



FlipFactory®

PROCESSING DPX FILES IN FLIPFACTORY WORKFLOWS

Introduction2

Processing DPX Files in FlipFactory.....2

Manually Submitting DPX Jobs3

Creating a Custom App to Submit DPX Jobs5

Copyright and Trademark Notice.....6

Limited Warranty and Disclaimers6

This
App Note
applies to
versions
5.1 & later



Introduction

Digital Picture Exchange (DPX) Version 2.0 (ANSI/SMPTE standard 268M-2003) is a common file format for digital intermediate and visual effects work. DPX file format is most commonly used to represent the density of each color channel of a scanned negative or rendered frame in a 10-bit log format; the gamma of the original camera negative is preserved when processed by a film scanner.

Telestream recognizes the importance of DPX in the film industry, and provides FlipFactory support for DPX as a supported media file format in most common DPX format variants.

Note: *When implementing DPX ingest workflows, Telestream recommends that you provide Customer Service (support@telestream.net) several DPX frames to verify that the frames are in a supported format. The DPX specification permits a wide variety of formats; FlipFactory supports a subset. Customer Service will analyze your frames and inform you if FlipFactory can process the format. If FlipFactory can't process the format, Customer Service will provide recommendations on how you might proceed.*

Processing DPX Files in FlipFactory

Full-length features that have been converted to DPX often top 200,000 individual frame files. Individual frame files can potentially exceed 50MB in size, resulting in enormous amounts of data. The enormous volume of data and individual files requires a very different approach to storing, moving, and processing to accomplish transcoding effectively.

Common video formats are supported. DPX provides flexibility in storing color and other information for exchange between production facilities. Multiple forms of packing and alignment are possible. FlipFactory supports 10 bit YCrYCb using both types of packing. FlipFactory supports 10 bit RGB with pack to fill. FlipFactory supports all common resolution of frame in these formats (for example, 720x480 up to and including 4K x 4K). FlipFactory also supports 10 bit log files (a single component).

Note: *DPX frames can include embedded audio, but FlipFactory does not support it. The FlipFactory DPX decoder can read an AIFC file and associate it with a video sequence. The file must have the same basename as the video files and must be in the same directory.*

DPX file access is almost always via UNC paths, or via SAN systems. The SAN directory must be mounted on the FlipFactory server. FlipFactory provides processing 10 bit YCrCb or RGB DPX sequences, as well as processing log (single key) based DPX sequences.

You can create factories that process DPX by translating it to RGB24 video, for re-encoding into media of any supported FlipFactory format and media essence.

You can submit DPX jobs manually, or you can write your own application to submit jobs, using the FlipFactory SDK. FlipFactory does not provide automated job submission via a monitor, because all DPX jobs require parametric data that can not be obtained from the file itself to process the job. Using the SDK to implement your own job submission application is usually the most effective way to integrate FlipFactory DPX processing into video workflows in your environment.

Manually Submitting DPX Jobs

To submit DPX media manually to a FlipFactory factory you've set up to process DPX media and encode it per your workflow and output requirements, follow these steps.

Note: For details on manually submitting jobs, see the *FlipFactory User's Guide*.

1. In the FlipFactory console, click Submit Job to display the Submit Job window.

Figure 1. Use the Submit Job window to configure and submit DPX jobs.



2. Complete the first general (Priority, Factory, Subject, Description, and Schedule) settings.
3. **Source.** Select Stream and select Cineon/DPX Profile from the dropdown menu. This connection is not strictly speaking, a stream. Rather, it is a *pipe*, which ingests succeeding frame files from the server, in a temporal, stream-oriented fashion, when the job is submitted. *Do NOT use this Browse button before performing the next step.*
4. **Domain/Workgroup Name.** Enter the name of the domain or workgroup where the SAN is located.
5. **Default Path.** Click Browse to navigate to specify the server and path to the DPX files.

