Delta Media Server

Distributed File Manager (DFM)

User Guide

Distributed File Manager (DFM) : User Guide

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Introduction

DFM (Distributed File Manager) is a single utility used to manage media for the Delta Media Server system. It is available in 32 bit and 64 bit versions for Microsoft Windows.

DFM can extract movie frames and audio from a compressed file format, into sequences of individual frames.

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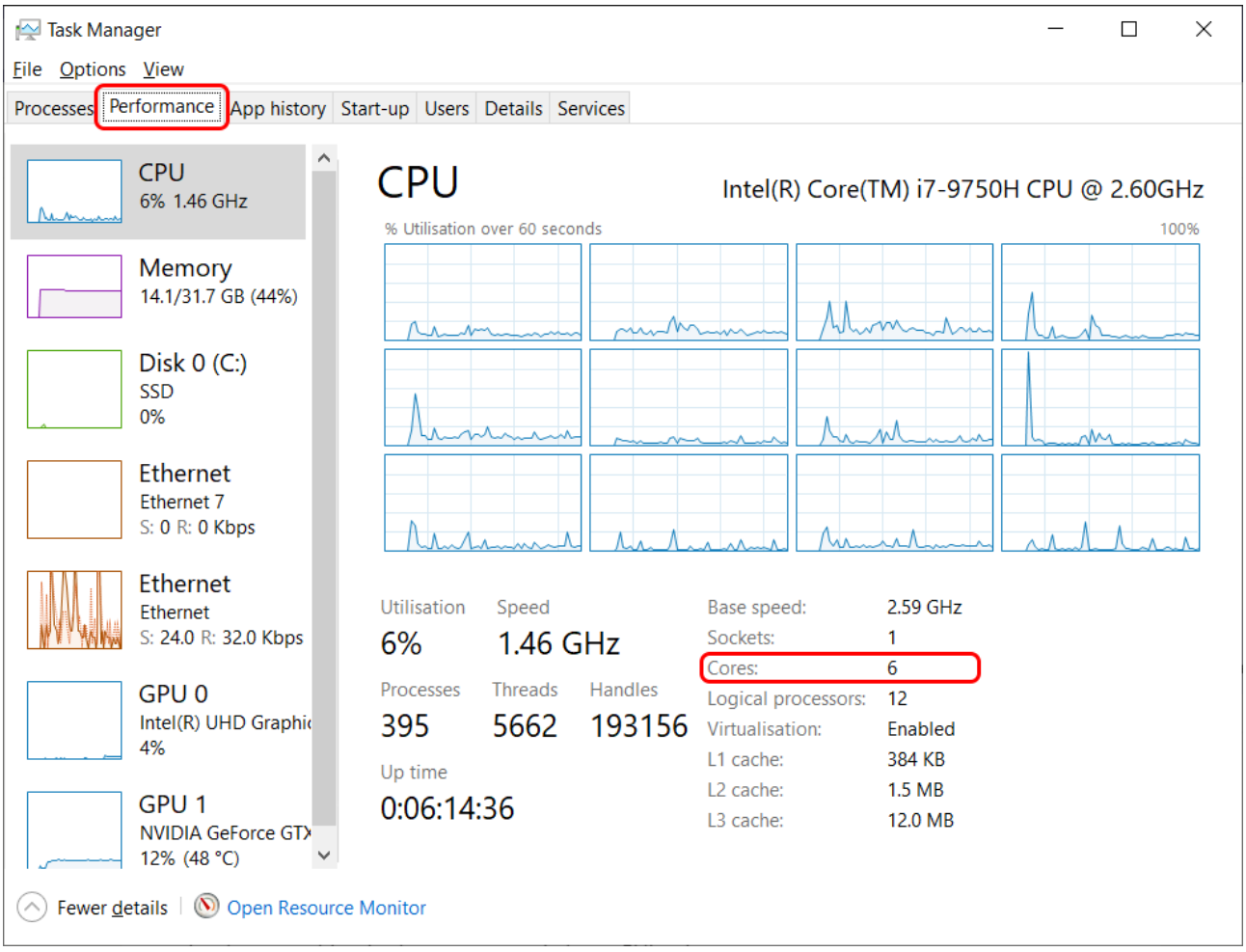
Installation: 32 vs 64 Bit

DFM can be demanding, and requires a minimum of four processing cores. Check in Windows Task Manager:



Install 'As Administrator':

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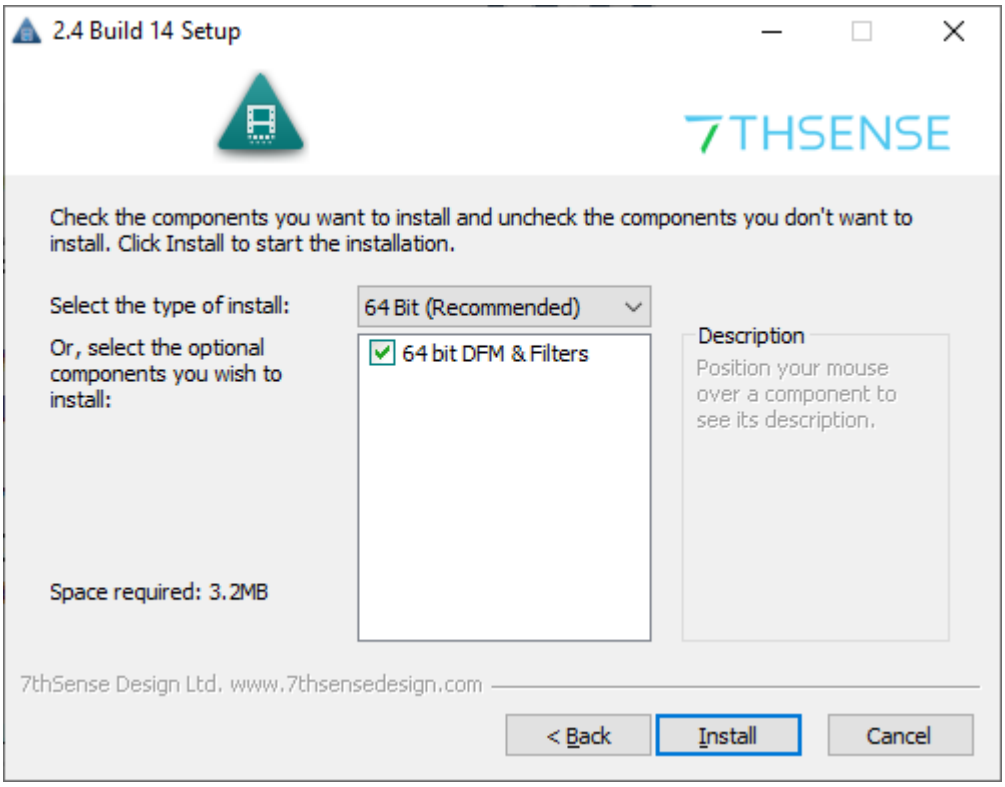

- 7thSense recommends that you install the 64 bit version of DFM if possible.
- 7thSense filters and the DFM application are available in both 32 bit and 64 bit versions.
- 32 bit DFM can be installed on 32 and 64 bit versions of Windows 7.

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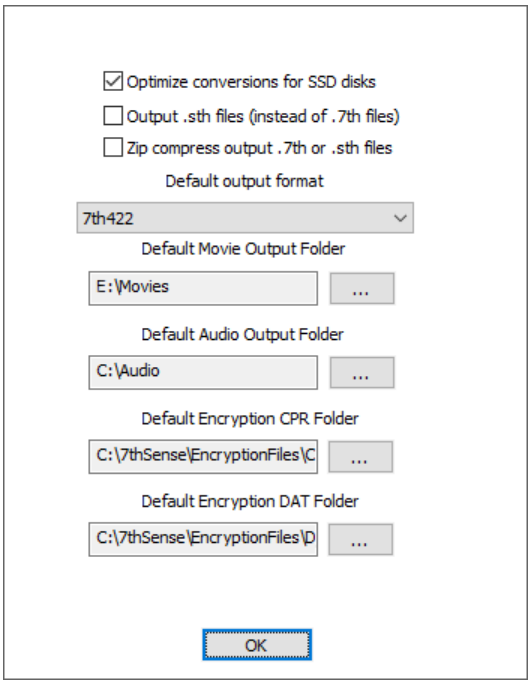
DFM Defaults

The first time DFM is launched, a defaults dialog will appear, as shown below. To revisit this dialog, see *Settings > Conversion Defaults*.

