WRAPTOR™

DCP SOFTWARE AND SERVICE 3.0

User Guide

Version 3.0

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QuVIS Technologies, Inc.
900 SW 39th Street
Suite N
Topeka, Kansas 66609-1247
USA
785-272-3656

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Revision Status

Version	Revision Date	Description
1.0	September 15, 2008	Software Release version 1.0
1.3	April 15, 2011	Software Release version 1.3
2.0	April 9, 2012	Software Release version 2.0
3.0	May 15, 2013	Software Release version 3.0

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FINDING INFORMATION

About this manual

This user manual describes the DCP Mastering process using the Wraptor plug-in for Compressor and related DCP operations.

IMPORTANT! This user manual is not intended to cover operational topics also covered in other Final Cut Studio 2 documentation including the Compressor 3 User Manual. This manual assumes the reader of this manual has an operational understanding of Compressor and other Final Cut Studio or Mac OS X applications as applicable.

How this manual is organized

This manual is organized around the tasks required to create and distribute a DCI JPEG2000 Digital Cinema Package (DCP). The following describes the chapters in this manual:

Chapter 1 – Introduction to Wraptor and DCP Mastering – Provides a general introduction to the Wraptor plug-in, Digital Cinema and DCP mastering.

Chapter 2 – DCP Mastering – This chapter discusses the Wraptor DCP workflow and the task of creating an industry-compatible and distribution-ready DCP.

Chapter 3 – DCP Distribution – This chapter discusses the methods and means for distributing a DCP.

Getting more information

Wraptor product information is also available on the QuVIS web site - http://www.quvis.com.

The current user manuals and product documentation are available to download on the QuVIS Web site – http://www.quvis.com/support/.

QuVIS Product Support

Technical assistance is available by email, the World Wide Web (Internet), or by phone or fax.

Web Technical Support

To access additional product information on the Internet; visit the product support Web page on the QuVIS Web site.

World Wide Web: http://www.quvis.com/support/
Wraptor Software Support Email Address: support@quvis.com

Phone Support

Telephone support is available. Support technicians are available during normal business hours (Monday – Friday, 9am – 5pm CST).

United States (785) 272-3656

CHAPTER 1 – INTRODUCTION TO WRAPTOR AND DCP MASTERING

Topics in this chapter include:

Wraptor Introduction

Thank you for your purchase!
Wraptor™ is a software plug-in for Apple® Compressor that adds the ability to create a professional-quality, DCI JPEG2000-encoded, AES-encrypted, MXF-wrapped, and distribution-ready Digital Cinema Package (DCP) directly from a Final Cut Studio® project.

Who is QuVIS?
QuVIS Technologies Inc., a leader in the field of hi fidelity high-resolution motion imaging technology, earned its reputation as a pioneer in the Digital Cinema industry. QuVIS has deployed commercialized Digital Cinema hardware and software solutions since the 90's when QuVIS servers were selected for the very first Digital Cinema trials. QuVIS has consistently set the bar for this industry with many technical innovations and "firsts". QuVIS was the first server company to develop a commercial wavelet compression technology, the first to demonstrate 2K extraction from 4K, the first to develop a single 3D playback server, the first to develop 3D real-time mastering, the first to develop true real-time DCI JP2K record, the first to develop a 4K playback server, and the first to offer 16 channels of audio. Wraptor continues that pioneering spirit by providing a software implementation of the mastering technology in our innovative high-end mastering server, the QuVIS Acuity™.

What is a DCP?
To start simply, a DCP (Digital Cinema Package) is a collection of standardized digital files that represent a Digital Cinema composition encoded, encrypted (optional), and packaged for distribution. The current form of a DCP used by the Digital Cinema industry, the same form the Wraptor plug-in outputs, is derived from several sources including early Interop sources, of course the Digital Cinema System Specification published by DCI, and a number of SMPTE documents and standards.

If you are new to Digital Cinema and would like a more comprehensive introduction to Digital Cinema and associated standards and practices, we would suggest that search out reference material including those found on the website identified in the Digital Cinema Online Resources (below) section.

Why do you need a DCP?
A DCP is very much the new "coin of the realm" for Digital Cinema. If you want your content exhibited in a Digital Cinema environment you must either distribute your content as a DCP or have someone else convert your content into a DCP and distribute it for you. For many content producers, paying someone else to create a DCP from your Final Cut Studio project is not desirable and certainly not budget friendly. Wraptor gives you the ability to create and distribute your own industry-compliant Digital Cinema content in the form required by the industry.