6. **Source File.** In the text field directly below Source (Stream), Telestream recommends that you *manually* enter the first file name, rather than clicking the Browse button under Source. If you click Browse and open the folder with thousands (or more) files, the volume may overwhelm the user interface.

The best method is to select the directory path (using the Default Path Browse button) and then manually enter the name of the first DPX file. For example, enter *myclip.00001.dpx* in the top window.

7. **Utilize LocalPath.** Check to indicate that you are going to cut and paste (or manually enter) a local path instead of browsing and selecting a file. The DPX decoder publishes the fact that it can accept jobs (files) by default from a UNC path. As a result of this, when you are browsing for a file you can only select a network path. In certain cases, because of how some SAN mounts are implemented, the files display on a locally-mounted drive.
8. **Default Frame Rate.** Select the frame rate at which the DPX frames should be presented to the decoder. This is not related to the frame rate of the output media you are creating. The output frame rate is specified in the encoder (product codec) in the factory.
9. **Enable Metadata Parameters.** Check to display metadata parameters you can supply with this job.
10. **Specify Start and Duration.** If you want all frames in this directory processed, do not check. If you want a portion of the frames processed, check this option and enter values in the Starting Frame Index and Duration fields.
11. **Starting Frame Index.** Enter the number (0 index) of the first frame file you want processed for this job.
12. **Duration.** Enter the duration of the clip/movie, in frames.

For example if you specify a starting frame index of 15, and a duration value of 23,999 to delineate a subset of DPX frames, only frames 151 through 24,000 are processed.

Include LUT (Look Up Table). Check to include your own, custom lookup table. A LUT table allows for custom YCrCb to RGB transformations to configure optimized conversion matrices (a specific color conversion formula) for your specific content. Telestream has sample LUT tables that illustrate mapping and formatting, which you can obtain from Telestream Customer Service.

13. If Include LUT is checked, click Browse and navigate to and select the lookup table file you want to use when converting from the original file color scheme to 24-bit RGB values.
14. **Enable Transcode While Receiving.** Check to perform decoding and re-encoding while the stream is receiving frame file after frame file. The DPX decoder renders all frames in a folder and waits for additional frames to arrive. This is useful for applications which are generating a large number of frames and you want to transcode frames as they are written to the folder.

Note: *To take advantage of Transcode While Receiving, you must check Specify Start and Duration and enter values in Starting Frame Index and Duration.*

15. Finally, complete the remaining general parameters (Content Name, Flip Engine, and Store).
16. Click Flip It! to submit the job to the specified factory for processing.

Creating a Custom App to Submit DPX Jobs

If you want to automate DPX job submission to FlipFactory, you can use the FlipFactory SDK to create a custom DPX job submission application.

Note: *The FlipFactory SDK is available at no charge from Telestream. To obtain the FlipFactory SDK, contact the SDK Support Team: sdk@telestream.net.*

You can write your own job submit application in any language or system that can create an XML message and submit it to FlipFactory. Submitting a FlipFactory job requires collecting information about the DPX files and other parameters, the factory, and then formatting an MDML message (a specific format of XML for FlipFactory) and sending it to the FlipServer.

You can write the application to submit jobs manually, or you can trigger the application to submit jobs based on other systems, creating your own DPX automatic submission component.

Obtaining a Sample DPX MDML Message

To obtain a sample MDML message that is used to submit DPX jobs, follow these steps:

1. Stop the FlipEngine on the FlipFactory Server.
2. Open Regedit (Run > CMD > Regedit)
3. Go to `HKEY_LOCAL_MACHINE\Software\JavaSoft\prefs\net\telestream\flip\engine\monitor`
4. Create a new string value and name it `debug`.
5. Add a path and file value to the key. For example:

<code>debug</code>	<code>REG_SZ</code>	<code>c:\monitor.xml</code>
--------------------	---------------------	-----------------------------
6. Restart the FlipEngine to pick up the new registry key.