Most Delta media systems operate with a consistent file format and media location. The options selected will be the default selections from this point on for all new media added into DFM for extraction.



Optimize Conversions for SSD disks checkbox

Unchecked for **HDD storage**: movie frames are stored 10 per file
Checked for **SSD storage**: movie frames are stored individually – 1 frame per file

Output .sth files (instead of .7th)

Avoid the numeric file extension: for Nuke users.

Zip compress output .7th or .sth files

Apply internal colour-bit compression. This saves on file size, but will demand more CPU on playing.

Select the correct Movie drive

Delta servers: For optimal functionality, we recommend that movies are stored on your server's **E:** drive, whilst all other images, sounds etc. are stored on the C:\ drive. Users of DeltaOffline or working on a separate PC, may need movies to go to their local C:\ drive.

It is possible to override this for each independent media file in DFM on an individual file basis as necessary.

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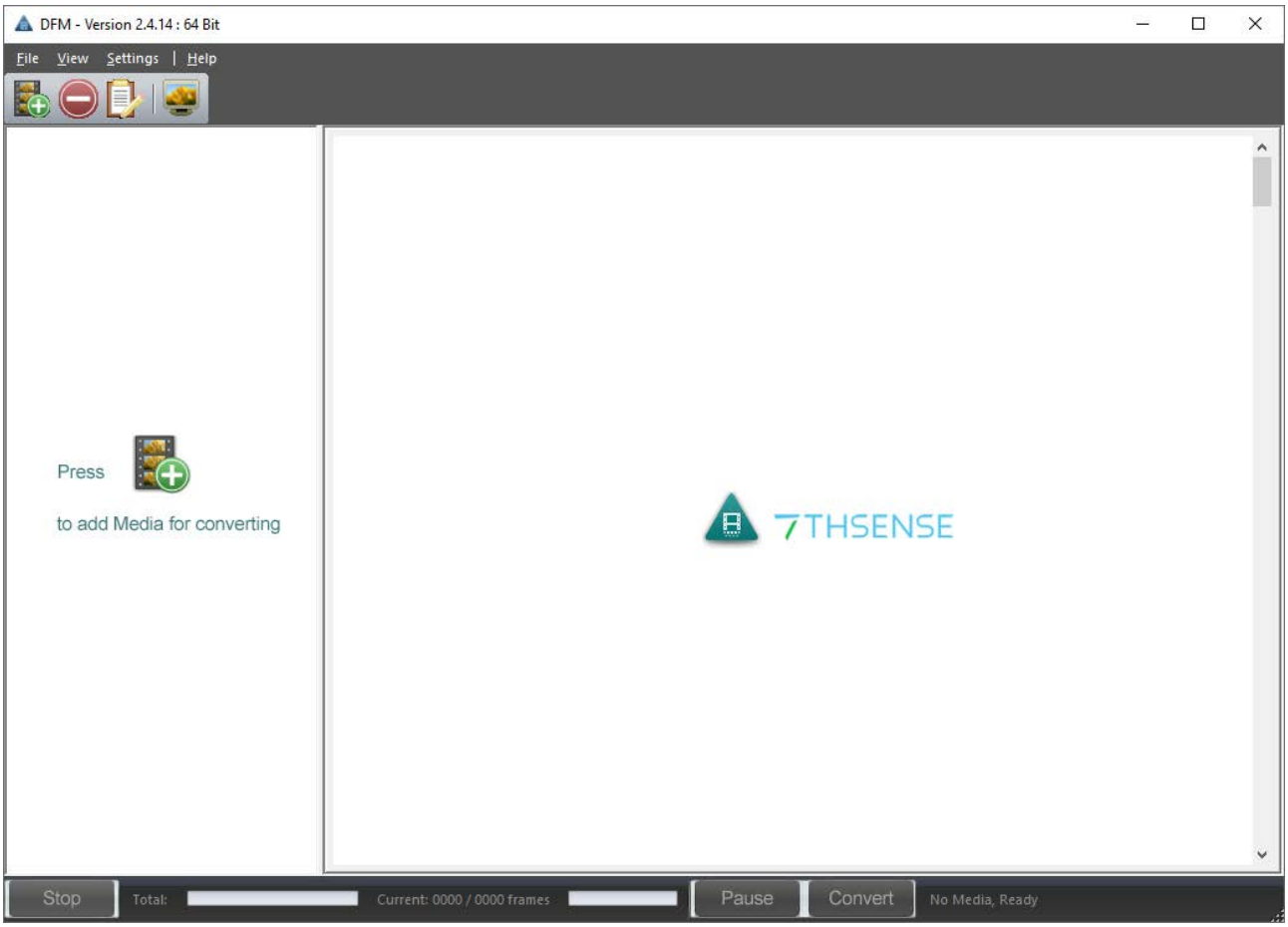
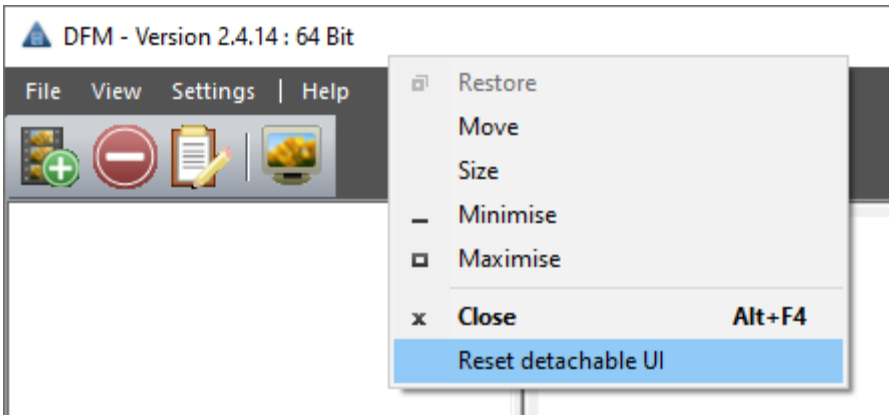
When you open DFM, the initial screen will look like this:



Toolbar

The toolbar is detachable to float or be redocked at the side, and reset from the Windows title bar:



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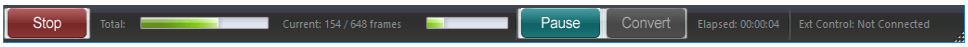
The buttons, in order: add media to the list, remove media from the list, view conversion log, and monitor frames during conversion.

Control bar



The control bar is shown here during conversion, showing progress, and offering Pause and Stop.

File Menu

The list of items to convert and their settings can be saved to a .DFM file, and reused.

New
Clear the current list and settings.

Open
Open a saved media list and settings file.

Save As
If the current list and settings are based on a saved .DFM file but edited, save the new list and settings.

File Extraction and Conversion

DFM can take movie files or sequences of images in a variety of formats and convert these to the 7TH, 7TH 420, 7TH 422, 7TH 444 proprietary file formats. These file formats feature various levels of compression allowing high-resolution movies to be streamed from disk in real-time: Movie images can be resized, cropped and scaled during this process if required.

DFM will also process audio files, whether contained within a movie file or in a separate audio file, such as an mp3 file. Audio is split out into separate mono files for each channel suitable for import into Delta media server.

If your computer has a codec to support the movie or audio files you want to convert, DFM can convert your files.

With DFM version 2 and beyond, batch processing is supported. Multiple files can be queued up ready for conversion.

> The process can take some time, depending on hardware capability and movie size.

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Extract a Movie

You can convert bitmap sequences or HapQ, MPG, AVI or WMV files to the 7TH (STH) file formats. Audio files, such as mp3 files are also supported. Follow these basic instructions; for more detail, see the sections on the [Basic Tab 17], [Advanced Tab 19] and [Audio 24].