Other instances in which you may need a DCP may include:

- You need to submit a project to a film festival. Most of the larger international film festivals require or strongly encourage submission to delivered in the Digital Cinema format.
- You need to submit a project for an industry award event. This requirement is becoming increasingly popular.
- Digital Cinema advertising.
- Digital Dailies

Digital Cinema Online Resources

www.dcimovies.com - Digital Cinema Initiatives (DCI) website
www.smpte.org - The source for SMPTE Digital Cinema standards documents
www.isdcf.com - Inter-Society Digital Cinema Forum (ISDCF) Discussion Group
www.digitalcinema-europe.com - European Digital Cinema Forum (ECDF)

What does Wraptor provide?
Wraptor extends the comprehensive transcoding capabilities of Compressor by providing the content processing services needed to create a distribution-ready DCP. Services specific to DCP mastering include the following:

- Sampling Conversion (4:2:2 to 4:4:4)
- Colorspace Conversion (RGB/YUV to X'Y'Z')
- DCI JPEG2000 Image Encoding using QPJ™ (Quality Priority JPEG2000)
- 6 Channels (24-bit, 48kHz) of AES-EBU Digital Audio
- Automatic Conversion to Digital Cinema Broadcast Wave Audio Format
- Industry-compatible DCP (Interop format)

General Advice

- The first seems really obvious, but plan ahead, know what your final product is. In the case of content created with Wraptor, your output product is going to be a Digital Cinema Package (DCP).

- Use the highest quality settings, especially if you know your content will end up in front of a Digital Cinema audience.

- When you start with a less than optimal source, or something that has to be resized, or resampled your results might not be good as you had hoped for.

- You might spend a lot of time experimenting to find what the proper settings are. If you are going to choose to experiment, you might choose to do so on small scenes rather than full length production, only to find that you had a setting wrong.

Wraptor DCP Attributes

Before getting starting it is important to know what Wraptor expects from source content and what it does to that source during the DCP mastering process.

Wraptor itself has no controls for source color space conversion, down converting, up converting, pull down, pull up, audio conversion, all of these processes need to be accomplished in Final Cut or elsewhere before you create your DCP with Wraptor. Your content source target for input to Wraptor is a 24 frame per second (fps) 2048 x 1080 video project with 6 channels of 24 bit, 48 kHz audio. If you have a project that plays back well in Final Cut with these settings then you are ready to create your DCP using Wraptor.

2K DCP Image File Properties

The Wraptor plug-in is only capable of creating a 2K (2048x1080) Digital Cinema Package. The following is an overview of the DCP image file properties and requirements.

Source Image Quality
Wraptor will create a DCP that contains the following attributes. Keep this in mind when you are defining quality (especially image) settings for your Final Cut Studio project.

- 12-bit, 4:4:4, X'Y'Z (colorspace), 2048x1080, 24fps

DCP Image Resolution
Wraptor outputs a single image container size, 2048x1080 (full container). This means that whatever the resolution of the source image, it will always be placed within a 2048x1080 image container. When source image content is smaller than the 2K container, the image is centered and padded (vertically and horizontally as needed) with black in order to create the 2048x1080 image.

If your image resolution is less than 2048 x 1080, that's okay; Wraptor will automatically pad the image with black to the full container size. If you want to create a "Scope" package, your project content should be centered in a 2048 x 858 image. If you wish to have a "Flat" package it should be centered in a 1998 x 1080 image.

Here is a list of the more common 2K D-Cinema image resolutions.

- 2048x1080 (full container)
- 2048x858 (Scope)
- 1998x1080 (Flat)
- 1998x836 (Scope on Flat)
- 1558x858 (Flat on Scope)

During the DCP mastering process, Wraptor does not manipulate the source image other than to pad the area around the image when that image does fill the full 2K container.

About Additional Settings and Presets
While Compressor can generally be used to apply other settings and presets, such as filters, cropping, frame sizing, video retiming, etc., it is recommended that these changes be applied to the content source prior to DCP creation and processing.

DCP Frame Rate
The standard video frame rate for digital cinema content is 24 frames per second (fps). The DCP created by Wraptor will be 24fps. If your source content is something other than 24fps (e.g. 25 or 30fps) the frame-rate should be converted prior to DCP mastering.

About Additional Settings and Presets
While Compressor can generally be used to apply other settings and presets, including format and rate conversion, it is recommended that these changes be applied to the content source prior to DCP creation and processing.

Wraptor DCP Audio File Properties

The following is an overview of the DCP Audio file properties and requirements.

Audio Channels
A standard 2K DCP will support up to 16 channels of digital audio. DCPs authored using the Wraptor plug-in are limited to six (6) channels. In fact, Wraptor always creates six channels even when your source project does not. If your source project contains less than six channels, Wraptor will create the remaining channels using digital silence.

The Digital audio channel order for digital cinema content has been standardized for content distribution purposes. Wraptor will not reorder the source audio channels for you. You must ensure that the audio channel of your source content is in the proper digital cinema order prior to DCP mastering.

The following is a brief overview of channel mapping used in Digital Cinema. For specific audio mix channel mapping detail (i.e. 5.2, 7.1, etc.) refer to the SMPTE 428.3-2006 standard.

AES Pair#/Ch#	Channel #	Label / Name	Description
1/1	1	L/Left	Far left screen loudspeaker
1/2	2	R/Right	Far right screen loudspeaker
2/1	3	C/Center	Center screen loudspeaker
2/2	4	LFE/Screen	Screen Low Frequency Effects subwoofer loudspeakers
3/1	5	Ls/Left Surround	Left wall surround loudspeakers
3/2	6	Rs/Right Surround	Right wall surround loudspeakers

Bit Depth
The bit depth of digital cinema audio must be 24 bits per sample. For best results, source audio should be converted to 24-bit prior to DCP mastering.

