User Guide

Calibrated Software, Inc.

Calibrated{Q} MXF Import component and Calibrated{Q} Import Assist contain the following source code:

Calibrated{Q} MXF Options application and Calibrated{Q} Import Assist contain the following source code:

Contents

Introduction 1

Overview

Calibrated{Q} MXF Import is a QuickTime component for NATIVE Importing and Playback of Panasonic P2, Sony XDCAM, Ikegami GFCAM, and many other types of MXF files in QuickTime Player and CatDV on Windows and Mac OSX, and Final Cut Studio 2 and 3 applications in Mac OSX. Other QuickTime-centric applications in Mac OSX or Windows may work but the users should test out those applications to insure compatibility.

Calibrated{Q} MXF Import is a QuickTime component that lets QuickTime Player, FCP, etc. understand the MXF file wrapper; however the proper QuickTime Codecs need to be installed to decompress the video. For Windows computers, this means that the proper Calibrated{Q} Decode codec(s) for Windows are needed. For Mac OSX computer either Final Cut Pro 6.0.6 or greater, Final Cut Pro 7, or Final Cut Server 1.5 is needed OR the proper Calibrated{Q} Decode codec(s) are needed (do not install Calibrated{Q} Decode codecs on a Mac computer with any version of Final Cut Pro/Final Cut Server). If you are working with DNxHD MXF files then the Avid QuickTime codecs need to be installed. Please see the System Requirements in Chapter 2 for more details.

The Calibrated{Q} MXF Import Options application sets Global Options for use with the Calibrated{Q} MXF Import component. (See Chapter: Global Options)

The ONLY Global Options that the vast majority of users will want to set are:

(1) Enabling Auto-Referencing for VBE or Indexed MXF Files (see 'Auto-Ref Options' section)

(2) Setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files (see the 'DNxHD Options' section)

DEMO MODE Limitation

Calibrated{Q} MXF Import will only read up to 30 seconds of media. If you attempt to read MXF media that is less than 30 seconds, Calibrated{Q} MXF Import will only read half of the media – this is the only DEMO MODE limitation. In every other way, the DEMO MODE for Calibrated{Q} MXF Import is fully functional. Using the software in DEMO MODE is for testing only and should not be used for commercial purposes.

Compatible MXF Files

The following MXF files will work with Calibrated{Q} MXF Import:

Panasonic P2

P2 Video Formats Supported

1. AVC-Intra
2. DVCProHD
3. DV50
4. DV25

P2 Camera Specific Notes

1. When opening/importing Video MXF files, the corresponding Audio MXF files will be 'auto-joined' when in the proper P2 Folder structure
2. P2 PullDown Removal and TimeCode conversion for **regular** PullDown 1080i29.97 and 480i29.97 material is not supported.
3. P2 PullDown can only be detected and removed thru parsing the P2 XML file data. If the P2 XML for a MXF clip is not present then pulldown cannot be detected or removed.
4. Auto-assembling of spanned MXF files is not supported. This means that if a shot is 'spanned' over multiple MXF files the MXF files will still only be opened or imported as individual MXF files.
5. AVC-Intra is only supported in Final Cut Pro 7.
6. In Final Cut Pro, the only metadata from MXF files that is currently imported into FCP is TimeCode and ReelName.

Sony XDCAM

XDCAM Video Formats Supported

1. XDCAM HD (35Mb and 25Mb)
2. XDCAM HD 422 (50Mb)
3. XDCAM EX (converted to MXF from MP4 via Sony Clip Browser)
4. IMX
5. DV25

XDCAM Camera Specific Notes

1. To work with XDCAM MXF files efficiently in FCP and other applications, Auto-Referencing should be enabled. Please see Chapter 4: Auto-Referencing for further details.
2. Auto-assembling of spanned MXF files is not supported. This means that if a shot is 'spanned' over multiple MXF files the MXF files will still only be opened or imported as individual MXF files.
3. XDCAM HD 422 (50Mb) 'Slow-Mo' 1920x540 are only supported as in FCP7
4. In Final Cut Pro, the only metadata from MXF files that is currently imported into FCP is TimeCode and ReelName.
5. IMX 'AES3' Audio requires rendering when imported into a Final Cut Pro sequence and will play back choppy in the FCP 'Viewer' window, and IMX AES3 audio will not play in QT Player X on Lion.
6. XDCAM Proxy audio will show as needing to be rendered in a FCP Sequence; however when rendering the audio – FCP will report a 'General Error'

Ikegami GFCAM

GFCAM Video Formats Supported

1. I-Frame MPEG2 100Mb 1080/720
2. Long-GOP MPEG2 50Mb 1080/720
3. I-Frame MPEG2 50/40/30Mb Standard Definition (IMX-compatible format)

GFCAM Camera Specific Notes

1. To work with GFCAM HD MXF files efficiently in FCP and other applications, Auto-Referencing should be enabled. Please see Chapter 4: Auto-Referencing for further details.

2. Auto-assembling of spanned MXF files is not supported. This means that if a shot is 'spanned' over multiple MXF files the MXF files will still only be opened or imported as individual MXF files.
3. In Final Cut Pro, the only metadata from MXF files that is currently imported into FCP is TimeCode and ReelName. The Default for the ReelName of GFCAM MXF files is the 'Bin Title'.
4. IMX 'AES3' Audio requires rendering when imported into a Final Cut Pro sequence and will play back choppy in the FCP 'Viewer' window, and IMX AES3 audio will not play in QT Player X on Lion.

Avid Media Composer

Video Formats Supported

1. DNxHD
2. DVCProHD
3. DV50
4. DV25
5. IMX
6. 1-1
7. 1-1-10b
8. Meridien

Avid Media Composer Specific Notes

1. The separate Video and Audio MXF Files from Avid Media Composer will NOT be auto-joined, and will open as separate files.
2. Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD, 1-1-10b, and Meridien MXF Files.
3. Avid Single and Multi Meridien files are not supported.
4. In Final Cut Pro, the only metadata from MXF files that is currently imported into FCP is TimeCode and ReelName.
5. IMX 'AES3' Audio requires rendering when imported into a Final Cut Pro sequence and will play back choppy in the FCP 'Viewer' window, and IMX AES3 audio will not play in QT Player X on Lion.
6. DNxHD MXF files captured by ARRI Alexa, BlackMagic HyperDeck or other hardware devices only have BETA support.
7. If a DNxHD MXF file was captured or created without a TimeCode Track then a 'fake' when this happens TimeCode is set to 00:00:00:00 (always NDF if 29.97fps or 59.94fps) at the video rate embedded in the MXF file. This was done so that (a) the MXF files would have a UUID ReelName and (b) Audio only MXF files could be identified with the proper video framerate. Please note that Audio only MXF files without any associated video framerate cannot have a TimeCode Track associated with them.
8. **IMPORTANT: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files**

Other OP1a MXF Files

Many other types of DNxHD, AVC-Intra, DVCProHD, XDCAM HD, IMX, DV50/DV25 OP1a MXF Files will work as well, please try your MXF files with Calibrated{Q} MXF Import in DEMO MODE to make sure they are supported. If you have a MXF File that Calibrated{Q} MXF Import cannot open, please contact info@calibratedsoftware.com to see if support can be added.

About DNxHD MXF Files

IMPORTANT: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files. DNxHD MXF files captured by ARRI Alexa, BlackMagic HyperDeck or other hardware devices only have BETA support.