- Add Media to Extract 11
- Extract Audio 12
- Selective Extraction and Conversion (Advanced Tab) 13
- Run conversion 14

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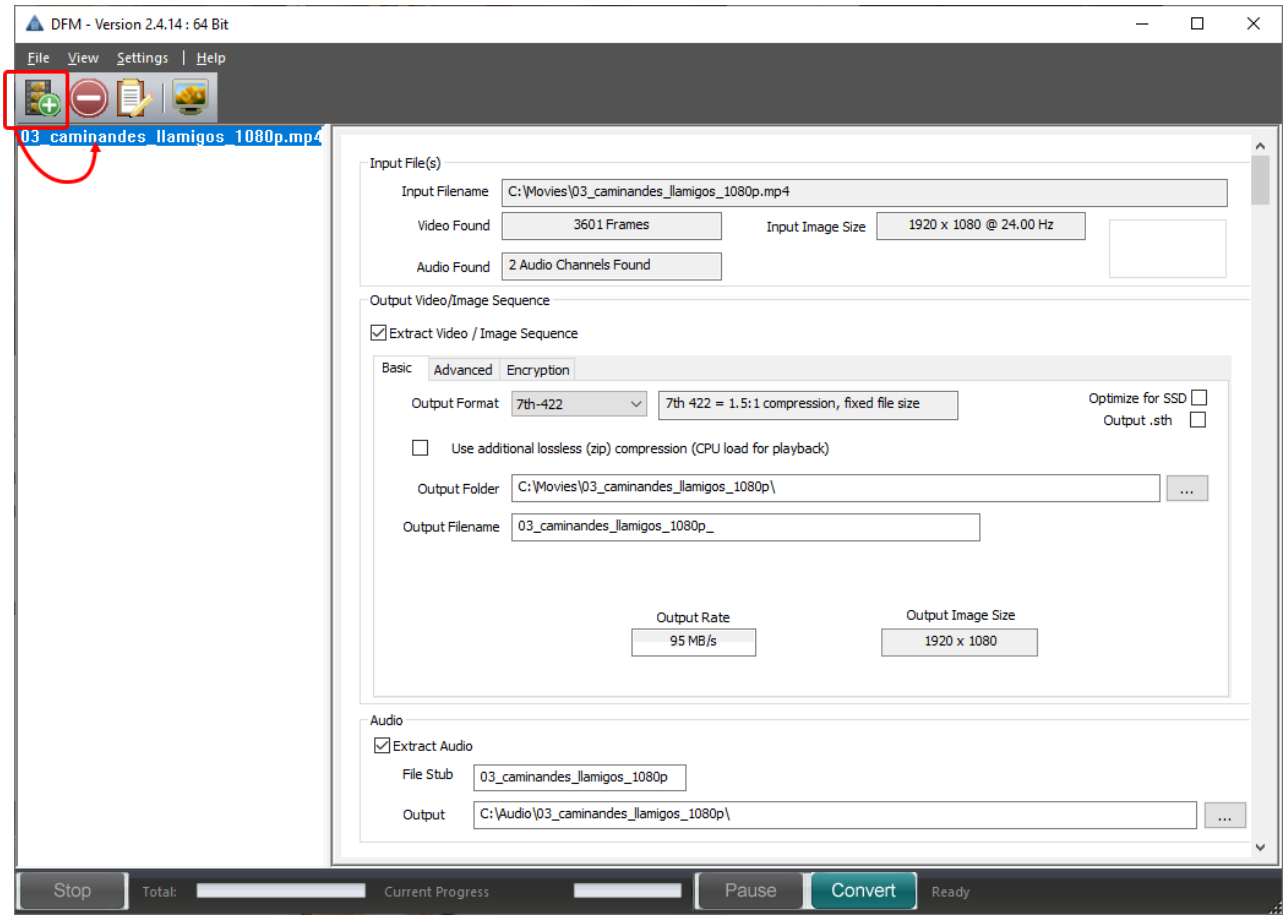
Add Media to Extract

Click the add media button on the toolbar to add input files (movies) to the queue. If selecting an image sequence, any file in the sequence can be selected.



The [Basic Video/Image] tab shows the selections that you made in the initial setup. Check and amend as necessary. If required, click to select to extract the video/image sequence from this file:

- Select your output format and check/uncheck **Optimize for SSD** (according to your storage device – all SSD-based servers should have this checked).
- Additional compression is available by selecting the zip option. This format is lossless, and reduces file size, but will increase CPU demand on playback.
- Tick **Output .sth** if you want this file extension (it is the same format as .7th).
- Update the output folder location if necessary. A new folder will be created if required.
- Update the output file name if required.
- Resolve any warnings.

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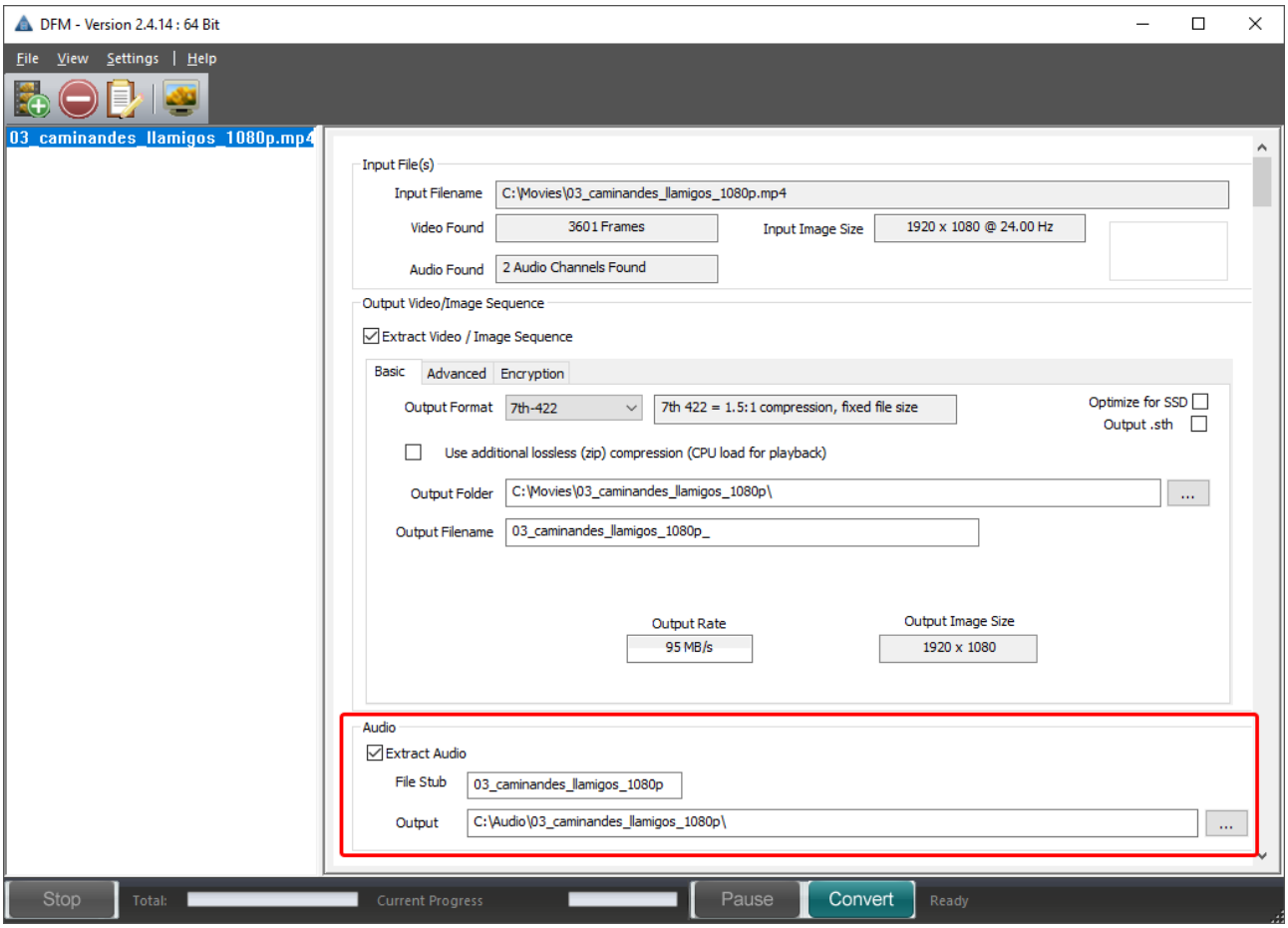
Extract Audio

If the file contains audio, select whether to extract audio from this file. Update the file stub name and output folder as required:



