

Version 2.5.1.x

June 2016



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# About QubeMaster Xport

QubeMaster Xport 2.5 is a plug-in for Apple<sup>®</sup> Compressor which allows users to create Digital Cinema Packages (DCPs) from files imported into Compressor.

QubeMaster Xport 2.5 is the latest version of this plug-in and incorporates two new features:

- SMPTE DCP support
- Enhanced encoding performance
- Encryption support and KDM generation through www.keysmith.com

*For those running older versions of QubeMaster Xport*, this new version (2.5.1.0) will REPLACE older versions.

This is a free update, so the license/serial numbers you received for the older versions of Xport will continue to work with this version as well.

### **Installating QubeMaster Xport 2.5**

QubeMaster Xport 2.5 can be installed on any Mac running OS version 10.10.x (El Capitan) and Apple Compressor 4.2. Earlier versions of the Mac OS and Apple Compressor are not supported.

Apple<sup>©</sup> Compressor (version 4.2) must already be installed. Earlier versions of Compressor are not supported.

Please ensure that the login credentials used during installation has ADMINISTRATOR privileges and permissions for all folders in the root.

*For those running older versions of QubeMaster Xport*, this new version will REPLACE the older version – the license/serial numbers you received for the older versions of Xport will continue to work with this version.

To install QubeMaster Xport

- Double-click on the QubeMasterXport.2.5.1.x.dmg
- Double-click on QubeMaster Xport 2.5.1.x.pkg



• Click on "Continue" on all successive screens.

|  | Welcome to the QubeMaster Xport Installer                                |
|--|--|
| Introduction     Read Me     Destination Select                              | You will be guided through the steps necessary to install this software. |
| <ul> <li>Installation Type</li> <li>Installation</li> <li>Summary</li> </ul> | unimihadaa oo so   |
| 1 A  | 5 0  |
|  |  |

• After the successful installation close the installer window.

• If it is not already open, Double click once again on the QubeMasterXport.2.5.dmg, to pen the installer folder and drag the folder called "Lookup Tables" to an appropriate location on the system – this folder contains different sample LUTs that may be required for colourspace conversions of different types of files. Please read more about these LUTs in the section on LUTs.



- Restart the computer after the installation of QubeMaster Xport.
- You can now begin using Qube Master Xport in the DEMO mode. All content will be watermarked.
- If you have purchased a license, you will have received a SERIAL NUMBER via email. You may ACTIVATE the software with this serial number.
- After the installation has been completed and the system restarted, open Compressor and check if the "Digital Cinema Package" setting is available.



- The "Digital Cinema Package" setting is not a built-in Compressor setting and needs to be added manually to "Custom" settings please refer the section on "Creating Settings for Digital Cinema Packages" later in this document.
- If the "Digital Cinema Package" setting does not appear in the drop-down menu, check to see if the file "Xport.plugin" is present in this location: *Library>Application Support>Apple QMaster.* If not, check the permissions for your folders your login should have READ-WRITE access for this folder.

### **Activating Xport**

The downloaded version of Xport is a fully functional version of the software that can be used for evaluation purposes. The only limitation is the visible watermark of the QubeMaster XPort logo on the image of the resultant DCP.

Purchased versions of Xport are licensed with a serial number. This license must be activated online by entering the serial number into the Xport's "System Preferences".

Steps to activate QubeMaster Xport are as follows:

• Open System Preferences and select QubeMaster Xport from the "Other" menu (see screenshot below). If the Xport logo is not visible here it means that the software was not installed properly.



• Double-click the "QubeMaster Xport" icon to open the activation window. Click the "Activate" button to enter the serial number. Please ensure you have an active Internet connection.



• Enter the serial number available in the receipt sent to you via email at the time of purchase, and then click the "Activate" button. (Please ensure an active internet connection).

| STATISTICS. | Enter Serial Number:   |
|-------------|--|
|             | Enter the serial number exactly as shown on your receipt, including case (uppercase or lowercase). |
| 1.0.0.199   | Cancel Activate  |

#### Activating Xport on more than one machine

A single license will only allow the software to be activated only on a single machine at a time.

If you wish to run QubeMAster Xport on another system, the license must first be "DEACTIVATED" on the existing system before it can be activated on a second machine.

The System preferences pane may be used to "DEACTIVATE" the license in this case.

| $\bullet \bullet \bullet \checkmark \checkmark \blacksquare$                          | QubeMaster Xport   | Q Search           |
|---|--|--------------------|
| Copyright   | ©2015 Qube Cinema Inc. All rights reserved                                     |                    |
| Installed Version: 2511   |  | Check for Lindates |
|   |  |                    |
| License   |  |                    |
| QubeMaster Xport is not currently active  | ated in this Mac.  |                    |
| Serial Number: N/A<br>Activated Options: None<br>Unactivated Options: 3D 4K           |  | Deactivate         |
| If you have a serial number, please clic  | k Activate.  | Activate           |
| If you do not have a serial number or v<br>visit <u>http://www.qubecinema.com/pro</u> | vish to purchase additional options, plo<br>ducts/Xport to purchase a license. | ease               |

After the license has been deactivated on one system, it can be activated on another one.

# **Uninstalling Xport**

- Deactivate the Xport license using the procedure detailed above
- Delete the "Xport.plugin" file from the following location:

#### Library>Application Support>Apple QMaster>



# **Compatible Source Files**

#### **Supported Formats**

- Image Sequences (TIFF, TGA, dpx)
- QuickTime Files whose codecs have been installed on the system.
   When exporting sequences from FCP to Xport, use the "Export" option to export the sequence as a standalone movie OR a Quicktime reference movie (by deselecting

the "Create standalone movie" option).