Windows Requirements and Installation

Ensure your PC meets the following requirements prior to installing Calibrated{Q} MXF Import:

- Pentium 4 processor with SSE3 support or greater; recommended at least Intel Core 2 Duo with two cores or two physical processors
- 32/64-bit Windows 7 or Vista (Business or Ultimate) or Windows 32-bit XP with SP3
- QuickTime 7.6.6 or higher
- Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD,DV50, IMX, and XDCAM HD video contained in MXF files.
- Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files. **IMPORTANT:** Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files

Installing on Windows

To install Calibrated{Q} MXF Import on a Windows Computer:

1. Quit any applications using QuickTime.
2. Run the Calibrated{Q} MXF Import Installer. The install program creates a folder named **Calibrated** in the *[System Drive]\[Program Files]* directory. The **Calibrated** folder will contain the Calibrated{Q} MXF Import Options application, Calibrated MXF QuickStat application and User Guide.
3. Restart your computer

After running the Calibrated{Q} MXF Import installer, you will be able to access the Calibrated{Q} MXF Import Options application in this location: *[System Drive]\Program Files\Calibrated\Applications\Options\CalibratedQMXFOptions.exe*

The CalibratedMXFQ.qtx will be auto-copied to the [System Drive]\Program Files\QuickTime\QTComponents directory.

Uninstalling on Windows

To uninstall Calibrated{Q} MXF Import on a Windows Computer:

1. Go to the **Control Panel>Add/Remove Programs**.
2. Select and uninstall **Calibrated{Q} MXF Import** from the list of programs.
3. Restart your computer.

Windows Applications Support

Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, DV50, IMX, and XDCAM HD video. Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files. **IMPORTANT**: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

Please see Chapter: Use with Windows Applications for more details.

- QuickTime Player 7.6.6 or higher
- CatDV 8.1.11 or 9.0
- Premiere Pro/After Effects CS5.0.3 or 5.5
- Other 'QuickTime-centric' applications (i.e. applications that use the QuickTime SDK to open media files) may work; however it is up to the user to test out and insure compatibility with those applications

Mac OSX Requirements and Installation

Ensure your Mac meets the following requirements prior to installing Calibrated{Q} MXF Import:

- MacIntel Computer Only; recommended at least Intel Core 2 Duo with two cores or two physical processors
- Mac Intel with OSX 10.5.8(Leopard) or 10.6.8(Snow Leopard) or 10.7(Lion)
- QuickTime 7.6.6 or higher
- Final Cut Pro 6.0.6* or greater OR Final Cut Pro 7*, Final Cut Server 1.5, **OR** Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, IMX, and XDCAM HD video contained in MXF files. Calibrated{Q} Decode codecs should NOT be installed on any Mac computer with any version of Final Cut Pro or Final Cut Server. *(*please see Final Cut Pro 6/7 Chapter for any other further requirements)*
- Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD, Meridien, and 1-1 10b MXF Files **IMPORTANT**: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.
- FCP-X is not currently supported – see the FCP-X section in this User Guide for more details

Installing on Mac OSX

To install Calibrated{Q} MXF Import on a Mac Computer:

1. Quit any applications using QuickTime.
   Run the Calibrated{Q} MXF Import Installer. The install program creates a folder named **Calibrated** in the */Applications* directory. The **Calibrated** folder will contain the Calibrated{Q} MXF Import Options application, the Calibrated MXF QuickStat application and User Guide
2. The CalibratedMXFQ.component will be auto-copied to the "/Library/QuickTime"directory.
3. Restart your computer

After running the Calibrated{Q} MXF Import installer, you will be able to access the Calibrated{Q} MXF Import Options application in this location: */Applications/Calibrated/Appications/Options/CalibratedQMXFOptions.app*

Uninstalling on Mac OSX

To uninstall Calibrated{Q} MXF Import on a Mac Computer:

1. If no other Calibrated Software is installed, then delete the directory:

   /Applications/Calibrated

   and skip Step 2 and go to Step 3

2. If other Calibrated Software is installed, then only delete:
   a. /Applications/Calibrated/Applications/Options/CalibratedQMXFOptions.app
   b. /Applications/Calibrated/Applications/Stat/ CalibratedMXFQStat.app
   b. /Applications/Calibrated/Plugins/QuickTime/CalibratedMXFQ.component
   c. /Applications/Calibrated/Docs/ CalibratedQMXF-UserGuide.pdf

3. Delete this file:

   /Library/QuickTime/CalibratedMXFQ.component

   (that's the Library folder on the Main Harddrive NOT the Library folder in the User Directory)

4. Restart your computer.

Mac OSX Applications Support

For Mac OSX systems without Final Cut 6.0.6 or greater or Final Cut Pro 7 installed or Final Cut Server 1.5 installed then Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, IMX, and XDCAM HD video. Do not install Calibrated{Q} Decode codecs for OSX on any Mac OSX computer with any version of Final Cut Pro installed.

Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files. **IMPORTANT**: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

Please see Chapter: Use with Mac OSX Applications for more details.

- QuickTime Player 7.6/7.7 & X
- Final Cut Studio 2 applications; FCP 6.0.6 or greater required
- Final Cut Studio 3 applications
- CatDV 8.1.11 or 9.0
- iMovie 09/11
- Media 100 1.6.2
- Premiere Pro/After Effects CS5.0.3 or 5.5
- Final Cut Express 4.0.1
- FCP-X is not currently supported – see the FCP-X section in this User Guide for more details
- Other 'QuickTime-centric' applications (i.e. applications that use the QuickTime SDK to open media files) may work; however it is up to the user to test out and insure compatibility with those applications

Known Issues and Limitations

The following known issues and limitations are associated with Calibrated{Q} MXF Import:

- Non-ASCII file names are not supported. This means that if either the MXF filename or any folder names in the MXF file path have any characters other than standard ASCII characters then there will be an error when trying to open the MXF file. Non-ASCII characters include any Non-Latin letters or any Latin-based letters with accents or two dots over them, etc.

- Sony XDCAM HD/EX ,Ikegami, and other types of Variable Bit Rate (such as MPEG2) or other Indexed MXF Files will take longer to open due to the variable length frame structure and to use these files efficiently in FCP you must have auto-referencing enabled for Indexed MXF files. **Please see the Auto-Referencing Chapter for further details.**

- Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files. **IMPORTANT:** Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

- Calibrated{Q} MXF Import will only 'auto-join' the separate video/audio P2 or Ikegami MXF Files when they are in the proper P2 or Ikegami MXF Folder structure.

- P2 PullDown Removal and TimeCode conversion for **regular** PullDown 1080i29.97 and 480i29.97 material is not supported.

- Advanced P2 PullDown can only be detected and removed thru parsing the P2 XML file data. If the P2 XML for a MXF clip is not present then pulldown cannot be detected or removed. Also, P2 MXF Files organized from a FireStore device sometimes do not have the PullDown information in the XML file; hence pulldown will not be removed on those files from a FireStore.

- Auto-assembling of spanned MXF files is not supported. This means that if a shot is 'spanned' over multiple MXF files the MXF files will still only be opened or imported as individual MXF files.

- Other 'QuickTime-centric' applications than the ones listed in this User Guide may be able to use and open MXF files with Calibrated{Q} MXF Import as well but the user should test out those applications to insure compatibility.

- With Shake on Mac OSX, you must set the BaseFile Type to QuickTime Movie for MXF Files.

- RealTime Playback of MXF files is dependent upon both your computer system and application. Calibrated{Q} MXF Import does not actually playback or decode any video frames.