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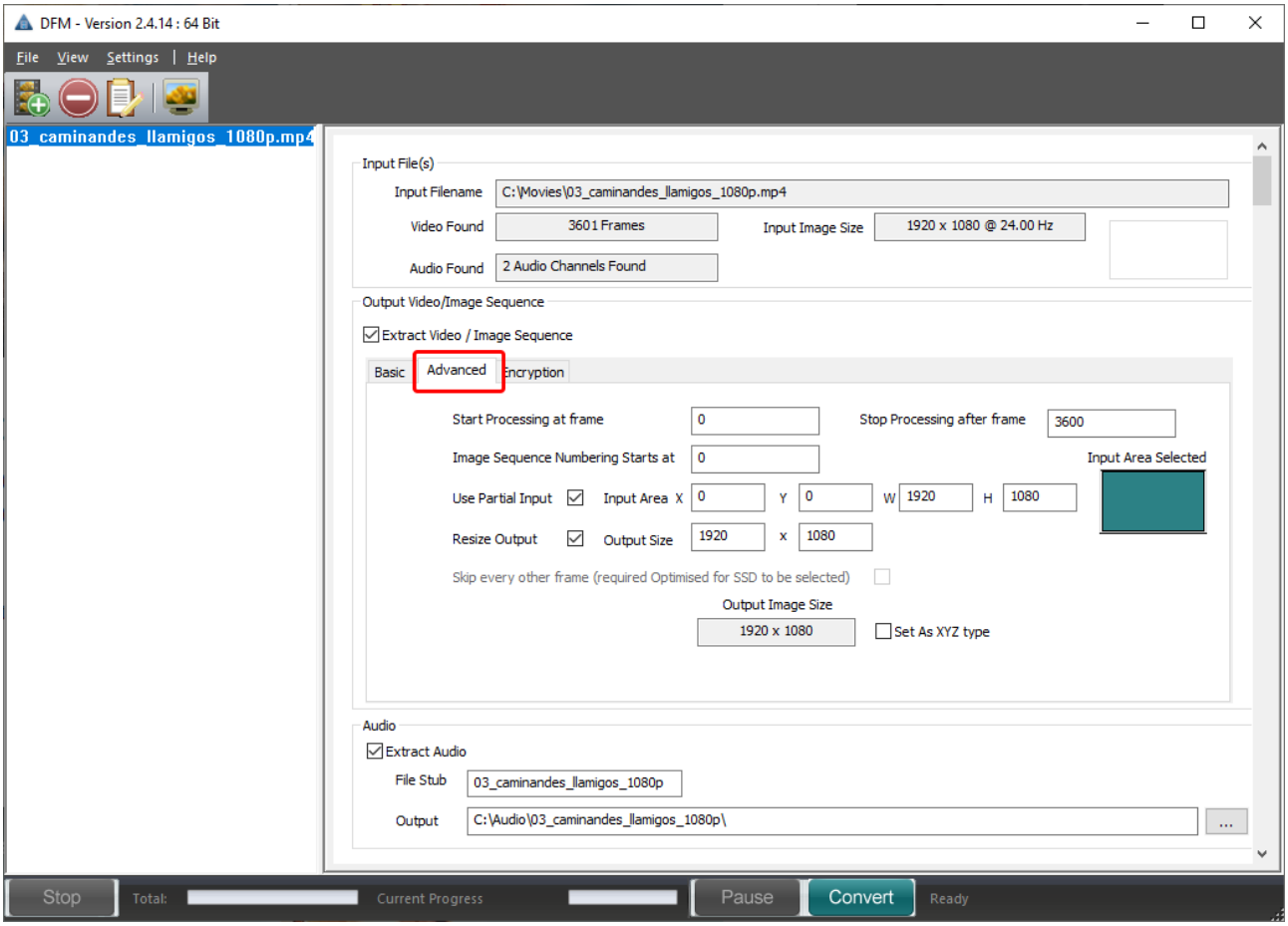
Selective Extraction and Conversion (Advanced Tab)

If extracting a video or image sequence, the advanced tab provides the ability to select a section of the image sequence to convert, select an area of the file to convert, and choose the output size of the file to convert to. It is also possible to select a range of input frames to convert and choose the output number to start at.

An option to skip every other frame is available for advanced users who are using SSD storage. This can be used for de-multiplexing stereo movies or halving the frame rate of images sequences.



Encryption

If converting a video or image sequence, encryption can be added to the output image sequence.

This feature is only available with a 7th Encryption licence.

➢ Encryption Option [21]

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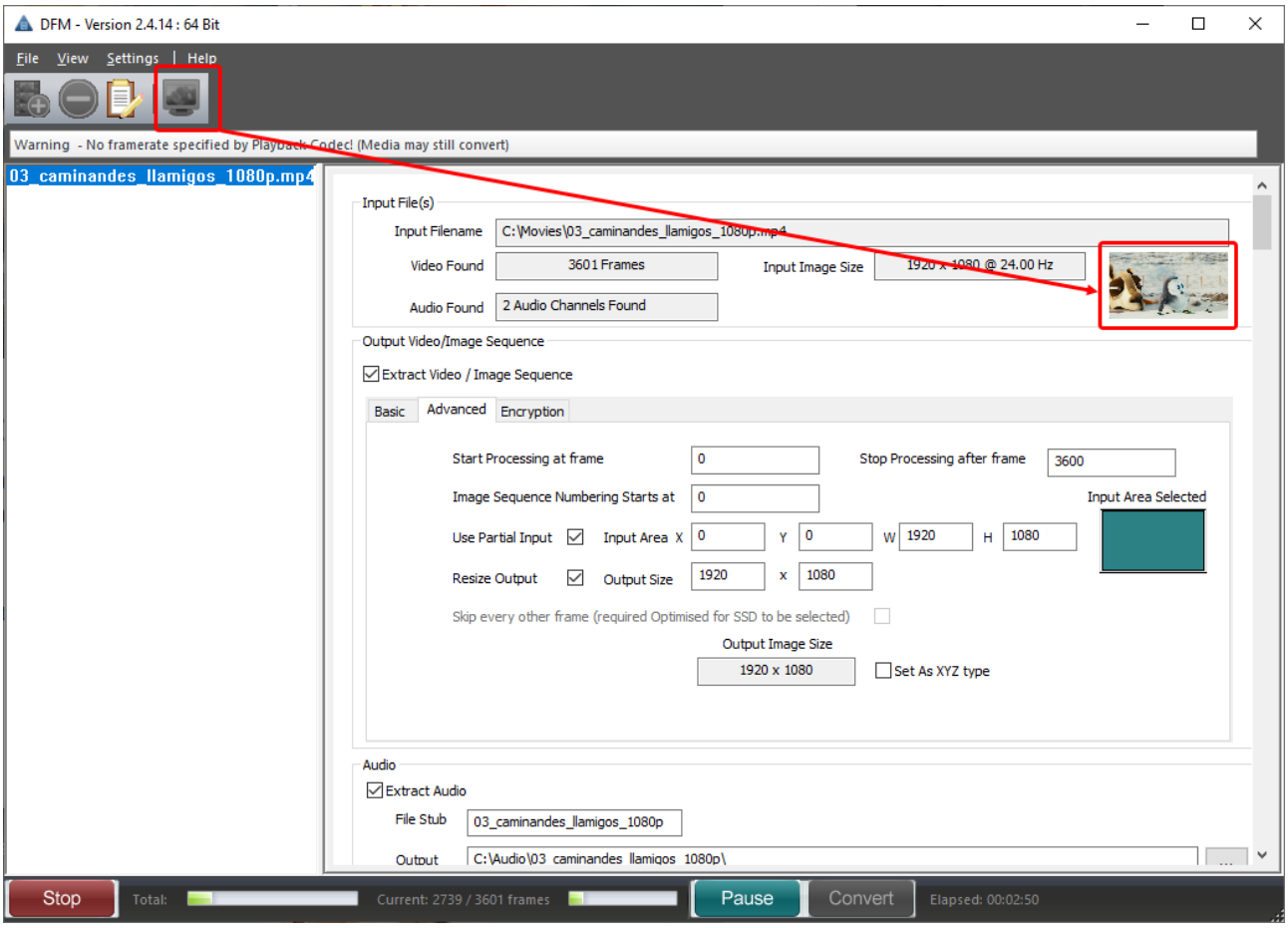
Run conversion