At this time the "Send to" Compressor option in FCP is not fully compatible with Xport with respect to the manner in which audio files are "sent" to Xport. Using the "Send to" option to create a DCP in Xport can result in a DCP with unusable audio.

#### **Supported Frame-rates**

- Recommended frame-rate 24fps PROGRESSIVE
- 23.97fps is NOT supported
- Other frame-rates such as 25, 30 and 50 are also supported but the implications of these frame-rates are explained below:

Currently there are two digital cinema standards that co-exist in the field – the older *Jpeg2000 Inter-op* standard which is slowly being replaced by the newer *DCI SMPTE* standard.

- Jpeg2000 inter-op DCPs need to be created at 24fps in order to be compliant with existing (older) Jpeg2000 Inter-op compliant digital cinema servers.
- DCI SMPTE DCPs can be at other frame-rates (24, 25, 50 and 60). However, please note that NOT ALL servers can play 25fps, 30fps DCPs, so it is best to check compatibility before creating these types of DCPs.

#### **Frame-rate conversions**

Selecting an output frame-rate for the DCP which is different from the original frame-rate of the source will cause Compressor's retiming "auto" function to automatically convert the source's frame-rate to the frame-rate chosen for the DCP.

The default retiming method employed in Compressor is to keep the durations of the source and output the same (100%).

If a different type of frame-rate conversion is required, use the RETIMING options in Compressor's Inspector window (GENERAL tab) to better control the type of conversion being performed.

#### Aspect ratios

Currently there are three aspect-ratios at which a DCI compliant 2K DCP may be created

- 2048x1080 (FULL CONTAINER),
- o 2048x858 (SCOPE) or
- 1998x1080 (FLAT)

If the source aspect-ratio is not as per any of the above DCI specifications, QubeMaster Xport will crop and/or pad black to conform the source to the required DCP aspect ratio.

Xport will not RESIZE the source at any time.

For example, a Quicktime file with the HD aspect of 1920x1080 will be:

- "Padded" with 39 pixels of black on either side (pillarbox) to create a FLAT DCP at 1998x1080.
- Cropped by 111 pixels on the top and bottom and padded with 64 pixels on either side (pillarbox) to create a SCOPE DCP at 2048x858

#### <u>Audio</u>

Audio may be interleaved into the QuickTime source file or may be separate. Specifications are:

- o 48KHz
- 24 bit
- Audio must have the same timebase as the image
- Audio timed at 23.97 is not supported, it must be 24fps. QuickTime sources at 23.97fps must be conformed to 24fps before importing them to Xport.

If audio is interleaved with the image it must be in the following format:

- o Interleaved stereo
- Interleaved 5.1 audio with Channel mapping L, R, C, Lfe, Ls, Rs.

If audio exists as discrete/separate mono wav files, it can be combined into a single interleaved audio file using the method described later in this document.

# **Creating Settings for Digital Cinema Packages**

QubeMaster Xport's DIGITAL CINEMA PACKAGE setting does not appear among the built-in settings in Compressor.

A CUSTOM setting must be created:

• In the SETTINGS Tab, click the "+" Add Settings pop-up menu



• From the drop-down list choose "Digital Cinema Package".



• Name the setting.

| Format:                    | 🗙 Digi   | tal Cinema | Package | *<br>* |    |
|----------------------------|----------|------------|---------|--------|----|
| Na <mark>me:</mark>        | 2D_Scop  | e          |         |        |    |
| Descripti <mark>on:</mark> | Scope DC | CP from QT | •       |        |    |
|                            |          |            |         | Cancel | ОК |

• The Setting will now be available under CUSTOM settings:

| Settings Locations              |
|---------------------------------|
| ▼ BUILT-IN                      |
| Add to iTunes Library           |
| ▶ 🛃 Create Blu-ray              |
| Create DVD                      |
| Prepare for HTTP Live Streaming |
| Publish to Facebook             |
| Publish to Vimeo                |
| Publish to YouTube              |
| Apple Devices                   |
| 🕨 😫 Audio Formats               |
| Hotion Graphics                 |
| P B MPEG Files                  |
| Podcasting                      |
| ProRes                          |
| Incompressed                    |
| Video Sharing Services          |
| ▼ CUSTOM                        |
| 🔀 2D_Scope                      |
|                                 |
|                                 |
|                                 |
|                                 |
|                                 |

• To adjust the settings for the Digital Cinema Package you are about to create, choose the "CONFIGURE" tab in the "Inspector" pane

| Settings Locations   |                        | General   |
|--|------------------------|---|
| V BUILT-IN   |                        |   |
|  |                        | 2D_Scope<br>Digital Cinema Package<br>Estimated file size: unknown<br>1920 x 1080 px   24 fps<br>5.1 (L R C LFE Ls Rs)   0.00 kHz |
| Publish to YouTube     Apple Devices   |                        | General Properties  |
| <ul> <li>► auto Formats</li> <li>► So Motion Graphics</li> <li>► So MPEG Files</li> </ul>  |                        | Name: 2D_Scope<br>Description: Scope DCP from QT<br>Extension: encoded  |
| Podcasting   | -                      |   |
| <ul> <li>▶ SProRes</li> <li>▶ SP Uncompressed</li> <li>▶ Video Sharing Services</li> </ul> | ₩ ▶ ₩ 00:00:00;00 🖽 ♥- | Default location: None C  |
|  |                        |   |
| 20_Scope   |                        | Set duration to: • 100.00%  of source   |
|  | Add File               |   |