- If Final Cut Pro 6.06 or greater or Final Cut Pro 7 or Final Cut Server 1.5 is not installed, then the proper Calibrated{Q} Decode codec(s) are needed to decompress the video in the MXF files

- To take advantage of certain features in Final Cut Pro 6 or 7, such as SmoothCam Filter and Select Media Management features, it is recommended that you change the Auto-change Typecode to **MooV** in the Calibrated{Q} MXF Options application (see Chapter 3: Global Options and Chapter 5: Use with Mac OSX Applications for more details)

  IMPORTANT for FCP: In Final Cut Pro – certain Media Management functions will not work properly if the typecode of a MXF file is not 'MooV'. In those cases where the typecode of a MXF file is NOT set to 'MooV', then if you perform any Media Management in FCP – the MXF files are simply copied by FCP instead of FCP rewrapping the MXF files into a MOV file; and in cases of P2 and Ikegami MXF files where the video/audio MXF files are stored separately then FCP will only copy the Video MXF file during Media Management functions if the typecode of the MXF file is not set to 'MooV'.

- On Mac OSX, after purchasing and licensing Calibrated{Q} MXF Import for OSX, you will have to use 'refresh' in Calibrated{Q} Import Assist to update the duration of any MXF files you had imported into Final Cut Pro or Final Cut Express while in DEMO MODE. (see Chapter: Use with Mac OSX Applications and Chapter: Calibrated Refresh for FCP/FCE for more details)

- Not all OP1a AVC-Intra, XDCAM HD, DVCProHD, DV50, DV25 or IMX MXF Files are supported. If you have a MXF File that Calibrated{Q} MXF Import cannot open, please contact info@calibratedsoftware.com to see if support can be added.

- IMX MXF files with AES3 audio requires rendering when imported into FCP Sequence and will play back choppy in the FCP 'Viewer' window. Also, some applications will not 'see' the AES3 audio.

- AVC-Intra playback requires Final Cut Pro 7 or Calibrated{Q} AVC-Intra Decode

- In Final Cut Pro, the only metadata from MXF files that is currently imported into FCP is TimeCode and ReelName. **Please see the Chapter 3: Global Options to see how to setup ReelName.**

- XDCAM Proxy MXF Files have support in v2.0.3 – in FCP, XDCAM Proxy audio will show as needing to be rendered in a FCP Sequence; however when attempting to render the audio – FCP will report a 'General Error' and the audio will not be rendered.

- At this time, Calibrated{Q} MXF Import does not work directly with FCP-X or Motion 5. We are investigating the situation but at this time we do not have an ETA on when or if Calibrated{Q} MXF Import for OSX will work directly in FCP-X or Motion 5.

- Avid XDCAM MXF files may not import into AE CS 5.0/5.5 with Calibrated{Q} MXF Import – this seems limited to 25fps files (but could also happen with other frame rates). The same files will open fine in other applications including Premiere Pro CS 5.0/5.5. The only workaround at this time is to create a QT Ref MOV file of the MXF file using Calibrated{Q} Import Assist or QT Player Pro 7.6/7.7 and import the QT Ref MOV file into AE.

- There is a Mac OSX Only issue with the Apple XDCAM Codec (v2.0 or v2.0.1) that comes with FCP-X, Motion-X, or Compressor 4 - only Interlaced XDCAM EX video is affected and the issue has only been seen in one or two third party applications – basically when attempting to play and/or view the interlaced XDCAM EX video in the those applications a green 'plaid' pattern is seen over the interlaced XDCAM EX video. Since the issue happens with both XDCAM EX .MXF files and XDCAM EX .MOV files – we have determined that the issue is not caused by Calibrated{Q} MXF Import for OSX. It is also not known if the issue only happens with certain graphics cards. Apple has been informed of the issue, but the status of any resolution by Apple is not known. The only workaround is to use either the Apple XDCAM Codec v1.6 (the last version that came with FCP 7.0.3) or use Calibrated{Q} XD Decode for OSX to decode the video (please note that Calibrated{Q} XD Decode for OSX is NOT meant to be installed or used on an computer with any version of FCP installed).

- QT Ref MOV files created by the 'Auto-Referencing' process should NOT be directly used in your workflow – if you need to create QT Ref MOV files for use in your worklow please use the 'qt ref' feature in Calibrated{Q} Import Assist.

- Even though IMX NTSC MXF files are Upper-Field first - they are 'tagged ' as Lower-Field First when Calibrated{Q} MXF Import for OSX is being used with FCP or FC Studio Applications. This is due to the fact that Apple's IMX Codec that comes with FCP will automatically (on decoding a IMX NTSC video frame) shift up the picture by one scan-line and fill the last scanline with an all-black line – thus realtime converting the IMX NTSC video frame to Lower-Field first during decode. The Apple IMX Codec that comes with FCP does this because FCP and FC Studio applications work with SD NTSC 30i video with Lower-Field First. In other applications on Mac OSX, the field type will be 'tagged' as undefined. On Windows, the field type will be 'tagged' as Upper-Field first since Calibrated{Q} IMX Decode and most Windows applications will work with IMX NTSC video frames as Upper-Field first.

- When using Calibrated{Q} MXF Import in DEMO MODE with CatDV, if CatDV auto-assembles a spanned P2 clip – the clip will appear to play in slow-motion or slower than it should. This is due to Calibrated{Q} MXF Import only operating in DEMO MODE and only showing up to 30 seconds of a MXF file, but it appears that CatDV still tries to play thru the true length of the P2 spanned clip thus the appearance of it playing slower than it should

- In v2.2.0 – we added support to add a 'fake' TimeCode Track for MXF files without a TimeCode Track – when this happens TimeCode is set to 00:00:00:00 (always NDF if 29.97 or 59.94) at the video rate embedded in the MXF file. This was done so that (a) the MXF files would have a UUID ReelName and (b) Audio only MXF files could be identified with the proper video framerate. Please note that Audio only MXF files without any associated video framerate cannot have a TimeCode Track associated with them.

- When an IMX MXF file with **AES3** audio tracks is loaded into QuickTime Player X (on 10.7 or greater - Lion only), scrubbing the MXF file will be fine but QT Player X will hang. This appears to an issue with QT Player X using the built in AES3 audio decoder in Calibrated{Q} MXF Import for OSX – we believe this is an Apple bug and have sent the information to them. Starting in v2.2.0, IMX MXF files with AES3 will have the audio track disabled when loaded into QuickTime Player X on Lion – so while you will not be able to hear, QT Player X will not hang and will still play the video in the file. The workaround is to install QuickTime Player 7 and use that for playback. You can download QuickTime Player 7 from Apple here: http://support.apple.com/kb/DL923 and it will install into the /Applications/Utilities folder and can co-exist fine with QT Player X on the same computer.

- **Possible Issue in 2.3.7 Avid QT Codecs for DNxHD444:** For working with DNxHD444 (RGB-encoded DNxHD that's new in Avid MC6) – you will need to have the Avid 2.3.7 QuickTime codecs; however at this time there appears to be an error if 8-bit RGBA is requested from the Avid QT Codecs for DNxHD444 data – on Mac OSX the decoded 8-bit RGB video will look gray with a gray plaid overlay and on Windows 8-bit RGB will always be decoded as SMPTE RGB regardless if Full Range RGB is selected. 16-bit RGBA and 8-bit YUV422 colorspaces appear to behave as expected.