For a small preview of frames through the conversion process, click the monitor toolbar icon before converting:



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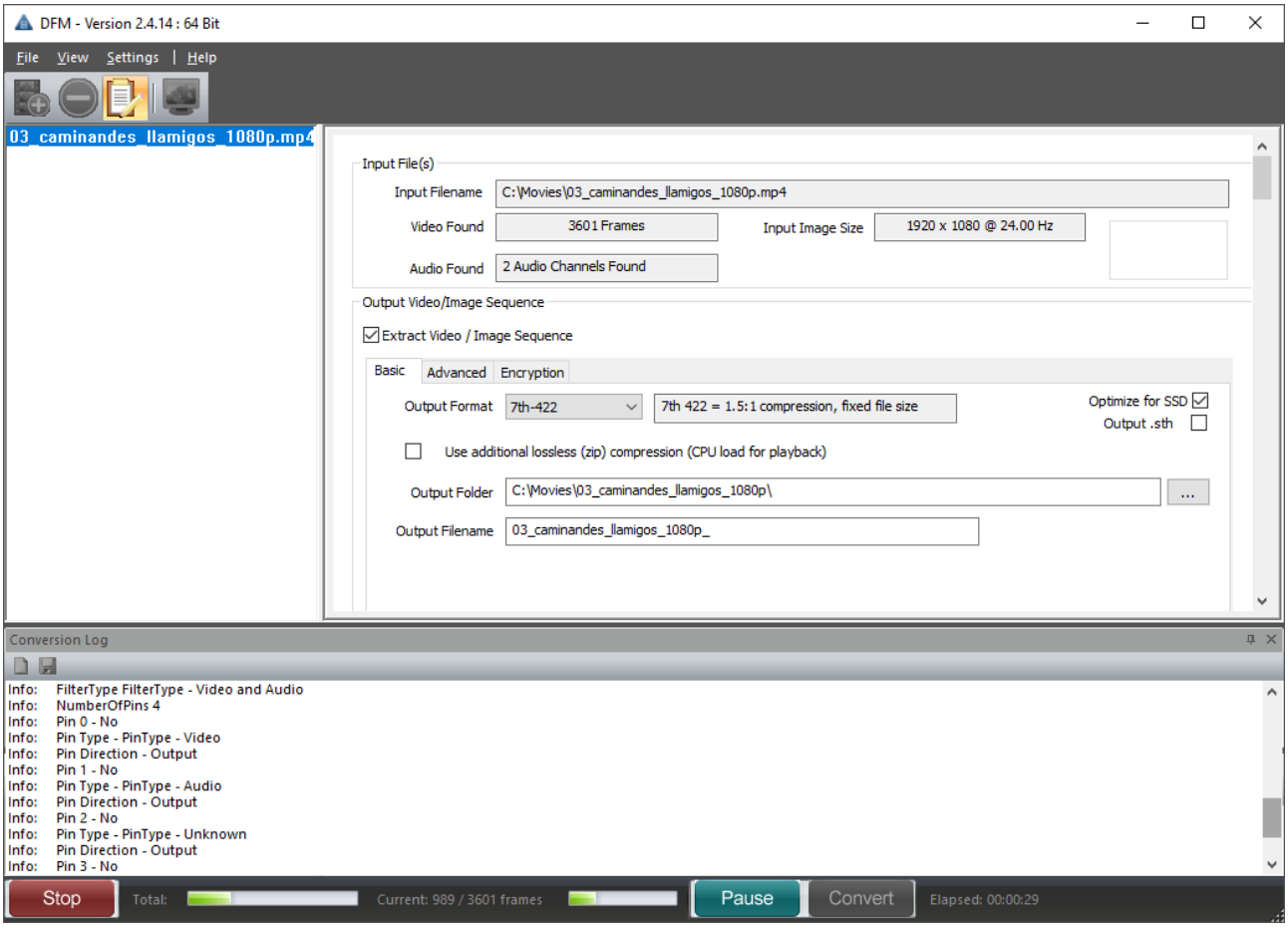
Add more media as required and click the green **Convert** button. The **Pause** and **Stop** buttons become active until conversion is complete. Progress bars for Total and Current track the progress of the conversion. Other controls are deactivated, but the log can be viewed.



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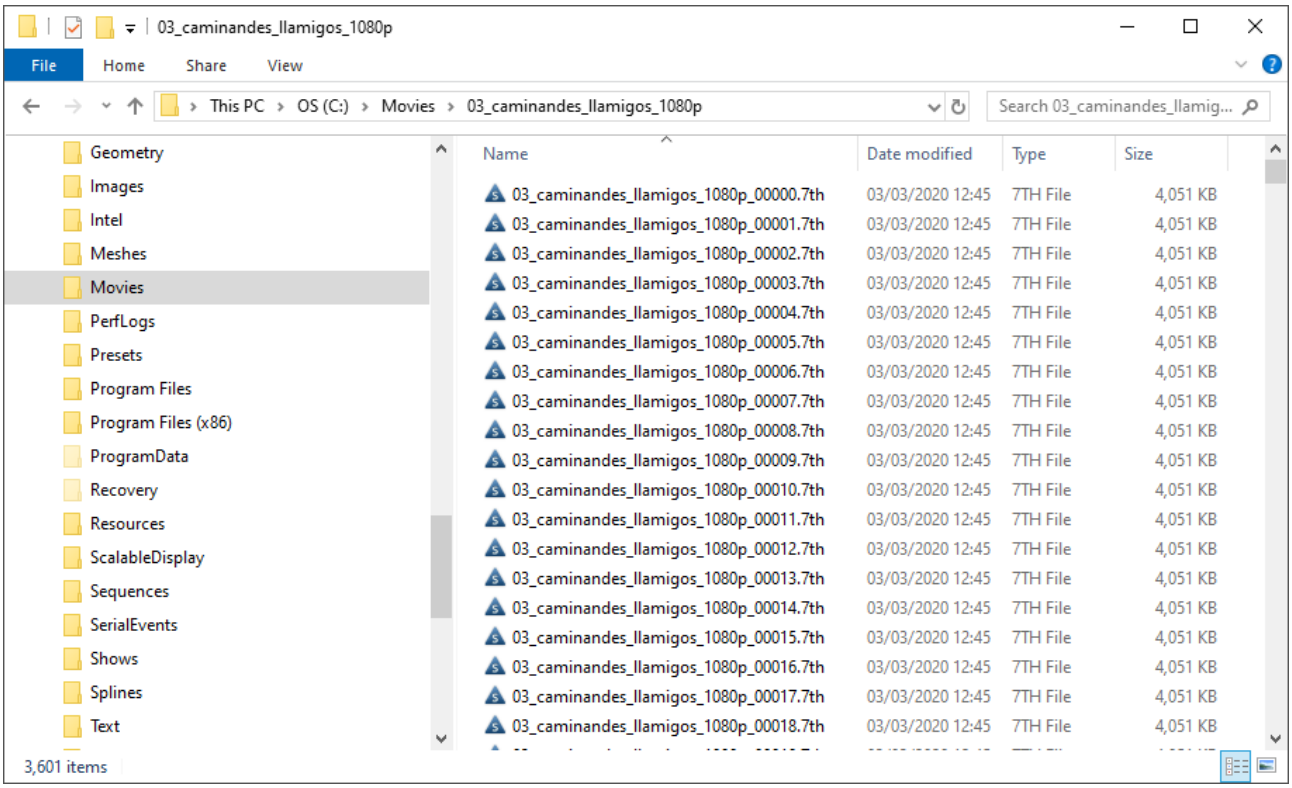
Once complete, the Convert button will be reactivated, whilst Stop and Pause buttons are greyed out. The image files will have been converted; check the destination movie drive to view the new file set.



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Basic Tab

Output Formats

Select the required output format from the drop-down list.

Basic File Format	Details
7th-YCoCg	3:1 Compression 7th files are a fixed file size for a specific resolution. This format is equivalent in quality to the best HapQ standard.
7th-420	2:1 Compression 7th-420 formats are equivalent to MPEG2 video standard, and compress the chrominance portions of the signal in both axes These files have the best compromise between image quality and hardware requirements.
7th-422	1.5:1 Compression 7th-422 formats are equivalent to broadcast video standard, and compress the chrominance portions of the signal. These files have the best compromise between image quality and hardware requirements.
7th-444	1:1 (No compression) This is perfect image quality, though largest file size.
7th-6to1	6:1 Compression – an old file type that is rarely used now. 7th files are a fixed file size for a specific resolution, and are the best solution for normal movie playback due to the file size reduction. These files are typically the smallest and require the least performance in the PC to play back.