Sample Rate
Wraptor will create the output DCP using 48kHz audio. Wraptor will not convert between sample rates during the DCP mastering process. If the sample rate of your source audio content is something other than 48kHz, it should be converted to 48kHz prior to DCP mastering.

DCP Audio File Format
A DCP audio essence file is distributed as a Broadcast Wave as defined by DCI and any applicable SMPTE standards. During the DCP mastering process, Wraptor receives the source audio from Compressor as an audio stream, which it then converts into the required DCP audio file format.

DCP Distribution Package Files

A DCP Distribution Package, which is the type output by the Wraptor plug-in, contains all of the files of a complete Digital Cinema composition.

The DCP Distribution Package consists of the following files:

- Packing List (PKL)
- Asset Map
- VolIndex
- Image Tracks
- Audio Tracks
- Composition Playlist(s)
- Auxiliary Tracks (optional)
- Subtitle Tracks (not supported by Wraptor)
- Subtitle Subpictures (if required by Subtitle type – not supported by Wraptor)
- Subtitle Font Files (if required by Subtitle Track – not supported by Wraptor)

Note: The *Packing List, Asset Map, and Volindex* files are DCP system files that are created during the packaging process and are not transferred to the playback server when the DCP is loaded.

CHAPTER 2 – DCP MASTERING

Information contained in this chapter include:

Wraptor DCP Mastering Workflow

One benefit of being a plug-in application to Compressor is that the workflow for creating a DCP is similar to just about every other transcode workflow performed by Compressor.

There are two paths for creating a DCP using the Wraptor plug-in:

- Create a DCP Direct from Final Cut Pro
- Create a DCP using Compressor

In both instances, Compressor is still used to define and submit the DCP transcoding operation.

There are additional Compressor workflow options that may be available to both workflow types discussed here. Additional information on the available workflow options, including distributed processing options, is detailed in the Compressor user documentation.

Create a DCP Direct from Final Cut Pro

This method for creating a DCP allows you export your Final Cut project to Compressor without having to render it first. While this transcoding method does tie up Final Cut until the DCP process is complete, it does allow you to bypass the need to render the project, which may introduce unnecessary generational quality loss depending upon your source codec settings.

As more experience Compressor users may already know, transcoding a Final Cut project doesn't actually create a rendered project, although the resulting DCP should contain any rendered effects.

The simple steps for Export a Final Cut project into Compressor are as follows:

1. Open the project you want to transcode in Final Cut Pro.
2. Select the project or sequence you wish to export.
3. Choose **File > Export > Using Compressor**.

   Compressor will open (if it wasn't already) and the sequence will appear as a job in a new *untitled* batch.
4. Assign settings and destinations to the job as necessary.

   See the following sections for more information:

   - Create a Digital Cinema Package Setting on page 22.
   - Define the DCP Output Destination on page 24.
5. Click the **Submit** button in the Batch window to create the DCP.

   See the following section for more information:

   - Create the Digital Cinema Package on page 24.
6. Once the transcoded operation is complete, Compressor will close and control will return to Final Cut Pro.

Create a DCP using Compressor

This method for creating a DCP takes place completely within Compressor and does not tie up Final Cut during the DCP transcoding operation. One significant difference between the two workflows is that this method requires a Final Cut project be saved as an appropriate input media file type for Compressor. One advantage is that Compressor will accept a wide variety of popular QuickTime and other formats (see Compressor documentation for available options).

For Digital Cinema mastering purposes, you should create the highest quality media file type you can from your Final Cut project. To maintain a professional image quality, it is recommended you also use a high-quality codec such as Apple ProRes 422, ProRes 422 (HQ), or uncompressed where possible.

The simple steps for creating a DCP using Compressor are as follows:

1. Open Compressor.

   The Compressor Batch window opens with an empty batch tab named *Untitled*.

2. Use the Compressor options for adding a new job.

3. Choose the source media file that will be transcoded into a DCP.

4. Assign settings and destinations to the job as necessary.

   See the following sections for more information:

   - Create a Digital Cinema Package Setting on page 22.
   - Define the DCP Output Destination on page 24.

5. Save and name the batch. This step is optional but recommended to help identify submitted batches in the History and Batch Monitor windows.

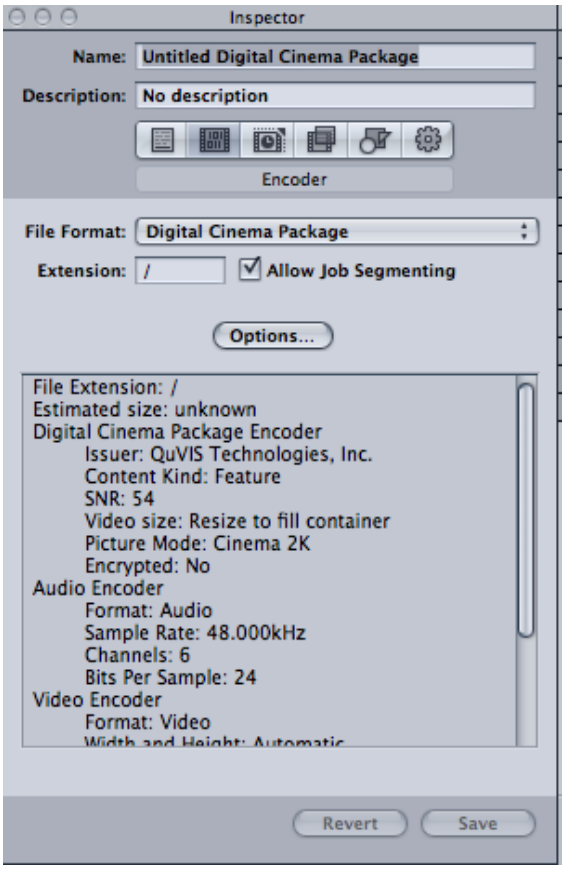
6. Click the **Submit** button in the Batch window to create the DCP.