- When Premiere Pro and After Effects use Calibrated{Q} MXF Import to import and oepn DNxHD MXF files – for reasons unknown any DNxHD MXF file with embedded 24-bit Audio will have the audio play as 'silent' even though Premiere Pro/After Effects are able to see and correctly report all of the audio properties.

Global Options

3

Overview

This chapter describes the features available in the Calibrated{Q} MXF Import Options interface.

Important Note: You must set options within the Calibrated{Q} MXF Import Options application before opening an application that supports QuickTime and before attempting to open any MXF file in any application that supports QuickTime. If you set options while the QuickTime-supported application is opened, you will have to restart the application before the Calibrated{Q} MXF options take effect.

Starting with v2.0.0 your settings are all global for all users on the computer and stored in:

(Windows) "[SystemDrive]:\Program Data\Calibrated" for Vista and Windows 7 or "[SystemDrive]:\Documents and Settings\All users\Application Data\Calibrated" for Win XP. **The Options now require Admin Rights to change and are the same for all users on the computer.**

(Mac OSX) "/Library/Application Support/Calibrated". **The Options now require Admin Rights to change and are the same for all users on the computer.**

IMPORTANT NOTE ABOUT OPTIONS

The ONLY Global Options that the vast majority of users will want to set are:

(1) Enabling Auto-Referencing for VBE or Indexed MXF Files (see 'auto-ref' Options section)

(2) Setting up either SMPTE (default) or RGB Color Ranges for DNxHD MXF files (see the 'dnxhd' Options section)

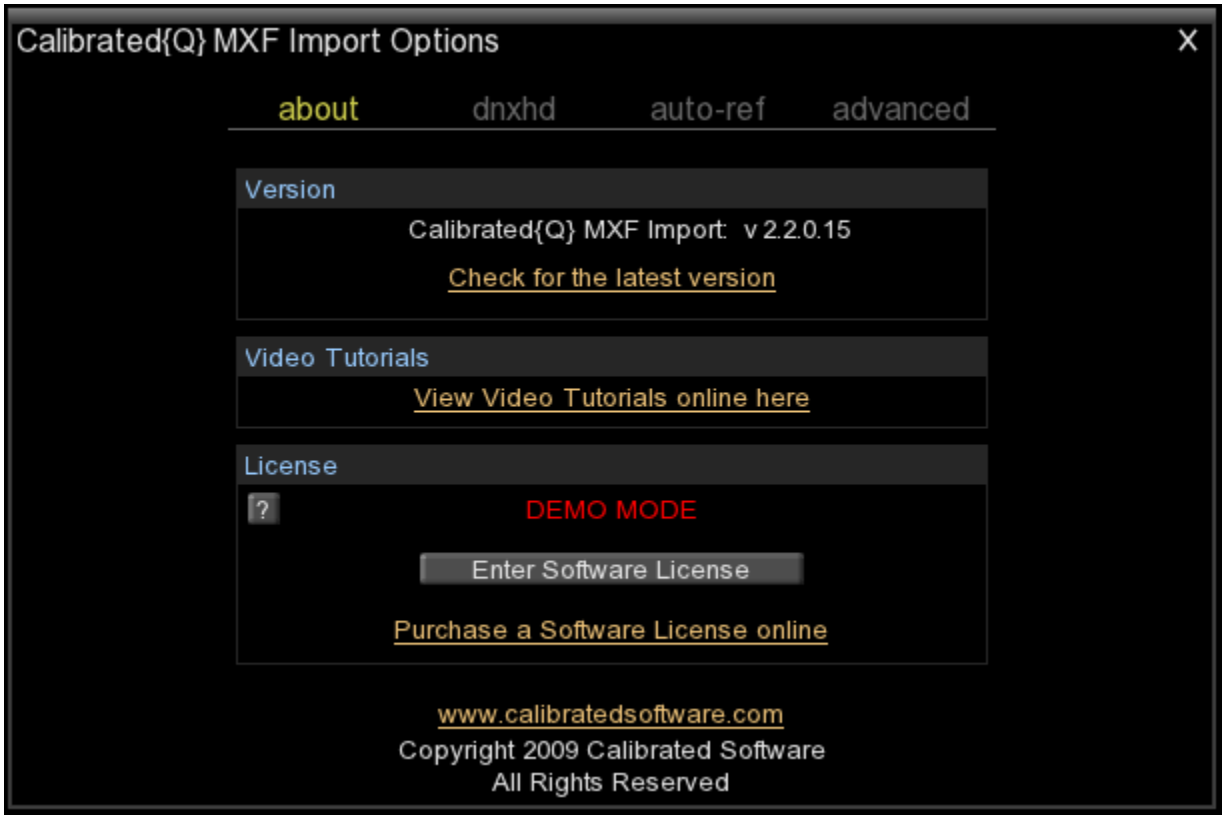
Calibrated{Q} MXF Import Options

The Calibrated{Q} MXF Import Options interface has an OpenGL GUI with four pages: **about, dnxhd, auto-ref,** and **advanced**. You can navigate to each of the four pages by clicking on that pages' name in the options interface.

The **about** page displays by default page when the Calibrated{Q} MXF Import Options application is started. The **about** page contains the version number of the currently installed Calibrated{Q} MXF Import component and indicates whether the component is running in DEMO MODE or LICENSED MODE.

You can access the **dnxhd** page by clicking **dnxhd** located at the top of the application, you can access the **auto-ref** page by clicking **auto-ref** located at the top of the application and you can access the **advanced** page by clicking on **advanced** located at the top of the application.

‘about’



Version

The version box shows the version of Calibrated{Q} MXF Import you are running and it display a webpage link of where to download the latest version.

Video Tutorials

Clicking on the link in this box will take you to our website where you can view YouTube Video Tutorials.

Entering Software License

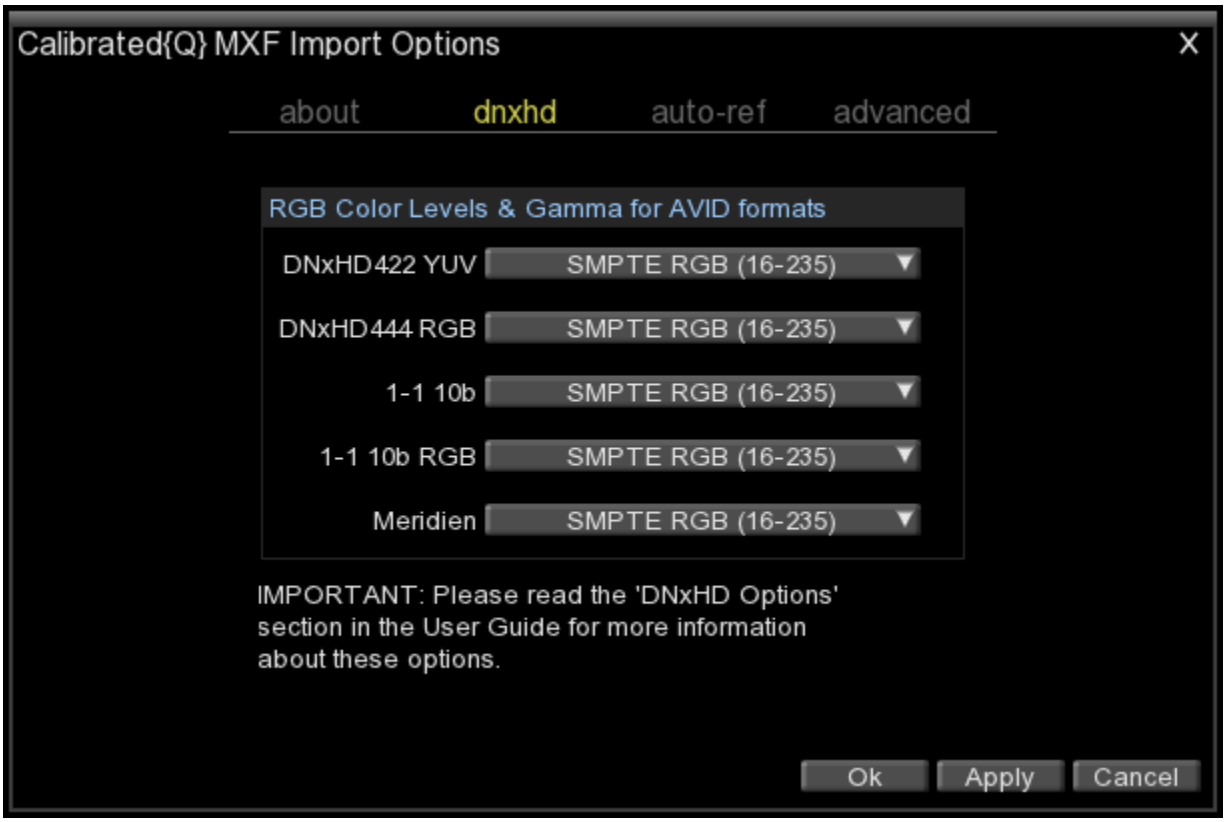
The license box is where you enter in your Software License after purchase. It will display a green LICENSED if you are properly licensed. Please see the ‘Software License’ chapter in this User Guide for more information.