 In the Options window, select the correct source colour space, desired encoding bitrate and destination aspect ratio. Please refer the section on "Colour Spaces" later in this document. For more information about colour-spaces and aspect ratios please visit the support forum at <u>http://forums.qubecinema.com/</u>

| Settings Locations              |   |                   |               | í.                | General                                |
|---------------------------------|---|-------------------|---------------|-------------------|--|
| ▼ BUILT-IN                      | GUBE                                    |                   |               |                   |  |
| Add to iTunes Library           | MASTER                                  | ion 2.0.0.85      |               | 🖌 2D_Scope        |  |
| 🕨 🖆 Create Blu-ray              |   |                   |               | Digital Cinem     | na Package                             |
| Create DVD                      | Convert to DCI X'Y'Z' Color Space       |                   |               | Estimated file    | e size: unknown                        |
| Prepare for HTTP Live Streaming | Source Color Space: ITU-R Rec. BT.709-5 |                   |               | 1920 x 1080       | px   24 fps                            |
| Publish to Facebook             | Custom 3D LUT File:                     |                   |               | 5.1 (L R C LF     | E Ls Rs)   0.00 kHz                    |
| Publish to Vimeo                |   |                   |               |                   |  |
| Publish to YouTube              | JPEG2000 Compression                    | _                 |               | neral Propertie   | 35                                     |
| Apple Devices                   | Bit Rate: 150 C Mbit/s                  |                   |               |                   |  |
| Audio Formats                   | Presentation                            |                   |               | Name:             | 2D_SCOPe                               |
| Motion Graphics                 | Dimensionality: • 2D                    | Structure:  In    | nterop        | Description:      | Scope DCP from QT                      |
| P 2 MPEG Files                  | O 3D                                    | ⊖ s≀              | MPTE          | Extension:        | encoded                                |
| Podcasting                      | Frame Rate: 24 24                       |                   |               |                   |  |
| ProRes                          | Image Size                              |                   |               | Default location: | None 💠                                 |
| Uncompressed                    | Resolution: 2K ‡                        | Aspect Ratio: Sco | ope ‡         |                   |  |
| Video Sharing Services          |   | Width: 204        | 8 Height: 858 |                   | Configure                              |
| ▼ CUSTOM                        | Other Metadata                          |                   |               |                   |  |
| ZD_Scope                        | Type: Feature ÷                         | Territory: Uni    | ited States 💲 | timing            |  |
|                                 | Language: English -                     | Rating: G         | ÷             | Set duration to:  | 100.00% 		 of source                   |
|                                 | ✓ Use Digital Cinema Naming Convention  |                   |               |                   |  |
|                                 | Facility Code: TMP                      | Facility Name:    |               |                   | Can't retime to output rate for audio. |
|                                 |   |                   |               |                   |  |
|                                 |   | Cano              | CR OK         |                   |  |
|                                 |   |                   |               |                   |  |
|                                 | Add File                                |                   |               |                   |  |
|                                 |   |                   |               |                   |  |

- Once all the necessary settings have been customized, click OK changes will be saved to the setting.
- This setting may now be used to create a Digital Cinema Package.

## **Creating a DCP from standalone QuickTime files**

Any standalone QuickTime file or a QuickTime Reference file that is exported from the Final Cut Pro timeline can be used as a source to create a Digital Cinema Package. For sequences of images, see workflow described later in this document.

#### **Image properties of QuickTime files**

• Frame-rate – 24fps – Progressive

If the source has any other frame-rate, Compressor's frame-controls may be used convert them to the frame-rate chosen for the DCP – in this case 24fps. It is recommended that Framerate conversions be performed within the Editing application.

- Any codec which works with FCP will work in Xport.
- Aspect ratio any standard HD/SD or Digital Cinema aspect ratio.

If the source's aspect ratio is not as per the DCI specification of 2048x858 (for SCOPE) or 1998x1080 (for FLAT) Xport will crop and/or pad black pillar-boxes on either side to conform the source to the required DCP aspect ratio.

For example, a QuickTime file at the HD aspect of 1920x1080 will be:

- "Padded" with 39 pixels of black on either side (pillarbox) to create a FLAT DCP at 1998x1080.
- Cropped by 111 pixels on the top and bottom and padded with 64 pixels on either side (pillarbox) to create a SCOPE DCP at 2048x858

#### <u>Sound</u>

- Stereo or 5.1 audio interleaved audio mapped in the order L, R, C, Lfe, Ls, Rs.
- 48Khz sample rate
- Synced to picture with the same time-base as image.

#### Step-by-Step

• Launch the Compressor application and add the QuickTime ".mov" source file using the "Add file" option.