   See the following section for more information:

   - Create the Digital Cinema Package on page 24.

About the Digital Cinema Package Pane

This section contains detailed information about the elements of the Digital Cinema Package pane in the Inspector window. You make your DCP mastering settings using this pane, by either modifying an existing setting or creating a new setting in the Settings tab.



- ***File Extension Field:*** Displays the default ("/") file extension used in the creation of the DCP output folder. Modifying this field will create an additional folder in the DCP output path that may not be desired.

- ***Allow Job Segmentation:*** This checkbox allows you to turn off job segmenting. For Wraptor DCP creation, job segmentation is only relevant if you are using Compressor with distributed processing. The Apple Qmaster distributed processing system speeds up processing b distributing work to multiple processing nodes (computers). When used for Wraptor DCP creation, the project is divided up according to the number of cluster processing nodes.

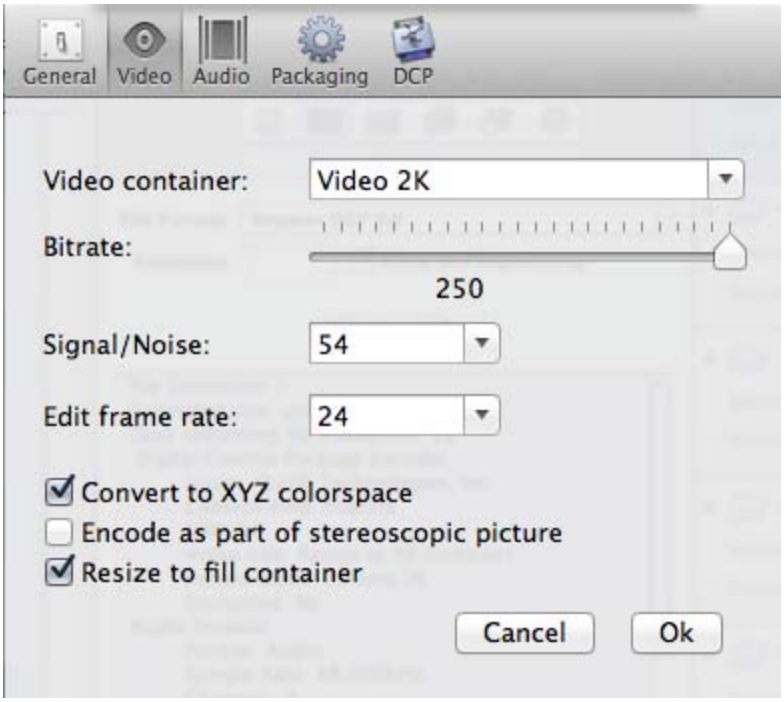
  Note: When a DCP project uses the distributed processing system, the source image (video) track is segmented into the same number of pieces as the number of cluster processing nodes. Each segment will result in a separate image (video) reel in the final DCP. If a 20-minute project is delivered to a four-node cluster (with job segmentation enabled) the resulting DCP will contain four 5-minute image reels.

  Audio on the other hand will not be segmented and will appear as a single audio track file in the output DCP.

Digital Cinema Package Pane Options

DCP processing options are modified by clicking the **Options** button on the Digital Cinema Package pane.

Video Tab



- ***Video container****:* This field is used to select 2K or 4K

- ***Bitrate****:* Wraptor provides two control mechanisms for peak DCP Bitrate and image quality control. Setting the bit rate establishes the maximum "do not exceed" Bitrate. The DCI specification defines a peak image Bitrate of 250 Megabits per second. At N frames per second, no single frame will exceed 1/N of this specified peak rate. For right or left eye DCDMs for 3D content, one half the peak rate, 125 Megabits per second, is required.

  Setting the Signal to Noise Ratio (SNR) of the encoding channel defines the minimum quality of the encoding used to generate the DCP. This is a patented method to assure both high quality and good data efficiency. For best quality and efficiency, set the SNR to very slightly above the original media quality. The US movie studios have typically used 54 dB when using this system for their high end releases. In some cases 51 dB or even 48 dB was used on major motion picture releases. There is no value in specifying a SNR significantly higher than the original media signal quality. A setting significantly higher than 54 dB is likely to increase data rates with no increase in quality.

  A 3dB increase or decrease in the SNR specification will typically result in a 40% increase or decrease in the resulting DCP file size.
  Encoding efficiency and resulting quality is significantly better if the SNR setting is controlling the rate, and not the peak Bitrate setting, which is effectively a failsafe to prevent excess data rates.