DEMO MODE Limitation

Without a Software License, Calibrated{Q} MXF Import will operate in DEMO MODE and only read up to 30 seconds of media. If you attempt to read MXF media that is less than 30 seconds, Calibrated{Q} MXF Import will only read half of the media – this is the only DEMO MODE limitation. In every other way, the DEMO MODE for Calibrated{Q} MXF Import is fully functional. Using the software in DEMO MODE is for testing only and should not be used for commercial purposes.

‘dnxhd’ options

The below options control how DNxHD MXF files, Meridien MXF files and Avid 1-1 10bit MXF files will be decode to RGB colorspace with the Avid QuickTime Codecs. IMPORTANT: This options are GLOBAL and will apply to all DNxHD MXF files, 1-1 10bit MXF files,and Meridien MXF files that Calibrated{Q} MXF Import is opening.



Overview of YUV/RGB conversions

The following overview gives a very basic understanding on YUV and RGB conversions, in order to better understand the reasons for the **‘dnxhd’ options** and how these options can apply to your workflow when using Calibrated{Q} MXF Import with DNxHD, DNxHD444, 1-1 10bit YUV (Uncompressed), 1-1 10b RGB (Uncompressed) and Meridien MXF Files. For simplicity sake, we are using 16-235 or 0-255 as the color levels for YUV & RGB. These ranges apply to 8-bit color depth but please note that there are high color depths (10, 16) that have higher values but similar in range. Also, to keep this as simple as possible we will only very, very briefly touch on Gamma when going over the option **‘Full RGB (0-255) & Gamma Ext.’** in the sections below.

To start, YUV and RGB do not traditionally have the same ‘black’ and ‘white’ levels. In 8-bit YUV, black is represented as ‘16’ but in 8-bit RGB black is ‘0’, and 8-bit YUV white is ‘235’ but 8-bit RGB white is ‘255’. Any values under 16 in YUV are considered Super Black and any values over 235 are considered Super White.
Many applications (like Final Cut Pro, Premiere Pro, After Effects) will convert YUV to RGB in such a way that expands and maps the black/white levels of YUV to the black/white levels of RGB, and likewise they will convert RGB to YUV in such a way that contracts and maps the black/white levels of RGB to the black/white levels of YUV. **This is considered converting YUV to Full Range RGB (or Computer Range RGB) because the 16-235 values of YUV are expanded and mapped to the Full Range 0-255 of RGB.**

While ‘technically’ Super White and Super Black are illegal YUV values, some users do like to preserve them in their workflows and so there are some applications like Sony Vegas and Avid Media Composer that are aware of the color levels differences of YUV and RGB data. These applications allow workflows where YUV can be converted to/from RGB that provides more of a one-to-one mapping of the color levels where 16-235 YUV is converted to 16-235 RGB. **This is considered converting YUV to SMPTE Range RGB (or Video Range RGB) because the 16-235 values of YUV are mapped to 16-235 RGB.**

Some examples of when applications perform these YUV<->RGB conversions are when

a. Viewing YUV on a computer monitor since computer monitors are RGB
b. Viewing RGB on a broadcast monitor since broadcast monitors are traditionally YUV
c. Performing RGB-based effects on YUV data
d. **(**Converting between different video compression types

Some advantages/disadvantages of using Full Range RGB conversions

a. Full Range RGB is found in more applications especially more 'non-professional' applications
b. Since Full Range RGB is more commonly found in applications, viewing Full Range RGB on a computer monitor will not look 'washed' out
c. Full Range RGB does not preserve the Super White and Super Black values of YUV

Some advantages/disadvantages of using SMPTE Range RGB conversions

a. SMPTE RGB preserves the Super White and Super Black values of YUV
b. SMPTE RGB may look 'brighter' or 'washed' out on your computer if Full Range RGB is expected by an application
c. Using SMPTE RGB is more of a complex workflow as usually applications are expecting RGB to be in the Full Range RGB.

Overview of YUV/RGB in Avid Media Composer

Avid Media Composer is aware of the color level differences of YUV and RGB data, and Avid MC allows workflows where YUV can be converted to/from SMPTE Range RGB, thus preserving the Super White and Super Black values of YUV.

Basics of Importing Media into Avid MC

When importing files into Avid MC via the 'Import…' command from the Avid Media Composer application menu, Avid MC will usually convert the incoming media to a flavor of DNxHD (usually the YUV-based DNxHD) and one of the import options that Avid MC gives you is to identify the incoming media as you having either SMPTE RGB via the '601 SD or 709 HD (16-235)' option or 'Computer RGB (0-255)' and Avid MC will compress the incoming media to DNxHD based on the

When importing via AMA Linking, Avid Media Composer is able to decompress and read the compressed video data natively – thus Avid MC AMA Linking can avoid any unnecessary YUV<->RGB conversions.

Basics of Exporting QuickTime MOV files from Avid MC

When exporting from Avid MC, you can export into a wide range of formats – but for the purposes of this User Guide we will only go over exporting DNxHD MXF files as DNxHD MOV files in Avid MC.

In Avid MC, you can right-click on a DNxHD MXF file in your Avid Bin and choose export and select 'QuickTime Movie' and choose 'Same as Source' and check 'Use Avid Codecs' – using those settings for exporting will simply rewrap the DNxHD MXF file as a DNxHD MOV file without converting the actual DNxHD data.

There's also another option we have to set before exporting from Avid MC – it's the 'Color Levels' option and the two options are

(a) 'RGB'
(b) '601/709'

The above options will not convert the DNxHD data; rather it's a setting for the Avid QuickTime Codecs that gets embedded in the MOV file wrapper. The above setting will tell the Avid QuickTime Codecs how to convert the DNxHD to RGB, if RGB is requested by an application. So if you had selected the '601/709' Color Level on export the DNxHD MOV file then anytime DNxHD is converted to RGB by the codecs it will be SMPTE RGB, and likewise for the 'RGB' Color Level setting.