• Click the "Add Outputs" option or, drag-and-drop the Digital Cinema Package setting from the CUSTOM Settings tab, onto the source.

|      | Settings Locations                | 1QTSurroundSample-Apple ProRes 422.mov | Job   |
|------|-----------------------------------|--|---|
| ₹ ВІ | JILT-IN                           |  |   |
|      | 🖆 Add to iTunes Library           |  | 1QTSurroundSample-Apple ProRes 422.mov            |
|      | 🖆 Create Blu-ray                  |  | /3QTfiles   |
|      | Create DVD                        |  | QuickTime movie                                   |
|      | 🖆 Prepare for HTTP Live Streaming |  | Encoded: 1920 x 1080 px   Display: 1920 x 1080 px |
|      | 🖆 Publish to Facebook             |  | Square   Progressive   24 fps                     |
|      | 🖆 Publish to Vimeo                |  | Linear PCM   5.1 (L R C LFE Ls Rs)   48.00 kHz    |
|      | 🖆 Publish to YouTube              |  | Duration: 00:00:26:01                             |
|      | Apple Devices                     |  |   |
|      | 😤 Audio Formats                   |  | Timing  |
|      | 😂 Motion Graphics                 |  | Start: 00:00:00:00                                |
|      | 😤 MPEG Files                      |  | In point: 00:00:00:00                             |
|      | 2 Podcasting                      |  | Duration (in-out): 00:00:26:01                    |
|      | 😤 ProRes                          |  |   |
|      | 😫 Uncompressed                    |  | File Properties                                   |
|      | 😤 Video Sharing Services          |  | Field order: Progressive                          |
| ₹ CI | JSTOM                             |  |   |
|      | 🔀 2D_Scope                        | 1QTSurroundoRes 422.mov                | Metadata  |
|      |                                   |  |   |
|      |                                   | <b>U</b>                               | Closed captions: Choose                           |
|      |                                   | Add Outputs                            | Add Job Annotation                                |
|      |                                   |  |   |
|      |                                   |  |   |
|      |                                   |  | Action  |
|      |                                   |  | When done: Do Nothing +                           |
|      |                                   |  |   |

• To make any adjustments to the settings choose the "CONFIGURE" option in the "Inspector" pane to open QubeMaster Xport's settings page:

| Settinge Locations   | 10TSurroundSample-Apple ProBes 422 mov - 2D Scope   | General Video Audio  |
|--|---|--|
|  |   |  |
| <ul> <li>▼ BUILT-IN</li> <li>▶ [☆ Add to iTunes Library</li> <li>▶ [☆ Create Blu-ray</li> <li>▶ [☆ Create DVD</li> <li>▶ [☆ Prepare for HTTP Live Streaming</li> <li>▶ [☆ Publish to Facebook</li> <li>▶ [☆ Publish to Vimeo</li> <li>▶ [☆ Publish to YouTube</li> <li>▶ [☆ Apple Devices</li> </ul> | BUBE .  | 2D_Scope<br>Digital Cinema Package<br>Estimated file size: unknown<br>1920 x 1080 px   24 fps<br>5.1 (L R C LFE Ls Re)   48.00 kHz<br>General Properties |
| <ul> <li>Saddio Formats</li> <li>Saddio Formats</li> <li>Samped Files</li> <li>Samped Files</li> </ul>   |   | Name: 2D_Scope<br>Description: Scope DCP from QT<br>Extension: encoded   |
| <ul> <li>▶ ∰ ProRes</li> <li>▶ ∰ Uncompressed</li> <li>▶ ∰ Video Sharing Services</li> </ul>   | ₩ ▶ ₩ 00:00:20:15 □ ♥・  | Default location: None ÷   |
| ▼ CUSTOM   |   |  |
| 2D_Scope   | 1QTSurroundoRes 422.mov       Setting     Location       Y     2D_Scope       H     4DCPs       1QTSurroun422.encoded | Retiming<br>Set duration to:  TO0.00% To of source To -:-: So source frames play at 24 fps   |

|  | Version 2.5.1.1 |                   |
|--|-----------------|-------------------|
| Convert to DCI X'Y'Z' Color Space                        |                 |                   |
| Source Color Space: Custom                               | •               |                   |
| Custom 3D LUT File: DCI_XYZ_sRGB_1.8.                    | 3dl             |                   |
| JPEG2000 Compression<br>Bit Rate: 150                    | O Mbit/s        |                   |
| Presentation   |                 |                   |
| Dimensionality: 0 2D                                     | Structure:      | • Interop         |
| 3D   |                 | ○ SMPTE           |
| Image Size   |                 |                   |
| Resolution: 2K 🗘   | Aspect Ratio:   | Flat \$           |
|  | Width:          | 1998 Height: 1080 |
| Other Metadata   |                 |                   |
| Type: Feature 🗘  | Territory:      | United States 🗘   |
| Language: English 🗘                                      | Rating:         | G ¢               |
| <ul> <li>Use Digital Cinema Naming Convention</li> </ul> |                 |                   |
| Facility Code: TMP                                       |                 |                   |
| Facility Name:   |                 | Edit CPL Name     |
| Encrypt using KeySmith                                   |                 |                   |

- Once all the necessary settings have been customized, Click OK.
- Select a DEFAULT location for all DCP outputs by selecting a Default location in the "General" section of the Inspector window.

| General Video Audio   |  |
|---|--|
|   |  |
| 🔀 2D_Scope  |  |
| Digital Cinema Package  |  |
| Estimated file size: unknown                                    |  |
| 1920 x 1080 px   24 fps   |  |
| 5.1 (L R C LFE Ls Rs)   48.00 kHz                               |  |
|   |  |
| General Properties  |  |
| Name: 2D_Scope  |  |
| Description: Scope DCP from QT                                  |  |
| Extension: encoded  |  |
| Allow job segmenting  |  |
| Default location: 🚺 4DCPs 🔶                                     |  |
| Configure   |  |
|   |  |
| Retiming  |  |
| Set duration to: <ul> <li>100.00%</li> <li>of source</li> </ul> |  |
|   |  |
| So source frames play at 24 fps                                 |  |
|   |  |