  These two controls, SNR and peak Bitrate, allow encoding quality and peak rate to be specified independently, assuring high quality, minimum total DCP data size, and rate compliance.

- ***Signal/Noise (SNR):*** This control is used to set the image quality level during JPEG2000 encoding, expressed as a Signal-to-Noise Ratio (SNR) value. The value of this setting can be set to 45dB to 66dB.

  Image encoding with JPEG2000 typically takes one of two forms: Fixed Bit Rate (FBR) encoding and Variable Bit Rate (VBR) encoding. The form employed by Wraptor and other QuVIS technology is

QPJ™ (Quality Priority JPEG2000), which is VBR with a selectable quality (SNR) setting. The maximum data rate for both methods, as defined by DCI, is limited to 250mbit/sec.

The SNR value is used to define the quality floor, meaning that during the JPEG2000 encoding process image quality peaks may vary upwards and under normal conditions will not drop that value. This encoding method protects image quality instead of arbitrarily throwing away picture information based upon a target bitrate.

Note: The higher the SNR value, the higher the image quality and larger the data set. Source image quality is important, as Wraptor will not improve the quality of the source. It is possible that if the source image quality is poor and the SNR value is set higher than the source, unnecessary noise may be added to the encoded image. A setting of 54 or 57dB is practical for most high quality image sources.

- ***Edit Frame Rate****:* The Edit frame rate is set to the desired DCI frame rate. DCI does not support "drop frame" video rates, but Wraptor will convert these rates to the proper format. Standard DCP frame rates of 24,25,30,48,60, and 96 are supported

- ***Convert to XYZ colorspace****:* DCPs are defined to represent color in the XYZ color space. For a standard DCP, request conversion to this XYZ space. If XYZ is not specified, the original color space will be passed through to the output file.

- ***Encode as part of stereoscopic picture****:* This option is for generation of a right or left eye DCDM which will later be combined and shuffled into a 3D DCP.

- ***Resize to fill container****:* This check box is for resizing your source to full container size (2K – 2048x1080, 4K- 4096x2016)

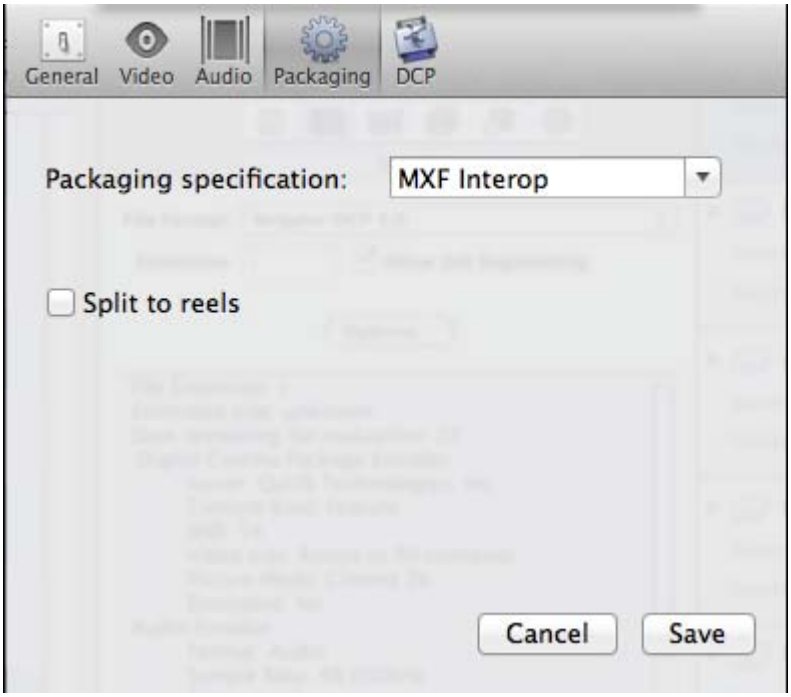
Audio Tab

- ***Audio channels**:* This field is used to select different number of audio channels and by default, 6 channel is selected. The following is a brief overview of channel mapping used in Digital Cinema. For specific audio mix channel mapping detail (i.e. 5.2, 7.1, etc.) refer to the SMPTE 428.3-2006 standard.

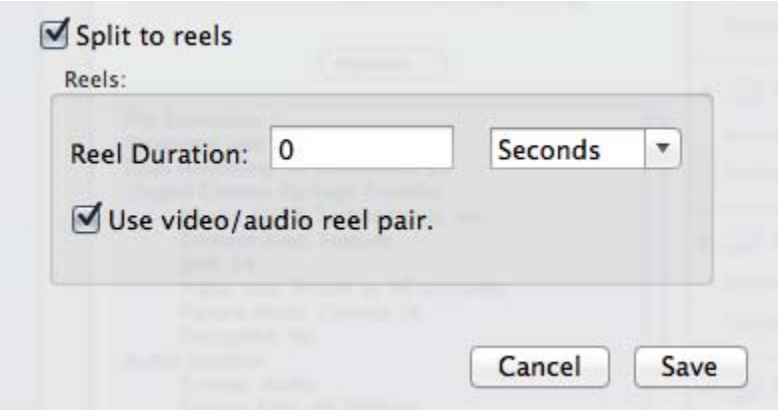
AES Pair#/Ch#	Channel #	Label / Name	Description
1/1	1	L/Left	Far left screen loudspeaker
1/2	2	R/Right	Far right screen loudspeaker
2/1	3	C/Center	Center screen loudspeaker
2/2	4	LFE/Screen	Screen Low Frequency Effects subwoofer loudspeakers
3/1	5	Ls/Left Surround	Left wall surround loudspeakers
3/2	6	Rs/Right Surround	Right wall surround loudspeakers