We believe that Avid MC gives this option on exporting DNxHD MOV files because Avid realizes that not all applications work with SMPTE RGB and this setting enables users to work with DNxHD MOV files at Full Range RGB in those applications.

Please note that Avid did introduce a new DNxHD444 RGB format in Avid MC 6. This flavor of DNxHD is not compressed from YUV data like the other flavors of DNxHD, but it is compressed from RGB data. The above 'Color Level' settings still seem to apply on whether the DNxHD444 is decompressed to SMPTE RGB or Full Range RGB.

Overview of the Avid QuickTime Codecs

The reason why we discussed how to export DNxHD MOV files from Avid MC is because Calibrated{Q} MXF Import is a QuickTime Import component that enables supported applications to 'open' and 'use' a MXF file like a MOV file. However, the actual video in MXF files is decoded by the appropriate QuickTime Video codecs installed on your computer. So when Calibrated{Q} MXF Import opens a DNxHD MXF file – the actual DNxHD data in the MXF file will be decoded by the Avid QuickTime Codecs installed on the computer.

Per our research – the Avid QuickTime codecs support decoding to 16/8-bit RGB(A) 444(4), 8-bit YUV422, and two other 'special' 8-bit YUV444 formats that mainly are only used in Final Cut Pro or Final Cut Studio applications.

When the Avid QuickTime Codecs are converting YUV<->RGB the embedded Color Level setting in the DNxHD MOV file lets the Avid QuickTime Codecs know whether to use SMPTE RGB or Full Range RGB.

The actual DNxHD MXF files do not have this embedded 'tag' in the MXF file, but because Calibrated{Q} MXF Import uses the Avid QuickTime Codecs to decode the DNxHD data in MXF files then Calibrated{Q} MXF Import must also supply this Color Level setting to the Avid QuickTime Codecs so that they will know whether to use SMPTE RGB or Full Range RGB.

Another interesting facet of the Avid QuickTime Codecs is the QuickTime Gamma that is reported when 8-bit YUV422 is requested from the Avid QuickTime Codecs. QuickTime Gamma can be a very confusing and complex topic but to keep things simple – traditionally the QuickTime Gamma for YUV is reported as 2.22 for HD and 2.2 for SD, while traditionally QuickTime Gamma for RGB is report as 1.8 on the Mac and 2.5 on Windows (this is known as 'QuickTime Platform Gamma' – for the gamma of the platform that you're on). In more QuickTime-centric applications (such as Final Cut Pro and FC Studio applications), Gamma correction is also applied when converting to and from YUV<->RGB. When decoding DNxHD to YUV, the QuickTime Gamma that is reported by the Avid QuickTime Codecs is the 'Platform Gamma' and not the traditional 2.22 for YUV HD in QuickTime. It is unknown at this time why this is done in the Avid QuickTime Codecs but presumably this was done so that QuickTime would not possibly perform any Gamma Correction during YUV<->RGB transformations – while this can be beneficial in some workflows (and we're not trying to second guess why Avid designed their codecs the way they did) and many applications do ignore reported QuickTime YUV Gamma - by not reporting the 'expected' QuickTime Gamma for YUV this can also cause color differences in more QuickTime-centric applications like FCP and FC Studio applications where they are expecting to see the traditional QuickTime Gamma of YUV being reported.

So with these considerations in mind:

(1) Color Level Setting to report to Avid QuickTIme Codecs for decoding DNxHD
(2) Avid QuickTime Codecs report a 'Platform' QuickTime Gamma when DNxHD is decompressed to YUV data

the following options in the next sub-section have been added to Calibrated{Q} MXF Import.

Possible Issue in 2.3.7 Avid QT Codecs for DNxHD444: For working with DNxHD444 (RGB-encoded DNxHD that's new in Avid MC6) – you will need to have the Avid 2.3.7 QuickTime codecs; however at this time there appears to be an error if 8-bit RGBA is requested from the Avid QT Codecs for DNxHD444 data – on Mac OSX the decoded 8-bit RGB video will look gray with a gray plaid overlay and on Windows 8-bit RGB will always be decoded as SMPTE RGB regardless if Full Range RGB is selected. 16-bit RGBA and 8-bit YUV422 colorspaces appear to behave as expected.

Overview of the 'dnxhd' options in Calibrated{Q} MXF Import

IMPORTANT: These options are GLOBAL in nature – meaning the options will apply to all DNxHD MXF files, 1-1 10bit MXF files,and Meridien MXF files that Calibrated{Q} MXF Import is opening for any application on the computer.

There three options that you can choose for each of the different video formats are:

(1) SMPTE RGB (16-235) **(DEFAULT OPTION)**

(2) Full RGB (0-255)

(3) Full RGB (0-255) & Gamma Ext. **(BETA OPTION)**

These three options can be independently set for DNxHD (YUV based), DNxHD444 (RGB based), 1-1 10bit YUV (Uncompressed), 1-1 10b RGB (Uncompressed) and Meridien MXF Files as these are the video compression formats that Calibrated{Q} MXF Import uses with the Avid QuickTime Codecs. Please note that for simplicity sake we will only refer to 'DNxHD' when describing how to use the options for all five of the Avid formats that use this option.

Please note that the number ranges used: 16-235 and 0-255 in the menu choices are used for simplicity sake as a point of reference for YUV<->RGB color levels. 16-bit RGB conversions would obviously not be limited to values less than 255, and would have much higher levels but in similar ranges.

Please note that none of the three options affects the actual MXF file on your harddrive – rather these options are used by Calibrated{Q} MXF Import to describe the DNxHD video in the MXF file when Calibrated{Q} MXF Import is opening a DNxHD MXF file for an application.

When you change any of these settings, you will have to close and re-open your application for these settings to apply, and in rare circumstances you may have to re-import the files back in your application.

(1) SMPTE RGB (16-235) – DEFAULT OPTION

This is the default option. This is the option where YUV will be converted to SMPTE Range RGB when RGB data is requested by an application from the Avid QuickTime Codecs. You will retain the super white/super black information from YUV; however the RGB may look 'washed out' in applications where Full Range RGB is expected.

This setting would not affect YUV data if that is requested by an application, as YUV data would be decompressed from DNxHD and handed to the application without any color level changes. The only exception for YUV not looking as expected would be in FCP or FC Studio applications where traditional YUV QuickTime Gamma (2.22HD or 2.2SD) and not Platform Gamma is expected to be reported for YUV data by the Avid QuickTime Codec.

This option would be equivalent to DNxHD MOV files that had been exported out of Avid MC with the '601/709' Color Level option set.

This is a more 'advanced option' but was chosen as the default option for the following reasons:

a) We usually find many more DNxHD MOV files exported out of Avid MC with the '601/709' Color Level option set in post-production workflows.

b) The Avid users we usually speak with are much more adamant about preserving the Super White/Super Black levels in RGB even if it makes their workflows more complex in applications that don't support SMPTE RGB

c) And we find that usually Calibrated{Q} MXF Import is used with DNxHD MXF files for quick-round trips in other applications like After Effects, where Calibrated{Q} MXF Import is used to import the DNxHD MXF files, a few simple effects are done, and then re-exported as DNxHD MOV files using the Avid QuickTime Codecs with the '709' Color Levels selected in the Avid QuickTime Codecs Options window. These exported DNxHD MOV files can then be imported back into Avid MC with no loss in super black/white levels.