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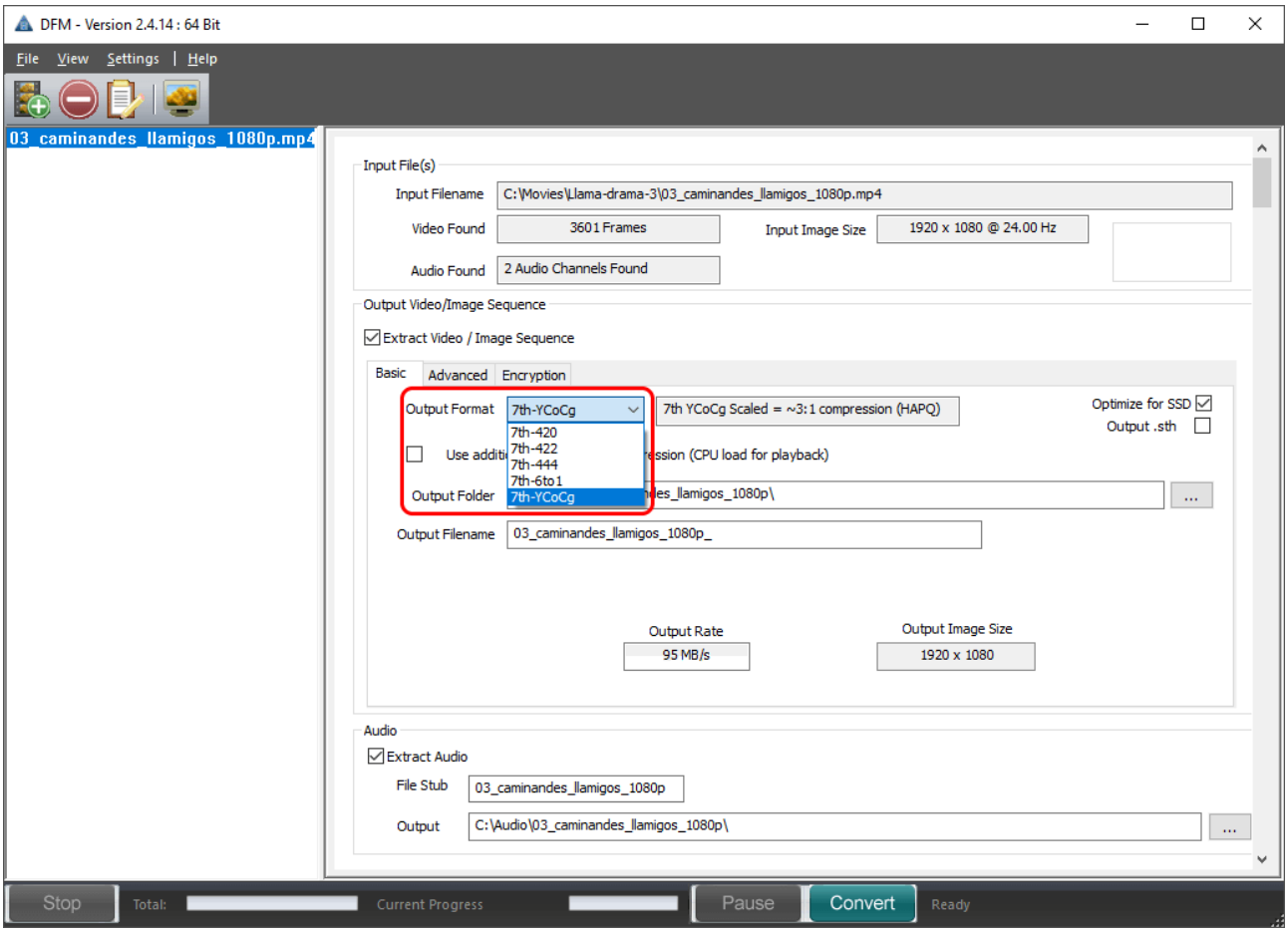

Output File Name

The output file name is chosen based on the first file found in the folder (03_caminandes_llamigos_1080p_ in the example above). You can edit this in the Basic tab to change the base name of the output files if you prefer. We recommend you leave a trailing underline for clarity.

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Advanced Tab

Image Sequence Numbering Starts at

Normally, the output 7TH files are numbered 0000.7TH, 0010.7TH, 0020.7TH etc. Files are output sequentially in 'Optimize for SSD' mode.

Start processing at frame

If you enter a frame number in here, DFM will ignore any frames previous to that number and start conversion from that frame.

Stop Processing after frame

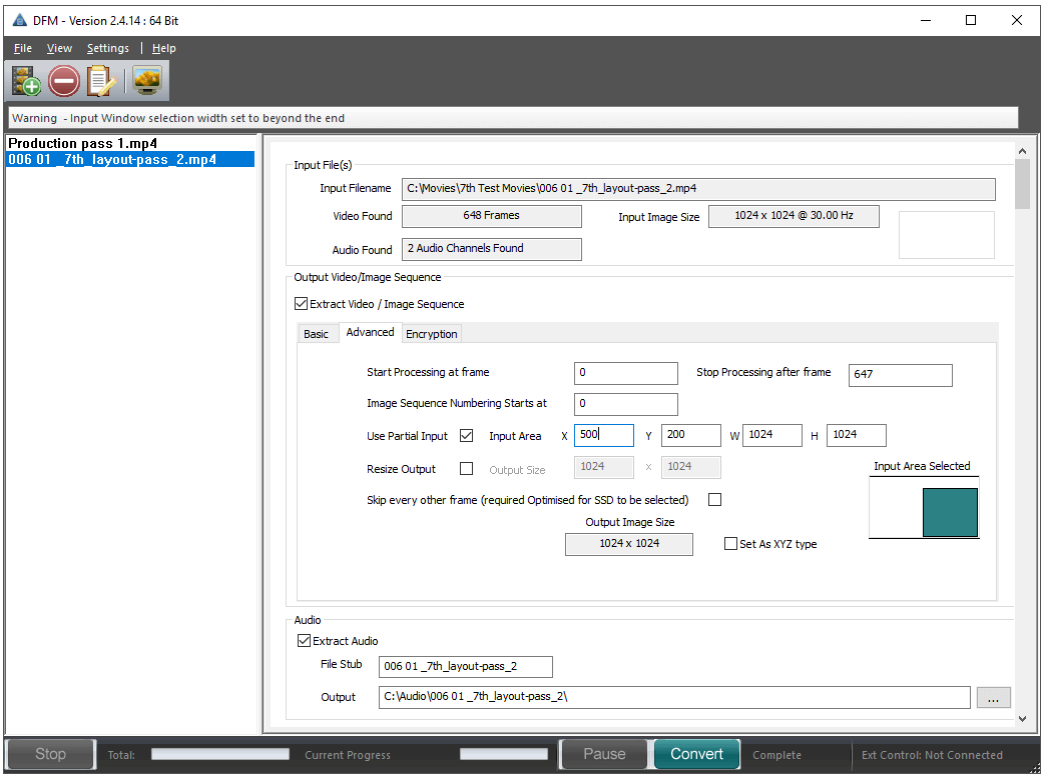
You can stop converting after the number of frames in this box to only convert a section of movie.

Use Partial Input

If you only want to output a section of the movie, select this option and type in the rectangle which you want to convert. With this option off, the whole input movie is output.

Input Area

If you check the User Partial Input checkbox you are able to edit the input area (X, Y, width and height of the images)



Resize Output

If checked, you can type in any size you wish into the Output Size boxes but the **output width** will always round up to the nearest multiple of 4: for example, if you type in a width of 2057, this

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will automatically reset to 2060. This minor scaling feature improves playback performance in Delta.

Output Size

The default nominal output width and height is shown here unless you check the Resize Output checkbox to amend (as above).