- ***Try to re-sample audio in case of different frame rate**:* In the DCP standard, frames are progressive at an integer number of frames per second, and audio is represented as up to 16 channels sampled at 48,000 samples per second and high sample resolution. Many users shoot content using US video equipment operating at "drop frame" rates such as 23.976 or 29.97 frames per second. If Wraptor is provided with "drop frame" US video content (23.976, 29.97, or 59.94 frames per second) it will treat it as though it was a DCP frame rate of 24, 30, or 60 frames per second. This increase in image speed of 1 part in 1000 will cause the audio to be too long, so audio will be resampled to keep everything in sync

Packaging Tab



- ***Packaging specification:*** This field is used to select either MXF Interop or SMPTE, but currently, SMPTE is NOT supported.



- ***Split to reel:*** The split to reels option allows the user to specify that very long media be produced as a DCP with separate reels with a maximum length. This can be an advantage in preview or quality control, or if there is likely to be some change in one or more reels in the future.

DCP Tab

- ***Issuer:*** This required field is used within the DCP construct to identify the person or company that created the DCP. Type in the appropriate text to describe who created the DCP.

- ***Kind:*** This field is used to identify the type of content contained within the DCP. The list of standard choices [SMPTE 429-7-2006 D-Cinema Packaging – Composition Playlist] include:

Kind	Description
Advertisement	Content promoting a product or service other than an upcoming feature.
Feature	A theatrical feature.
Policy	Content defining the code of conduct for patrons.
PSA	Public Service Announcement.
Rating	Slate/still picture indicating the recommended age group permitted to view the content to follow. This rating is generally unique per country.
Short	Non advertising/promotional content (2 to 15 minutes) typically before a theatrical feature.
Teaser	Very short (typically less than 1 minute) content promoting an upcoming theatrical feature.
Test	Content used to test, calibrate or setup digital cinema equipment
Trailer	Short (2-3 minutes) content promoting an upcoming theatrical feature.
Transitional	Extremely short content (1 to 15 seconds) separating unrelated compositions.

Creating a Digital Cinema Package

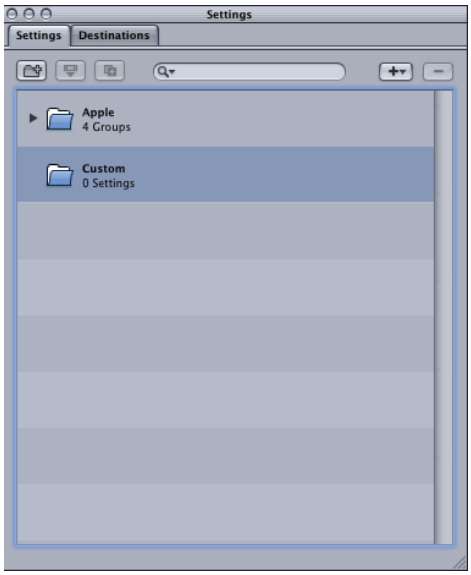
Compressor and the Wraptor plug-in provide the tools you need to create a professional quality Digital Cinema Package (DCP).

Create a Digital Cinema Package Setting

Digital Cinema Package (DCP) settings are defined just like any other Custom Setting in Compressor. The number of Wraptor DCP settings are limited to just a couple, once a setting has been defined for a specific content type (e.g. feature, trailer, advertisement, etc.) has been created, it shouldn't require frequent updating.

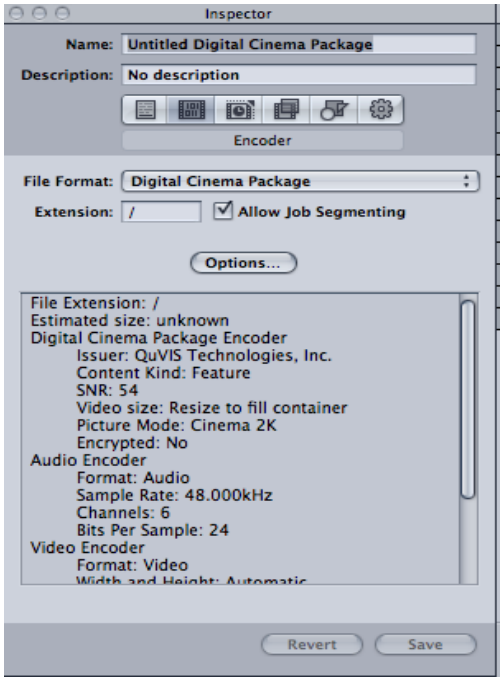
It is recommended that if you will be creating DCP packages for different content types (e.g. feature, trailer, etc.) that you pay attention to the **Kind** setting (see "Digital Cinema Package Pane Options" on page 17) as that setting is one used by digital cinema playback servers to identify the type of content. While mistakes in assigning the content type (Kind) should not prevent the playback system from playing the content, it may introduce operator confusing or downstream billing mistakes.