(2) Full RGB (0-255)

This is the option where YUV will be converted to Full Range RGB when RGB is requested by an application from the Avid QuickTime Codecs. You will lose any super white/super blacks values when YUV is converted to RGB but full range RGB is used by many more applications so viewing the Full Range RGB would look normal (i.e. it would not look washed out).

This setting would not affect YUV data if that is requested by an application, as YUV data would be decompressed from DNxHD and handed to the application without any color level changes. The only exception for YUV not looking as expected would be in FCP or FC Studio applications where traditional YUV QuickTime Gamma (2.22HD or 2.2SD) and not Platform Gamma is expected to be reported for YUV data by the Avid QuickTime Codec.

Round-tripping could still easily be accomplished in applications like After Effects, where Calibrated{Q} MXF Import is used to import the DNxHD MXF files, a few simple effects are done, and then re-exported as DNxHD MOV files using the Avid QuickTime Codecs with the RGB Color Levels selected in the Avid QuickTime Codecs Options window. These exported DNxHD MOV files can then be imported back into Avid MC but would have lost values above and below the super black/white levels.

This option would be equivalent to DNxHD MOV files that had been exported out of Avid MC with the 'RGB' Color Level option set.

(3) Full RGB (0-255) & Gamma Ext. – BETA OPTION

Please note that this option is a new feature that is BETA. This feature is mainly for FCP and FC Studio applications where DNxHD MXF files will be added to ProRes Sequences or other types of FCP Sequences where the DNxHD Codec is NOT used as the Sequence Renderer. The reason we have currently labeled this BETA is that it has not been tested out with round-tripping to Avid MC by exporting back to DNxHD MOV files using the Avid QuickTime Codecs; however this option is not made for that goal in mind – rather it's for using DNxHD MXF files on ProRes Sequences or other types of FCP Sequences where the DNxHD Codec is not used as the Sequence Renderer. Also, this option should not be used with DNxHD MXF files where the video was recorded with Log Curves.

This is the option where YUV will be converted to Full Range RGB when RGB is requested by an application from the Avid QuickTime Codecs. You will lose any super white/super blacks values when YUV is converted to RGB but full range RGB is used by many more applications so viewing the Full Range RGB would look normal (i.e. it would not look washed out).

With this option, Calibrated{Q} MXF Import will also add a 'Gamma Image Description Extension' set to 2.22 for HD or 2.2 for SD when presenting the MXF file information to the QuickTime framework. This Gamma Image Description Extension is a little used QuickTime property that enables the file rather than the codec to declare the Gamma of the video in the file, and in doing this we can get around the fact that the Avid QuickTime Codecs will report YUV as 'Platform Gamma'. This 'Gamma Image Description Extension' will let FCP & FC Studio apps know that the DNxHD has the same YUV Gamma as ProRes, and display and process the YUV from the DNxHD Codec in a similar manner as the ProRes Codec. (see *the 'dnxhd' options for Final Cut Pro 7, Compressor and FCP-X sub-sections* below)

This option has not been tested with round–tripping to Avid MC, and while round-tripping may work in applications with the Avid QuickTime Codecs – it may not work in all applications as expected. This option is meant for users wanting to use DNxHD MXF files in FCP or FC Studio application with ProRes Sequences or other types of FCP Sequences where the DNxHD Codec is not used as the Sequence Renderer, and exporting back out to DNxHD is not the desired goal. Also, this option should not be used with DNxHD MXF files where the video was recorded with Log Curves.

QT Player will also use the information in the 'Gamma Image Description Extension' so this option would also affect how DNxHD MXF files are displayed and exported in QuickTime Player X & 7.6/7.7. The YUV data will be handled in the same way that it's handled in FCP with this option.

This option can also be set on Mac computers where After Effects and/or Premiere Pro are installed on the same computer with FCP, as those Adobe applications does not use and should ignore the reported QuickTime Gamma (see *the 'dnxhd' options for After Effects and Premiere Pro sub-sections* below)

Because of the addition of the 'Gamma Image Description Extension', this option does not have an equivalent DNxHD MOV files that would be exported out of Avid MC.

How should you setup the 'dnxhd' options for Calibrated{Q} MXF Import?

That's a question that's hard to answer as it depends on the specific workflow that you are using or that you want to use. Some of the factors you'd want to consider are

(a) Does the application you want work in support SMPTE RGB or Full Range RGB?

(b) Do you want to preserve Super White/Super Black values?

(c) Are you using DNxHD MOV files in your workflow? If so, what Color Level setting were they exported out of Avid MC with?

(d) Are you round-tripping back to Avid MC? (i.e. is your goal to export DNxHD MOV files using the Avid QuickTime codecs from the application you're working in)

To better help in your decision on how to setup your workflow – we've tested how the options work in a few different applications in the next sections. In our testing we used the Avid v2.3.7 QuickTime Codecs and a 720p59.94 DNxHD 220 MXF file, but please note that the information about how the options work in the different applications should be considered as guidelines as your setups/workflows may be slightly different than how we tested.

Also we're trying to upload some simple Video Tutorials in the next few weeks – if you don't find any, please check back in the coming weeks: http://www.calibratedsoftware.com/MXFImportTutorials.asp

Before getting started please make sure that you've read over the User Guide (especially where we have sections that deal with the application you are using), and here are just a few quick remainders:

(1) Make sure you have the Avid QuickTime Codecs (v2.3.4 or v2.3.7) installed

(2) Please be aware that if Audio and Video are stored in separate MXF files that they will be open as separate files and not be 'auto-joined' together by Calibrated{Q} MXF Import

(3) The option *'Full RGB (0-255) & Gamma Ext.'* is a BETA option.

(4) DNxHD MXF files captured by ARRI Alexa, BlackMagic HyperDeck or other hardware devices only have BETA support.

(5) DNxHD444 MXF files only have BETA support.

(6) ARRI DNxHD MXF files may or may not have an embedded ReelName or Sound ReelName in the XML MetaData of the MXF file; however in keeping a consistent workflow with across all the different MXF files we support the ReelName will still be reported as the UUID of the MXF file and a secondary Sound ReelName is not supported.

(7) When you change any of 'dnxhd' options, you will have to close and re-open your application for these settings to apply, and in rare circumstances you may have to re-import the files back in your application.

(8) Please note that none of these 'dnxhd' options affects the actual MXF file on your harddrive – rather these options are used by Calibrated{Q} MXF Import to describe the DNxHD video in the MXF file when Calibrated{Q} MXF Import is opening a DNxHD MXF file for an application.

(9) If a DNxHD MXF file was captured or created without a TimeCode Track then a 'fake' when this happens TimeCode is set to 00:00:00:00 (always NDF if 29.97fps or 59.94fps) at the video rate embedded in the MXF file. This was done so that (a) the MXF files would have a UUID ReelName and (b) Audio only MXF files could be identified with the proper video framerate. Please note that Audio only MXF files without any associated video framerate cannot have a TimeCode Track associated with them.

To better help in your decision on how to setup your workflow – we've tested how the options work in a few different applications in the next sections. In our testing we used the Avid v2.3.7 QuickTime Codecs and here is how we generated our test files:

Original file is a 1280x720p59.94 XDCAM HD MXF file, and then we re-wrapped the XDCAM HD MXF file into a XDCAM HD MOV file using Sony XDCAM Transfer on the Mac. These two XDCAM HD files (one MXF and one MOV) served as our 'Control files' in testing how the video should look in the application being tested. We would use either the MXF or MOV file in an application depending on which file format the application natively supported.