• Else choose a destination folder by right-clicking on LOCATION

| 📹 Grab File Edit Capture Window Help  |   | 🕴 🎅 🜒 52% 💽 Tue 1 Ju  |
|---|---|---|
| 000   | Compressor  |   |
| E Hide  | Current Active Completed  |   |
| Settings Locations  | 1QTSurroundSample-Apple ProRes 422.mov - 2D_Scope                                       | General Video Audio   |
| ♥ DUIT-TN           ▷ Cf. Add to Times Library           ▷ Cf. Create Blu-ray           ▷ Cf. Create Blu-ray           ▷ Cf. Create Blu-ray           ▷ Cf. Create Blu-ray           ▷ Cf. Problem for HTTP Live Streaming           ▷ Cf. Publish to Facebook           ▷ Cf. Publish to Facebook           ▷ Cf. Publish to Tomoo           ▷ Cf. Publish to Vortube           ▷ Station Graphics           ▷ Station Graphics | Enjoy the experience  | ED_Scope Biglial Cliems Package Estimated file are: unknown 1900 pp. (24 file 5.1 d. R C LFE Ls Rie J (48.00 Mtz      General Properties      Mame: 20. Scope Description: Scope DCP from Q1 Extension: encoded     Mone:     Extension: Encoded     Extension: Encoded     Extension: Encoded     Mone:     Extension: Encoded     Extension: Enc |
| 2D Scope  | IOTE and a Beat 400 mere  | Retiming  |
|   | 2D_Scope 4DC<br>Cut 8X<br>Copy 8C<br>Pasto 82V<br>Location New Job With Selected Output | <ul> <li>I 00.00%</li> <li>I of source</li> <li>I =</li> <li>So source frames play at 24 fps</li> <li>Desktop</li> <li>Movies</li> <li>Source</li> </ul>  |
| +· \$- Q-   | +- Start Batch  | Other   |

- Click "Start Batch"
- Now the job is added to the job queue and the progress of the encode can be monitored in the ACTIVE tab.

| 000                      |        | Compre<br>Current Active | ssor<br>(1) Completed |     |
|--------------------------|--------|--------------------------|-----------------------|-----|
| Name                     | Status | Elapsed Time             | Progress              |     |
| 1QTSurroundroRes 422.mov |        | 0:00:18                  |                       | 0 8 |

- When the encode job is completed, it will be designated as "successful" and your DCP will be available in the destination folder.
- In the destination folder you will find the 6 essential files that together constitute a Digital Cinema Package, these files are:
  - One audio mxf file
  - One video mxf file
  - One CPL xml file
  - One PKL xml file
  - One ASSETMAP file
  - One VOLINDEX file
- Copy ALL these files to the distribution drive being sent to the presentation venue.
- Ensure that the distribution drive is not formatted as a Mac volume or it will not be recognized by any digital cinema server. The worldwide format recommended for DCP distribution drives is the Linux EXT2 format with an inode size of 128 bytes as detailed on the ISDCF website (http://www.isdcf.com/ISDCF/Technical\_Documents.html).
- In order to save the DCP created on QubeMaster Xport to an EXT2 formatted volume, you can either purchase Paragon ExtFS for Mac software (http://www.paragon-software.com/home/extfs-mac) and mount Linux volumes directly on your Mac system or you could use a virtualization product that supports Linux formatted USB drives and can share them with the host Mac OS. Some of the available virtualization products include Parallels Desktop for Mac (http://www.parallels.com/products/desktop/), Virtual Box (http://www.virtualbox.org/) and VMware Fusion (http://www.vmware.com/products/fusion/overview.html).

### **Creating a DCP from sequences of images**

• Select the Add Image Sequence option and point to the folder containing sequential images:

| 000                                  | Compressor   |                    |
|--------------------------------------|--|--------------------|
| Hide                                 | Current Active Completed   | 8                  |
| Setting     Locations       * BULTIN |  | Nothing to inspect |
| +. \$. Q.                            | Add File 81<br>Add File 81<br>Add Image Sequence 181<br>Add Surround Sound Group 181 |                    |

• Once the image sequence has been correctly recognized and added to the job queue, add an audio file to the image sequence by selecting the "Choose" option in the Job window.



• The audio file must be Stereo or a single multi-channel 5.1 interleaved WAV, AIFF or QuickTime file with the channel assignment Left, Right, Center, Sub-woofer (aka LFE), Left Surround & Right Surround.

| 8 1QTSur | 1QTSurroundSample-Apple ProRes 422.mov — Inspector                                  |   |  |  |  |
|----------|---|---|--|--|--|
| 1QT5     | 1QTSurroundSample-Apple ProRes 422.mov  |   |  |  |  |
|          | Source:   | /3QTfiles/1QTSurroundSample-Apple<br>ProRes 422.mov |  |  |  |
|          | Format:   | Apple ProRes 422, 1920 x 1080 (1888                 |  |  |  |
|          | Linear PCM, 24 bit little–endian signed<br>integer, 48000 Hz, 5.1 (L R C LFE Ls Rs) |   |  |  |  |
|          | FPS:  | 24  |  |  |  |
| D        | ata Size:   | 198.7 MB  |  |  |  |
| D        | ata Rate:   | 61.03 Mbit/s  |  |  |  |
| Curr     | ent Size:   | 1440 × 810  |  |  |  |



- Discrete/separate mono audio files must first be combined into a single multi-channel QuickTime or wav audio file before it may be used. The procedure for this is described later in this document.
- Drag-and-drop the Digital Cinema Package setting into the job,
- Change the name of the output file ensuring that there are no special characters in the name (by default Compressor retains "#" in the name for Image sequences, this will cause the DCP to fail ingest).
- Set target and submit the job as described in the previous section.