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Encryption Option

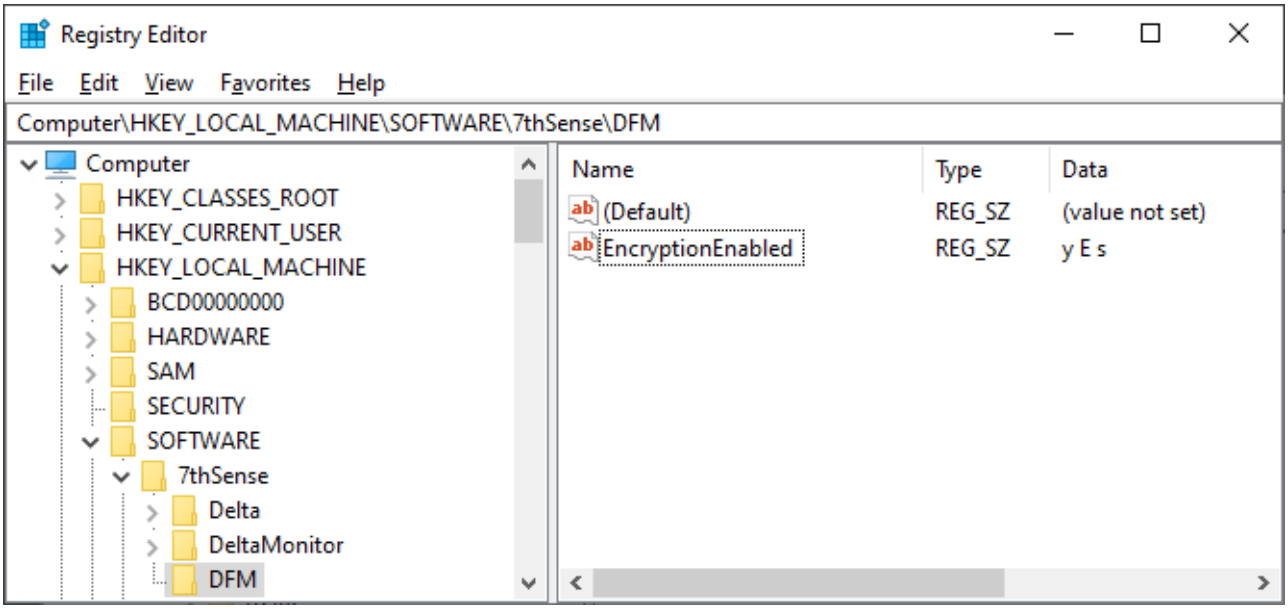
Delta Content Protection System (CPS) is a content encryption and decryption system whereby content imported onto a Delta Media Server can only be played back if certain criteria are met.

Delta CPS has the ability to allow the content creator to encrypt 7TH movie format files, selecting a playback date-range and/or venue codes, so that their content will only play back within the dates specified or the venue they choose.

Notes:

- Content protection playback requires use of an additional licence.
- To encrypt media requires a registry key setting.

Using Regedit, edit the value of HKEY_LOCAL_MACHINE > SOFTWARE > 7thSense > DFM > EncryptionEnabled key, to y E s:



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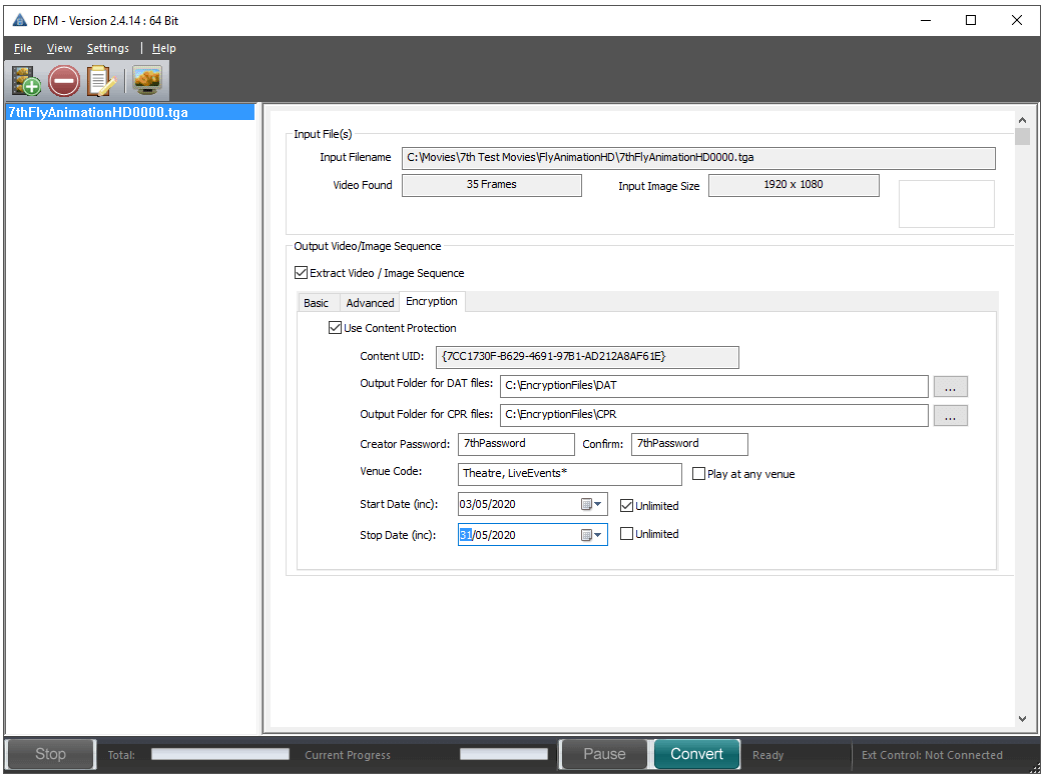
This enables, a third tab under Output:



In DFM, check ‘Use Content Protection’ to enable the settings.

DAT file location

This contains the playback security information and must accompany the media in order to decode it on the playback server.

CPR file location

The content creator can modify the movie protection details remotely, using the 7thSense Content Protection Manager application, to produce a revised DAT file that can be sent, extending dates or venues.

Password

Add a password and ensure that you note it securely.

Venue Code / any venue

To restrict play, uncheck ‘Play at any venue’ and enter a venue code or codes. In this example, the movie will play at a venue coded Theatre, and *also* at any venue with code beginning LiveEvents (e.g. LiveEvents1 and LiveEvents2 etc. – * is a character wildcard).

Date control

Uncheck ‘Unlimited’ to apply start and/or end dates.

For full details, see: *Delta Content Protection System*.

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Input File Warnings

Examples of warnings that you may get include:

Missing file(s) after frame N

If there are gaps in the numbering (e.g. file_100.jpg ,file_101.jpg, file_104.jpg) indicating missing files, you cannot convert them, as this would lead to a black frame at that point. Files must be sequential and present.

Note: you may get this error if viewing a Mac formatted drive which has a number of small files with the same name (prefixed with a dot) as the actual images.

Filenames have different digit size

If files are named File1_0001.jpg to File_0100.jpg but the 50th file had an extra digit (e.g. File_00050.jpg) it would cause problems: **all filenames must have the same number of fixed digits.**

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Audio

If a Windows movie file containing audio is loaded and the codecs are present to render the audio stream, the ‘Extract Audio’ area will be visible and available.

Audio is extracted into a set of WAV files (one for each channel) and placed into an ‘Audio’ sub-directory of the specified output directory.

Suffixes applied for the channels (up to 8) are as follows:

_SUB	subwoofer
_RSIDE	right side
_RS	right surround
_R	right
_LSIDE	left side
_LS	left surround
_L	left
_C	centre

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External Control

DFM can be controlled remotely via Ethernet, normally using a telnet interface on port 33, although this is configurable within DFM: *Settings > External Control*.

To configure DFM, select *Settings > External Control* and type in the port over which you wish to communicate with DFM.