1. Click the Add (+) button in the Settings tab and choose **Digital Cinema Package** from the pop-up menu.



A new setting called *Untitled Digital Cinema Package* appears in the Custom folder of the Settings tab.

The Inspector window is also updated with the new Untitled settings.



2. Enter an appropriate name and description in the **Name** and **Description** fields.

3. Configure the settings as needed in the Inspector window.

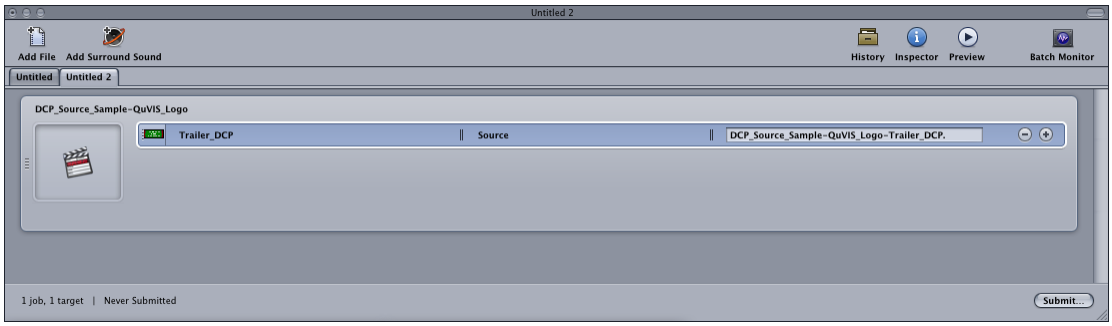
See "About the Digital Cinema Package Pane" on page 16 for information about assigning settings.

About Additional Settings and Presets
While Compressor can generally be used to apply other settings and presets, such as filters, cropping, frame sizing, video retiming, etc., it is recommended that these changes be applied to the content source prior to DCP creation and processing.

4. Click **Okay** to accept the changes to the Digital Cinema Package settings.

5. Click **Save** to save the Digital Cinema Package settings.

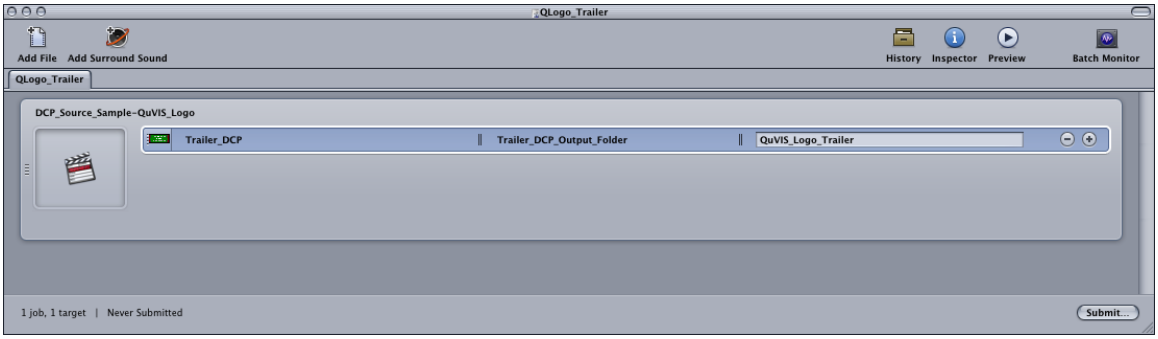
Note: Once defined, each custom Digital Cinema Package setting can be quickly assigned by dragging it onto the desired job.



Define the DCP Output Destination

Before the DCP mastering job is submitted, it is recommended that you define the DCP output folder, or Destination. By default, the DCP output destination is the same folder from which the source media files originated, unless you have selected a custom Destination preset from the **Compressor > Preferences** menu page. If you have created a custom destination, displayed on the Destinations tab, simply drag the custom setting to the desired job.

Please consult your Compressor user documentation if you require detailed information for creating custom Destinations.

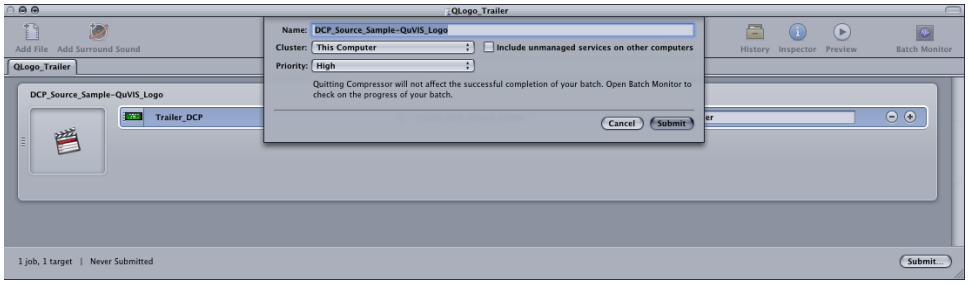


Considerations for Distributed Processing
Jobs that will submitted using Qmaster distributed processing may require additional consideration or planning. Please consult your Compressor and Qmaster documentation for more details.