### Working with discrete mono audio files

Multiple, discrete Mono audio files must be combined into a multi-channel interleaved audio file using the "Add Surround Sound" option in Compressor.

The procedure for combining the image file with this "Surround sound" audio file will differ based on the format of the image file.

#### Video source is a QuickTime file

- If the Image source is a QuickTime file and the audio files are present as discrete mono files, use the "Add Surround Sound" option to add the Audio source first.
- Add the Image QuickTime file by selecting the "Add Video" option.

| *             |               | *             |
|---------------|---------------|---------------|
| L             | с             | R             |
| <none></none> | <none></none> | <none></none> |
|               |               |               |
|               | LFE           |               |
|               | <none></none> |               |
|               | T             | 4             |
| Ls            | S             | Rs            |
| <none></none> | <none></none> | <none></none> |
| L             | Add Video     |               |
| Clear All     | Cancel        | Add           |

- Apply the Digital Cinema Package setting.
- Submit the job.

#### Video source is an Image Sequence

- Convert discrete mono files into a multichannel WAV, AIFF or QuickTime file by selecting the "Add Surround Sound" option.
- In the channel assignment window, individual mono files need to be assigned to each of the 6 (or 7) channels

| ۲<br>د        | L C           | <b>▼</b><br>R |
|---------------|---------------|---------------|
| <none></none> | <none></none> | <none></none> |
|               | LFE           |               |
|               | <none></none> |               |
| Ls            | s s           | Rs            |
| <none></none> | <none></none> | <none></none> |
|               | Add Video     |               |
| Clear All     | Cancel        | Add           |

- Once the channels have been assigned, click "OK"
- Drag-and-drop the WAV Audio format setting from the **Audio Formats** folder into the job queue.

| Settings Locations              | Surround-Jodha Tr audio R - WAVE File |          |                        | General Audio                           |
|---------------------------------|---------------------------------------|----------|------------------------|---|
| ▼ BUILT-IN                      | 1                                     |          |                        |   |
| Add to iTunes Library           |                                       |          |                        | 🛶 WAVE File                             |
| ▶ 🛃 Create Blu-ray              |                                       |          |                        | Common Audio Formats                    |
| Create DVD                      |                                       |          |                        | Estimated file size: 231 68 MB          |
| Prepare for HTTP Live Streaming |                                       |          |                        | 51 (I B C I FF I s Bs)   Automatic      |
| Publish to Facebook             |                                       |          |                        |   |
| Publish to Vimeo                |                                       |          |                        | Audio Deservation                       |
| Publish to YouTube              |                                       |          |                        | Audio Properties                        |
| Apple Devices                   |                                       |          |                        | Channel layout: 5.1 (L R C LFE Ls Rs) ≑ |
| Audio Formats                   |                                       |          |                        | Sample rate: Automatic (48)             |
| 4 AAC File                      |                                       |          |                        | Samola siza: Automatic (24) * bite      |
| M AC3 File                      |                                       |          |                        | oumpre sizer Platemane (24) + ono       |
|                                 |                                       |          |                        |   |
|                                 |                                       |          |                        | Add Audio Effect                        |
|                                 |                                       | 00:00:00 | :00 🖽 🛡 -              |   |
|                                 |                                       |          |                        |   |
| 🖶 WAVE File                     |                                       |          |                        |   |
| Motion Graphics                 | Surround- Jodha Tr                    | audio R  |                        |   |
| MPEG Files                      | Surround-Sound II                     |          |                        |   |
| Podcasting                      | Setting                               | Location | Filename               |   |
| ▶ 😫 ProRes                      | 😁 WAVE File                           | 🚞 4DCPs  | Surround-Joaudio R.wav |   |
| Uncompressed                    |                                       |          |                        |   |
| Video Sharing Services          |                                       |          |                        |   |
| V CUSTOM                        |                                       |          |                        |   |
| × 2D Scope                      |                                       |          |                        |   |
|                                 |                                       |          |                        |   |

- Adjust the output settings for the wav file as 48 KHz, 24-bit PCM audio with the channel assignments as Left, Right, Center, Sub-woofer (aka LFE), Left Surround, Right Surround.
- Submit the job.
- To link this 5.1 surround interleaved wav audio file to an image sequence follow the procedure described for creating a DCP from Image Sequences.

## Creating a 3D DCP

Creating a 3D DCP in QubeMaster Xport is as simple as selecting the "3D" option in the Xport settings window. However, it is important that the source files are in the required 3D format.

#### **3D Sources**

Currently Apple Compressor accepts 3D sources either as QuickTime files or as image sequences. In both cases, the files have to be in the "Frame-sequential" or "L-R Interleaved" format and in both cases (QuickTime or image sequence), the first frame must always be the Left eye frame:

• QuickTime files:

Frame Sequential (each alternate frame within the QuickTime file must be L and R) and the frame-rate of the QuickTime file must be 48fps (24 fps for each eye).

 Sequence of Images: Both L and R files should be in the same folder and each alternating file in the sequence should be Left and Right.

Compressor cannot work with 3D sources where the Left and Right eye streams are separate QuickTime files (one for each eye), or as independent sequences of images, one sequence for each eye.

- Use the procedure described earlier to import the Quicktime file or Image sequences.
- Apply the Digital Cinema Package setting
- Chose "Configure" to open the Xport Settings window
- In the Xport Settings window select 3D.
  - If the 3D source was shot at 24fps (per eye), retain the default frame-rate of 24fps.
     Do not change the frame-rate.
  - If the 3D source was shot at HFR (High Frame Rate) of 48fps (per eye) and above, then change the frame-rate appropriately.

