select the option you're interested in by clicking the checkbox.

Multiple Options may be selected simultaneously.

FFprobe Reports

Reports

☐ FFprobe - Containers & Streams (TXT)   ☐ FFprobe - Frame information (XML)

Interrogate your media prior to processing using FFprobe. You can:

1. Generate & Save a TEXT file containing all **Container & Stream** metadata extracted by FFprobe.
2. Generate, Save & View an XML file containing metadata extracted by FFprobe for ALL samples/frames within the file.

Simply select the appropriate checkbox prior to clicking the "OK" button to begin processing.

Frame Information Report & XML Viewer

The Frame Information report from FFprobe is generated & saved as an XML file.

Once the file has been generated and saved to the output location you define under "Output Options", it will automatically open in our **FFmpeg XML Viewer** as shown below:

Streams *(Sample Type)*: By default both Audio and Video samples will be displayed, if contained within your file. Uncheck either type to only display the other using the checkboxes in the lower left corner of the viewer.

Custom Colors: Click the "Apply custom colors" checkbox to color-code MPEG frame types. Double-click the color next to each frame type to customize.

Choose Columns: Resize the window and/or scroll vertically or horizontally to view all columns/fields.

IMPORTANT NOTES ABOUT FFmpeg XML Viewer:

- ***Our XML Viewer is provided for convenience only*** *and is not required to view this XML file.*

- *Color coding of frame/sample types is a best effort based off from FFprobe output.*

- *GOP displayed (highlighted in green above) is a simple row count between I-frame records; it is NOT obtained directly from file metadata.*

- *The Frame Information report can also be opened with Microsoft Excel or other apps that can parse & display XML.*

Output Options

This section of **FFmpeg Convert** allows you to 1) Adjust the Output Dimensions, 2) change the output Frame Rate, 3) Trim the clip, 4) add an optional Filename Prefix, 5) browse to the save-to location you'd like to use, and 6) optionally add a Frame Counter to your output.

Change Dimension

Select this checkbox and enter your desired output Width and Height in pixels.

Note that some codecs will not accept ODD pixel dimensions (e.g. 703 x 479, etc).

Change FPS *(Output Frame Rate)*

By default the input frame rate (FPS) is used as the output FPS <u>unless FFmpeg cannot determine the proper FPS of the source stream</u>; in which case it defaults to 25fps.

To manually adjust the output frame rate, simply check the related checkbox and enter a frame rate.

Trim

To shorten your clip to a specific area of interest, select this checkbox and click the "Play" button on the video's thumbnail image *(under **File Info**)* to play the file. With this option selected and the file playing back in FFplay, you'll notice the playback timecode displayed in the lower right corner of the video during playback, as shown to the right:

1. Note timecodes for IN & OUT points you'd like to use, then close FFplay.
2. Enter those timecodes into the Trim "In Time" and "Out Time" fields, as shown below:

☑ Trim (hh:mm:ss.nn)

In Time   Out Time

| 00:00:06.267 | 00:00:08.000 |

File Name Prefix

By default the original file name will be included as a File Name Prefix. You may change this behavior by manually entering a prefix.

Folder Path

Browse to the location where you'd like to store your output. **Remember, when exporting frames as images, you need to direct your output to a FOLDER.**

Overlay frame counter (lower right corner)

Check this checkbox if you'd like to add frame numbers to each & every frame in the lower right-hand corner. Frame counting will begin with frame zero (0).

Once you're happy with your selection & settings, simply click "OK" to begin processing.

Saving Your Log File

During and after processing, the FFmpeg processing details will be displayed in the top portion of the **FFmpeg Convert** window. Upon completion, if you'd like to save this log file of information, simply click "Save Log" as shown to the right.
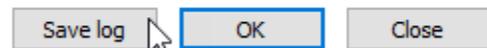
Note that the "Save Log" button will only be displayed upon completion of a processing task.

The resulting TXT file log will contain Omnivore™ Viewer version information, FFmpeg build information, commands used, and the FFmpeg output/processing details.

Advanced FFmpeg Users (Command Line)

If you'd like to leverage the full power of FFmpeg via Command line, you'll find the **FFmpeg, FFplay,** and **FFprobe** executable files in the *"helpers"* folder found at the root of your Omnivore's ROM partition, as shown below.
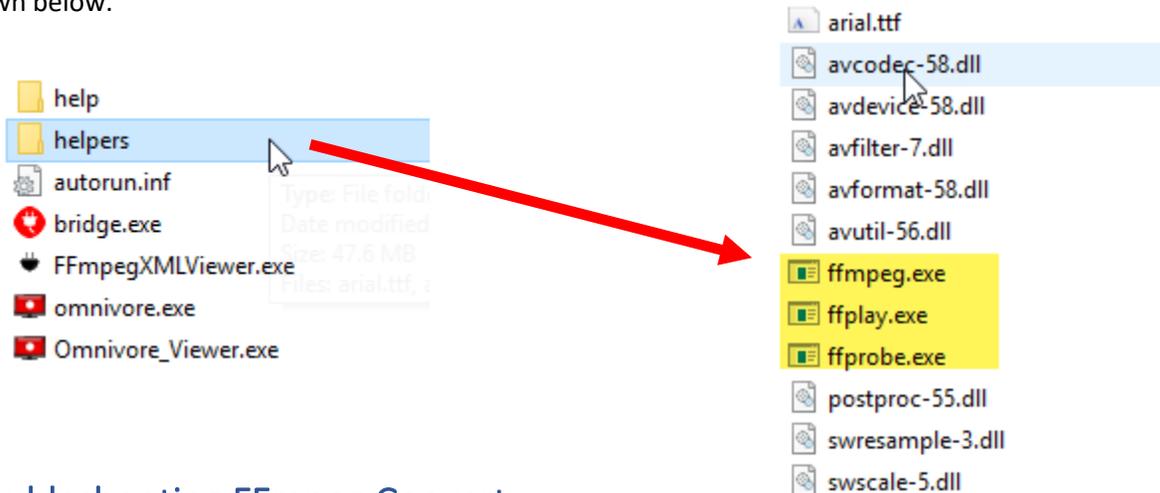
Troubleshooting FFmpeg Convert

FFmpeg Convert is simply a GUI front-end to FFmpeg. Review the FFmpeg logs for details on any failures to open/process.

Frame Rate Concerns/Issues

- If precise timing is part of your analysis, be sure to interrogate the original.
- The AVI file format was not designed to contain Variable Frame Rate (VFR) material. When converting to Uncompressed AVI, FFmpeg will output a Constant Frame Rate (CFR) file.
    - All other video output options support VFR *(e.g. Uncompressed MOV, Lossless H.264, WMV and MP4)* and include the *"-vsync 0"* command to passthrough timing from the Demuxer to the Muxer.

- **IMPORTANT:** When processing **proprietary containers** *(e.g. proprietary DCCTV file types)* FFmpeg may not be able to determine the proper frame rate of the stream, and in such cases will default to 25fps.