Create the Digital Cinema Package

It is recommended that if you will be creating DCP packages for different content types (e.g. feature, trailer, etc.) that you pay attention to the **Kind** setting (see "Digital Cinema Package Pane Options" on page 17) as that setting is one used by digital cinema playback servers to identify the type of content. While mistakes in assigning the content type (Kind) should not prevent the playback system from playing the content, it may introduce operator confusing or downstream billing mistakes.

1. Click the **Submit** button in the Batch window to create the DCP.



A Compressor dialog window is displayed that allows to define how the batch is to be submitted. The standard options include the ability to name the submission, chose whether to use distributed processing, and set the priority of the submission.

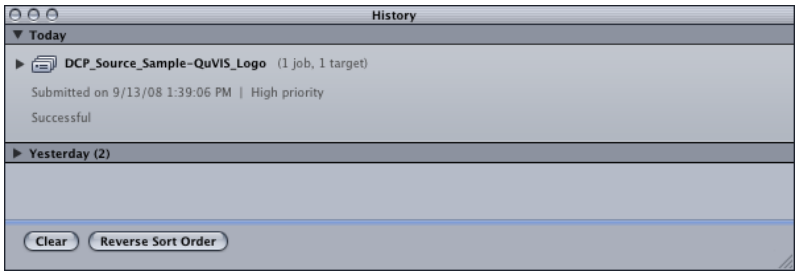
IMPORTANT! The one setting that does affect how a DCP is created is the **Cluster** setting, which determines if the batch is distributed for processing to the assigned cluster. As previously noted, distributed processing and the number nodes that make up the cluster directly determine the number of reels the image track will divided into in the resulting DCP.

While distributed processing over a node cluster does provide the means to decrease processing time, the number of target nodes should be carefully considered prior to submitting a batch.

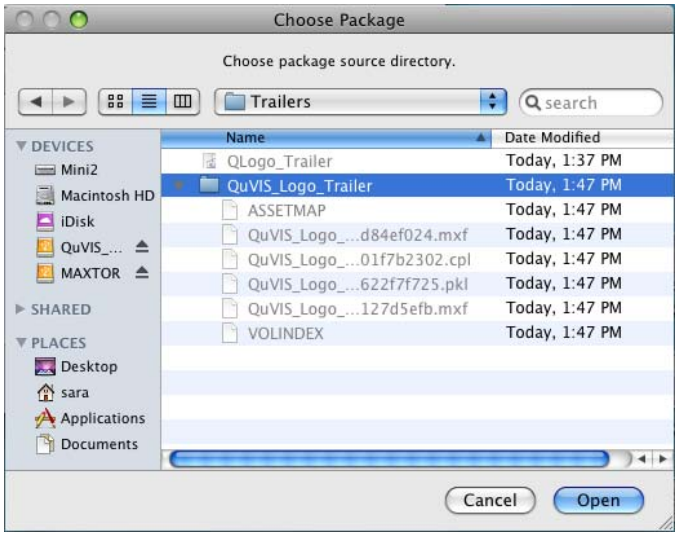
2. Once you have modified (if necessary) the batch submission settings, click **Submit** button in the dialog window.

As with any Compressor batch, after you submit a batch you can open the Batch Monitor to monitor the transcoding (DCP mastering) process of your batch.

The DCP mastering progress may also be monitored in the History window.



3. Once the batch is done process, the DCP will be stored in the specified destination. The individual files that make up the distribution-ready DCP can be viewed in the project folder.



CHAPTER 3 – DCP DISTRIBUTION

Information contain in this chapter include:

DCP Distribution Overview

The DCP created using the Wraptor plug-in is an industry-compatible Distribution Package. This Distribution Package includes the entire DCP package as well as the packing list, which is a file that describes the composition (DCP) to the receiving playback server or DCP mastering system.

Now that the DCP is complete, the only remaining task is to distribute the content.

The Ext2/3FS (file system) driver for Mac OSX from Paragon specifically enables the ability to read from and write to (and even format) an Ext2/3 formatted drive. This Ext2/3 file system format (a Linux file system format) is the file system format used on USB 2.0 DCP distribution hard drive preferred by the Digital Cinema distribution facilities. See section Preparing a DCP distribution hard drive (p. 28) for more information.

Preparing a DCP distribution hard drive

Ext2/3 file system driver for Mac OS X from Paragon allows you to copy the contents of a DCP directly to a USB 2.0 distribution hard drive that is universally supported by all major digital cinema playback servers.

To copy a distribution-ready DCP to an Ext2/3 distribution hard drive, use the following procedure.

1. Attach the external USB 2.0 Ext2/3 distribution hard drive to your Macintosh computer.

   If you need to format or partition a USB 2.0 hard drive, use the standard OS X disk utilities and specify the *Extended Filesystem* volume format.

2. Using Finder, select the DCP source directory (the parent directory containing the individual DCP files) and copy them to the DCP distribution hard drive.

3. Once the DCP files (and folder) have been copied to the distribution hard drive, unmount the drive and deliver it to its intended destination. If the destination is a digital cinema playback server, connect the USB 2.0 drive to the server and follow the device instructions for loading the DCP for playback on that server.