# **ColourSpace Conversions**

According to DCI specifications, all DCI compliant DCPs must be in the X'Y'Z colourspace.

Since most video source files are in the RGB colourspace, they need to be converted to X'Y'Z during the DCP creation process.

This option to convert from RGB Rec 709 to X'Y'Z is selected by default.

|   | ersion 2.5.1.1 |               |            |  |
|---|----------------|---------------|------------|--|
| ✓ Convert to DCI X'Y'Z' Color Space   |                |               |            |  |
| Source Color Space: ITU-R Rec. BT.709-5 🗢   |                |               |            |  |
| Custom 3D LUT File:   |                |               |            |  |
| JPEG2000 Compression<br>Bit Rate: 150 0 Mbit/s  |                |               |            |  |
| Presentation  |                |               |            |  |
| Dimensionality: • 2D  | Structure:     | • Interop     |            |  |
| O 3D  |                | ○ SMPTE       |            |  |
| Frame Rate: 24 $\bigcirc$ 24  |                |               |            |  |
| Resolution: 2K  | Acrest Datio   | Flat          | ^          |  |
|   | Aspect Ratio:  |               | ×          |  |
| Other Materia   | Width:         | 1998 Heigh    | t: 1080    |  |
| Type: Feature   | Territory:     | United States | 0          |  |
| Language: English   | Rating:        | G             | 0          |  |
| Use Digital Cinema Naming Convention  |                |               |            |  |
| Facility Code: TMP  |                |               |            |  |
| Facility Name:  |                | 🗌 Ed          | t CPL Name |  |
| Encrypt using KeySmith  |                |               |            |  |
| Open KeySmith after successful DCP creation A visible watermark will be embedded in the output as some of the options selected above are not activated in this Mac. Please onen QubeMaster Xport in |                |               |            |  |
| System Preferences to check your activation status.   |                | Cancer        | UN         |  |

If the source file has been created in the requisite X'Y'Z colourspace, there should not be any further colouspace conversion, and this option must be de-selected.

|                              |                |              | Version 2.5 | .1.1       |          |          |         |
|------------------------------|----------------|--------------|-------------|------------|----------|----------|---------|
| Convert to DCI               | X'Y'Z' Color S | pace         |             |            |          |          |         |
| Source Color S               | pace: ITU-R R  | ec. BT.709-5 | 0           |            |          |          |         |
| Custom 3D LU                 | File:          |              |             |            |          |          |         |
| JPEG2000 Compre<br>Bit Rate: |                | 150          | O Mbit/s    |            |          |          |         |
| Presentation                 |                |              |             |            |          |          |         |
| Dimensionality:              | • 2D           |              | S           | tructure:  | • Intero | p        |         |
|                              | O 3D           |              |             |            |          | E        |         |
| Frame Rate:                  | 24             | ≎ 24         |             |            |          |          |         |
| Image Size                   |                |              |             |            |          |          |         |
| Resolution:                  | 2К 🗘           |              | Asp         | ect Ratio: | Flat     |          | ٢       |
|                              |                |              |             | Width:     | 1998     | Height:  | 1080    |
| Other Metadata               |                |              |             |            |          |          |         |
| Type:                        | Feature        | ٥            | T           | erritory:  | United   | States 🗘 |         |
| Language:                    | English        | ٥            |             | Rating:    | G        | \$       |         |
| ✓ Use Digital Cin            | ema Naming C   | Convention   |             |            |          |          |         |
| Facility Code:               | тмр            |              |             |            |          |          |         |
| Facility Name:               |                |              |             |            |          | Edit C   | PL Name |
| Encrypt using P              | KeySmith       |              |             |            |          |          |         |

If the source file is in a colourspace other than the industry standard RGB Rec 709, then custom conversions may be performed by selecting the CUSTOM option from the drop-down menu.

|                           |                                       |              | Version 2.5.1.1 |                 |         |
|---------------------------|---------------------------------------|--------------|-----------------|-----------------|---------|
| Convert to DCI            | X'Y'Z' Color Space                    |              |                 |                 |         |
| Source Color S            | pace: Custom                          | ٢            |                 |                 |         |
| Custom 3D LU1             | File: DCI_XYZ_sR0                     | GB_1.8.3dl   |                 |                 |         |
| JPEG2000 Compre           | ession                                |              |                 |                 |         |
| Bit Rate:                 | · · · · · · · · · · · · · · · · · · · | 150 C Mbit/s |                 |                 |         |
| Presentation              |                                       |              |                 |                 |         |
| Dimensionality:           | • 2D                                  |              | Structure:      | Interop         |         |
|                           | O 3D                                  |              |                 | ○ SMPTE         |         |
| Frame Rate:<br>Image Size | 24 🗘                                  | 24           |                 |                 |         |
| Resolution:               | 2К 🗘                                  |              | Aspect Ratio:   | Flat            | ٢       |
|                           |                                       |              | Width:          | 1998 Height:    | 1080    |
| Other Metadata            |                                       |              |                 |                 |         |
| Туре:                     | Feature 🗘                             |              | Territory:      | United States 🗘 |         |
| Language:                 | English $\Diamond$                    |              | Rating:         | G               |         |
| Use Digital Cin           | ema Naming Conve                      | ention       |                 |                 |         |
| Facility Code:            | ТМР                                   |              |                 |                 |         |
| Facility Name:            |                                       |              |                 | Edit C          | PL Name |
| Encrypt using k           | KeySmith                              |              |                 |                 |         |

This allows the selection of custom Look Up Tables (LUTs) which have been created for these sources.