The full range of file conversion steps detailed in the File Convert section above is available through external control via these commands:

LOAD "fullpath"	Load the DFM files in this path
INPUTFILE "fullpath"	Set the input file for a single file movie
INPUTFOLDER "fullpath"	Set the path to find image sequence files
INPUTFILETYPE type	jpg, tif, tga, dds, bmp, png
OUTPUTFOLDER "fullpath"	Set the output path for converted files
OUTPUTFILETYPE type	7th (currently)
OUTPUTFILENAME	Override the automatic output filename
INPUTIMAGESIZE X Y W H / NATIVE	Specify which part of the image to use, or use the whole image (default) by choosing Native
OUTPUTIMAGESIZE W H	Override the automatic output image size
OUTPUTSTARTSAT frame	The output file numbering starts with this number (has to be divisible by 10)
STOPAFTERFRAME frame	Stop converting after this frame number
CONVERT	Start the conversion process
CANCEL	Cancel the conversion process
STATUS	Return DFM status
SHORTSTATUS	Return short DFM status : canconvert frame framecount mode width height skipexisting
WARNINGS	Return any warnings
TIMEDSTATUS Y / N	When Y, output the current frame and the total frame count after every 10 frames.
QUIT	Quit the application

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QUITAFTERCONVERT	Quit the application once the current conversion has ended.
MINIMIZE	Minimize dialog and playback window
RESTORE	Restore dialog and playback window
HELP	This help information

The various commands are not case sensitive, and are actioned by Carriage Return (character 13). The strings OK or BAD are returned after each command indicating syntax success or failure.

A typical sequence would be:

INPUTFOLDER "c:\mymoviefolder\beach movie"
OUTPUTFOLDER "c:\mymoviefolder\beach movie\output"
INPUTFILETYPE jpg

You can now see if there were files found using STATUS – this returns full status information such as:

INPUT:	c:\mymoviefolder\beach movie*.JPG
OUTPUT:	c:\mymoviefolder\beach movie\output*.7th
FRAME:	0
FILECOUNT:	198
INPUTSIZE:	0 0 512 768
OUTPUTSIZE:	1024 x 768
DEINTERLACE:	Off
MODE:	Stopped
CANCONVERT:	Yes
SKIPEXISTING:	No
QUITAFTERCONVERT:	No

Note the CANCONVERT flag: if this is No, then it could be no files were found (**FILECOUNT** will be 0) or there are problems with the files found. Check this by sending **WARNINGS** you get back (for example):

> Files 'Stargaze_00014.jpg' and 'Stargaze_0002.jpg' have different digit size!

or

> Missing file(s) after frame 14 !

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Correct these problems, and then send **REFRESH** to update the status information.

You can set the **OUTPUTFILENAME** which overrides the one chosen by DFM, but be aware that any of the other commands causes this to be reset to the automatic one, so issue this command last before sending **CONVERT**.

While conversion is progressing, you can check it by requesting STATUS to see the current frame increasing, or request **SHORTSTATUS**, which returns a string such as this: **1 0 198 0 1024 768 0**

These numbers represent these facts:

Digit	Description	
1	Canconvert	0 = No, 1 = Yes
2	Frame	Current frame number
3	Framecount	Number of files found
4	Mode	0 = Stopped, 1 = Converting
5	Width	Output image width
6	Height	Output image height

You can send CANCEL at any time to stop conversion.

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Command-Line Interface

In a similar fashion to telnet, DFM can be operated via a command line. To run DFM from the command line, specify the file name (i.e. DFM.exe), followed by some combination of the following flags and parameters:

/if "fullpath"	Set the path to find image sequence files – this should be the full path to one of the image sequence files*
/in "fullpath"	Full path of windows movie file (mpg, wmv, etc.)*
/of "fullpath"	Set the output path for converted files*
/oft type	7th (currently)
/on "filename"	Override the automatic output filename
/inputimage X Y W H	Specify which part of the image to use.
/ossd	Optimise for SSD
/outsize W H	Override the automatic output image size
/outstart frame	The output file numbering starts with this number (must be divisible by 10)
/stopafter frame	Stop converting after this frame number

* Denotes a required parameter

For example:

```
DFM /if C:\Frames\Source /ext jpg /of C:\Movies\Test /on crosshatch /oft 7th-
444 /outstart 100 /stopafter 1000 /inputimage 0 0 10 10 /outsize 768 768
```

This command line specifies the following:

All JPG files (matching the name of the first JPG found) from C:\Frames\Source will be converted into 7TH-444 format and placed into C:\Movies\Test\crosshatch_xxxxx.7th files (where xxxxx is the output number).

Only the top left 10 pixel square will be used from each input frame and the frame written to the output will be blown up to 768 × 768.

Output files will start at crosshatch_00100.7th, followed by crosshatch_00110.7th, crosshatch_00120.7th, etc., until either all frames have been written, or the first 1000.

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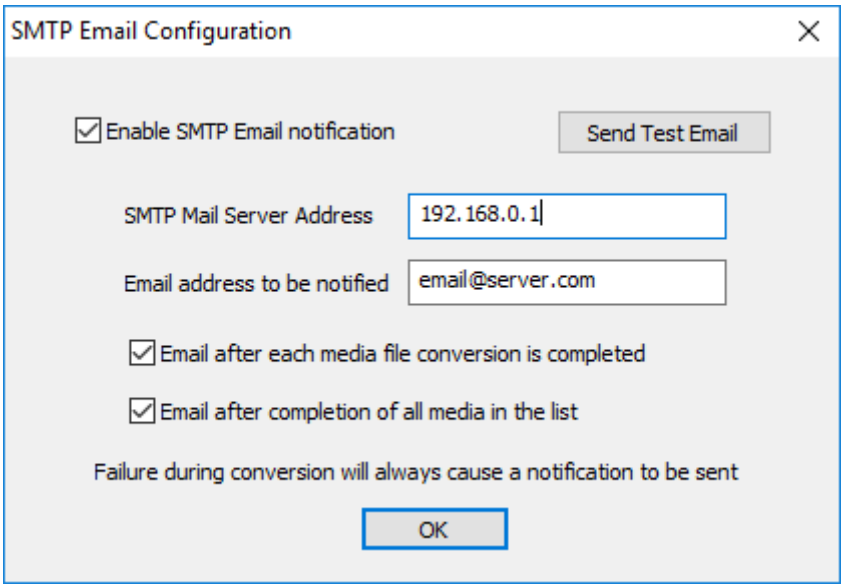
SMTP Email

DFM can be set to send email notifications on completion of file conversions: *Settings > SMTP Configuration*.



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Codecs

DFM2 uses Direct Show Filters for all its conversions. The following formats are supported natively.

File formats:	
MXF	MPEG-PS
MOV	MPEG-TS
MP4	GXF
LXF	FLV
ASF	AVI
WMV	MKV
DV	WebM

This includes unencrypted DCP packages with MXFs and JPEG 2000 streams.

Audio Codecs:	Video Codecs:	Image Sequence Formats
AAC	DVCPRO	DPX (10,12,16 bit per pixel)
MP2	M-JPEG	TGA (24 bit and 32 bit per pixel)
MP3	MPEG-1	PNG
WMA	MPEG-2	BMP
Vorbis	MPEG-4	GIF
FLAC	H.264	JPG
	AVC	TIFF (8, 16 bit per pixel)
	VC-1	
	VP8	
	VP9	
	HuffYUV	
	DNxHD	
	ProRes	
	H.265	

If the format of your media is not one of the above, then please make sure the correct direct show codecs are installed, and that they are capable of decoding the media you wish to convert.

Windows comes with a variety of codecs as standard for converting files such as WMV, AVI.

DFM Installs the codec pack ‘FFDShow’. This extends DFMs capabilities to allow conversion of XviD, MPEG-1, MPEG-2, MPEG-4, H.263, MJPEG.

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Document Information

Date	Document edition	Software version	Revision Details	Author/Editor
July 2011	1	DFM 2.0	New release	
September 2015	2	DFM 2.4.2.8: 64	Updated screenshots and guidance to newer software version	Helen Ward
July 2017	3	DFM 2.4.8	Edited and updated	Andie Davidson
April 2018	4	DFM 2.4.13	Edited command line options	Andie Davidson
February 2020	5	DFM 2.4.14	Improved menu management and bug fixes	Andie Davidson
June 2021	6	DFM 2.4.14	Encryption registry key added	Andie Davidson

Windows Registry Settings

This document is supplied for informational purposes only. Any modification to Windows Registry values that are not exposed via the DeltaServer or DeltaGUI application interfaces – or otherwise advised by 7thSense personnel – may result in performance degradation and/or complete instability of the products. Any attempt to engage 7thSense for support in troubleshooting may result in the reversal of all Registry settings to the factory default or last known good 7thSense-approved configuration. **The customer assumes all risk when manually editing any Windows Registry values on any 7thSense product.**

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