Now, each job you submit to FlipFactory causes the MDML message to be saved as `C:\monitor.xml`. (The XML file is overwritten with each successive job you submit).

To generate one or more example MDML messages, manually submit DPX jobs with various parameters checked and then copy the XML file to another location. For a comprehensive example, select all options. Submit the job, and the XML file with the contents of the job are saved. This file becomes you template from which you can tailor specific behavior for DPX jobs you want to submit from your own application.

Writing your DPX Job Submission Application

Use the FlipFactory SDK Developer Reference (Chapter 2, Submit) to learn about the format of MDML messages you need to construct, and the sample MDML messages from DPX job submissions to learn about the specific elements of a DPX job.

After constructing the proper MDML message, you can submit it to FlipFactory using various methods (HTTP, Java RMI, SQL, or Email).

Copyright and Trademark Notice

©2008 Telestream, Inc. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, altered, or translated into any languages without written permission of Telestream, Inc. Information and specifications in this document are subject to change without notice and do not represent a commitment on the part of Telestream.

Telestream, FlipFactory, GraphicsFactory, and ClipExpress are registered trademarks of Telestream, Inc. ClipMail, FlipFactory, FlipFactory Publish, FlipFactory Pro, TrafficManager, Telestream MAP, MAPx, MAPone, FlipScan, and HyperLaunch are trademarks of Telestream, Inc.

All other brand, product, and company names are the property of their respective owners and are used only for identification purposes.

Limited Warranty and Disclaimers

Telestream, Inc. warrants to you, as the original licensee only, that the software you licensed will perform as stated below for a period of one (1) year from the date of purchase of the software by you:

The software will operate in substantial conformance with its specifications as set forth in the applicable product user's guide/published specifications/product description. Telestream does not warrant that operation of the software will be uninterrupted or error-free, will meet your requirements, or that software errors will be corrected. Telestream's sole liability under Section 1 of this Limited Warranty shall be to use reasonable commercial efforts to bring the Software's performance into substantial conformance with the specifications in the applicable product user's guide/ published specifications/product description.

FlipFactory has been designed for professionals skilled in the art of digital media transformation and workflow automation, to facilitate the automation of complex media operations and workflow that require a multitude of input and output media formats, delivery to numerous types of media devices and file systems, and notification of media systems including broadcast automation systems and media asset management systems.

The FlipFactory architecture and user interface is designed to provide maximum flexibility in the setup and configuration of these complex media transformations and workflow. In providing this high degree of flexibility, it is possible for media transformation and workflow processes to be configured that are impractical, likely to result in unexpected or unintended results, or beyond the limits of FlipFactory to perform satisfactorily. Additionally, FlipFactory may be executed on a platform that lacks the performance or capacity to perform the media transformations and workflow you've configured, which is your responsibility to specify. Telestream has chosen to implement FlipFactory to provide the greatest flexibility without limiting its functionality to only those transformations and workflow that are known with certainty to be within its performance capabilities, including those limits imposed by the platform upon which you have installed FlipFactory.

Therefore, you acknowledge that you may create transformations and workflow that are impractical or beyond your FlipFactory installation's limits, and Telestream does not warrant that each transformation or workflow you specify or use will complete without error.

Limitations of Warranties. EXCEPT AS EXPRESSLY SET FORTH IN SECTION 1 ABOVE, NO OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE WITH RESPECT TO THE SOFTWARE, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT OF THIRD PARTY RIGHTS AND THOSE ARISING FROM A COURSE OF DEALING OR USAGE OF TRADE. NO WARRANTY IS MADE THAT USE OF THE SOFTWARE WILL BE ERROR FREE OR UNINTERRUPTED, THAT ANY ERRORS OR DEFECTS IN THE LICENSED MATERIALS WILL BE CORRECTED, OR THAT THE SOFTWARE'S FUNCTIONALITY WILL MEET YOUR REQUIREMENTS.

December 1, 2008

P/N 74-0154-00