Some sample LUTs are shipped with QubeMaster Xport, their purpose is described below:

- **DCI\_XYZ\_ITU-R\_709\_HD** For HD video source material where the range of values used is 16-235 for 8-bit and 64-940 for 10-bit signals with a gamma transfer function as defined by the specification.
- **DCI\_XYZ\_Kodak\_2383** For 10-bit log source material suitable for filmout where Kodak 2383 Vision film stock emulation is applied to match the characteristics of typical print film
- **DCI\_XYZ\_NTSC\_601** For older NTSC video source material where the range of values used is 16-235 for 8-bit and 64-940 for 10-bit signals with a gamma transfer function as defined by the specification.
- **DCI\_XYZ\_PAL\_EBU** For PAL video source material where the range of values used is 16-235 for 8-bit and 64-940 for 10-bit signals with a gamma transfer function as defined by the specification.
- **DCI\_XYZ\_p3** For source material in the DCI RGB P3 color space where the full range of values is used with a gamma of 2.6.
- **DCI\_XYZ\_ITU-R\_709\_1.8** For sources in RGB Rec 709 color space where the full range of values is used with Gamma of 1.8
- **DCI\_XYZ\_ITU-R\_709\_2.2** For sources in RGB Rec 709 color space where the full range of values is used with a Gamma of 2.2
- **DCI\_XYZ\_sRGB\_1.8** For computer generated or processed source material in the Rec. 709 color space where the full range of values is used with a gamma of 1.8
- **DCI\_XYZ\_sRGB\_2.2** For computer generated or processed source material in the Rec. 709 color space where the full range of values is used with a gamma of 2.2

### **Encryption**

Encryption of DCPs in QubeMaster Xport is closely integrated with <u>www.keysmith.com</u> and you will require a KeySmith user account to use this option (registration on www.keysmith.com is free).

<u>www.keysmith.com</u> is a powerful online key (KDM) management and reporting service for digital cinema. It allows filmmakers to generate KDMs for their DCPs, by accessing a comprehensive online theatre database that is continuously updated.

The close integration between QubeMaster Xport and KeySmith allows Distribution KDMs (or DKDMs) and CPLs to be automatically uploaded to your KeySmith account whenever the "Encrypt using KeySmith" option is enabled in the Xport settings. Any required theatre KDMs can then be quickly and easily generated by logging into your account at www.keysmith.com.

KeySmith accesses an extensive, constantly updated theatre database to generate the required KDMs that will unlock the DCP for each selected theatre. Each KDM is tied to the unique identity of the digital cinema equipment in the theatre database. KeySmith can directly deliver the KDMs to theaters via email and will also support the Theatre Key Retrieval protocol (TKR) now recommended by the ISDCF. KeySmith also has comprehensive reporting capabilities that allow the user to keep track of all their KDM orders.

The KeySmith service is protected by FIPS 140-2 certified hardware security modules and verifies the certificate chain so only devices from authorized manufactures can be added to the public theatre database.

QubeMaster Xport and the KeySmith service together offer the independent filmmaker, an easy to use process for encrypting their DCPs and protecting their intellectual property, while still having convenient and fast access to the required KDMs for screenings and worldwide distribution.

The encryption and KDM generation features are especially important now, with film festivals requiring DCPs. QubeMaster Xport and www.keysmith.com will keep content secure and easily accessible even during the chaos of a festival.

Encrypting a DCP is as simple as:

- 1) Registering for a user account on <u>www.keysmith.com</u> (it's free)
- 2) Ensuring that the system running QubeMaster Xport is connected to the internet and that the connection is active.
- 3) Selecting the "Encrypt using KeySmith" option in the Xport settings.

|                              |                               | Version 2.5.1.1 |                   |
|------------------------------|-------------------------------|-----------------|-------------------|
| Convert to DCI               | X'Y'Z' Color Space            |                 |                   |
| Source Color Sp              | ace: ITU-R Rec. BT.709-5      | •               |                   |
| Custom 3D LUT                | File:                         |                 |                   |
| JPEG2000 Compre<br>Bit Rate: | ssion 150                     | C Mbit/s        |                   |
| Presentation                 |                               |                 |                   |
| Dimensionality:              | • 2D                          | Structure:      | Interop           |
|                              | ○ 3D                          |                 | ○ SMPTE           |
| Frame Rate:                  | 24                            |                 |                   |
| Image Size                   |                               |                 |                   |
| Resolution:                  | 2К 🗘                          | Aspect Ratio:   | Flat 🗘            |
|                              |                               | Width:          | 1998 Height: 1080 |
| Other Metadata —             |                               |                 |                   |
| Туре:                        | Feature 🗘                     | Territory:      | United States 🗘   |
| Language:                    | English 🗘                     | Rating:         | G ¢               |
| ✓ Use Digital Cine           | ema Naming Convention         |                 |                   |
| Facility Code:               | ТМР                           |                 |                   |
| Facility Name:               |                               |                 | Edit CPL Name     |
| Encrypt using K              | eySmith                       |                 |                   |
| 🗌 Open KeySm                 | ith after successful DCP crea |                 |                   |

- 4) For additional information on using <u>www.keysmith.com</u> please visit <u>https://support.keysmith.com/support/home</u> to view the Quick Start demo video or view the demo directly here: <u>https://support.keysmith.com/support/discussions/topics/1000074095</u>
- 5) Additional FAQs about QubeMaster Xport can be found here: http://qubecinema.com/support/faqs/qubemaster-xport-faq