Our DNxHD testing files were created as followed:

(a) The XDCAM HD MXF file was AMA Linked into Avid MC6 and then then transcoded to a DNxHD 220 MXF file.
(b) From the DNxHD 220 MXF file, we exported two DNxHD 220 MOV files from Avid MC6 using 'Same As Source' with one DNxHD MOV file having the 709/601 Color Level setting and the other DNxHD MOV file having the 'RGB' Color Level setting.

So while we are testing the different options of how Calibrated{Q} MXF Import will open a DNxHD MXF file in an application as compared to the original XDCAM HD file– we are also comparing that to the expected behavior when a DNxHD MOV file is imported into the same application. All of the comparisons were done visually on the computer screen in the application being tested.

File Reference for below tests:

XDCAM-MXF – this is the original XDCAM HD MXF file.
XDCAM-MOV – this is the MOV file create by re-wrapping the XDCAM MXF file to a MOV file using Sony XDCAM Transfer.

DNxHD-MXF – this is the DNxHD 220 MXF file we generated in Avid MC6 by AMA linking the above XDCAM MXF file and then transcoding to a DNxHD 220 MXF file.

DNxHD-709-MOV – this is the DNxHD 220 MOV file we generated by exporting the DNxHD-MXF file as a MOV file in Avid MC6 and using 'Same as Source' with the Color Level Setting set to '601/709'

DNxHD-RGB-MOV – this is the DNxHD 220 MOV file we generated by exporting the DNxHD-MXF file as a MOV file in Avid MC6 and using 'Same as Source' with the Color Level Setting set to 'RGB'

DNxHD-709-REFMXF – this refers to a QT Ref MOV file of the DNxHD-MXF file created by Calibrated{Q} Import Assist when the 'dnxhd' option is set to 'SMPTE RGB (16-235)'. This should behave in the same way as file **DNxHD-709-MOV** in the applications we are testing.

DNxHD-RGB-REFMXF – this refers to a QT Ref MOV file of the DNxHD-MXF file created by Calibrated{Q} Import Assist when the 'dnxhd' option is set to 'Full RGB (0-255)'. This should behave in the same way as file **DNxHD-RGB-MOV** in the applications we are testing.

DNxHD-RGB-GAMMA-REFMXF – this refers to a QT Ref MOV file of the DNxHD-MXF file created by Calibrated{Q} Import Assist when the 'dnxhd' option is set to 'Full RGB (0-255) & Gamma Ext.'. This may or may not behave in the same way as file **DNxHD-RGB-MOV** in the applications we are testing – it depends on if an application uses the Gamma Extension.

We used the 3 generated QT Ref MOV files as an easier way to compare Color Level differences between the different 'dnxhd' options side-by-side in an application. Importing the DNxHD MXF file natively in application that support Calibrated{Q} MXF Import would yield the same results as using the QT Ref MOV files for Color Level Testing.

Also, we used **DNxHD-709-MOV & DNxHD-RGB-MOV** to make sure that **DNxHD-709-REFMXF** & **DNxHD-RGB-REFMXF** appeared as expected in the test applications and this was always the case. The only difference we will make a notation of in the experiments is if **DNxHD-RGB-REFMXF & DNxHD-RGB-GAMMA-REFMXF** have the same Color Levels or not in an application.

Please note that the following tests should be considered guidelines since your setups/workflows may be slightly different than how we tested. Also, please remember when you change any of 'dnxhd' options, you will have to close and re-open your application for these settings to apply, and in rare circumstances you may have to re-import the files back in your

application. Also, if you generated QT Ref MOV files from the DNxHD MXF files then whenever you change the options – you would have to generate new QT Ref MOV files from the DNxHD MXF files if you wanted to ‘see’ the option change in the QT Ref MOV file.

'dnxhd' options for Final Cut Pro 7.0.3

*Control file used was the **XDCAM-MOV** file.*

Test was performed on a Mac OSX 10.6.8 system with all of the latest updates

We did not perform any 'Send to Compressor' export tests, nor in-depth rendering/effects tests, nor did we perform any in-depth editing speed tests, and no third-party hardware I/O boards were used in this test. All visual comparison tests were performed on the computer monitor by sight.

Viewer Window

In the FCP Viewer Window,

1) When viewing files in the Viewer Window from the ***FCP Bin*** in the Viewer Window, **DNxHD-RGB-GAMMA-REFMXF** & **DNxHD-RGB-REFMXF** are visually the same – and are also visually the same as the **XDCAM-MOV** file; however **DNxHD-709-REFMXF** is much brighter.
2) When viewing the files in the Viewer Window from a ***FCP Sequence with DNxHD*** set as the Sequence codec, **DNxHD-RGB-GAMMA-REFMXF** & **DNxHD-RGB-REFMXF** are visually the same – and are also visually the same as the **XDCAM-MOV** file; however **DNxHD-709-REFMXF** is much brighter.
3) When viewing the files in the Viewer Window from a ***FCP Sequence with ProRes*** set as the Sequence codec, **DNxHD-RGB-GAMMA-REFMXF** & **XDCAM-MOV** are visually the same; however **DNxHD-RGB-REFMXF** & **DNxHD-709-REFMXF** are visually the same and are much brighter than **DNxHD-RGB-GAMMA-REFMXF** & **XDCAM-MOV**.

This would lead us to the conclusion that in the first two tests above, DNxHD is being decoded to RGB data hence the reason that **DNxHD-709-REFMXF** is much brighter since it is decoding to SMPTE RGB range while the other files are decoding to Full Range RGB.

However in the third test it appears that DNxHD is being decoded to YUV data since **DNxHD-RGB-REFMXF** & **DNxHD-709-REFMXF** are visually the same; however **DNxHD-RGB-GAMMA-REFMXF** & **XDCAM-MOV** are visually the same and are darker than the **DNxHD-RGB-REFMXF** & **DNxHD-709-REFMXF.** Thus it appears that the added Gamma Extensions does make an impact when viewing YUV data in FCP7.

Editing on a ProRes Sequence

When viewing the unrendered files in the Canvas Window from a ***FCP Sequence with ProRes*** set as the Sequence codec, **DNxHD-RGB-REFMXF** & **DNxHD-709-REFMXF** are visually the same; however **DNxHD-RGB-GAMMA-REFMXF** & **XDCAM-MOV** are visually the same and are darker than the **DNxHD-RGB-REFMXF** & **DNxHD-709-REFMXF.** Thus it appears that the added Gamma Extensions does make an impact when viewing YUV data in FCP7.

When rendering the DNxHD files to ProRes on the FCP Sequence:

(a) ***"Always Render in RGB"*** – **DNxHD-RGB-GAMMA-REFMXF** & **XDCAM-MOV** are visually the same; however both **DNxHD-RGB-REFMXF** & **DNxHD-709-REFMXF** are much brighter with **DNxHD-709-REFMXF** being brighter than **DNxHD-RGB-REFMXF.**

(b) ***"Render in 8-bit YUV"*** **- DNxHD-RGB-GAMMA-REFMXF** & **XDCAM-MOV** are visually the same; however **DNxHD-RGB-REFMXF** & **DNxHD-709-REFMXF** are visually the same and are much brighter than **DNxHD-RGB-GAMMA-REFMXF** & **XDCAM-MOV**.

(c) ***"Render all YUV material in High-Precision YUV"*** **–** the results of this test were the same as Test (b) above.

All DNxHD .MOV files and all DNxHD MXF files we tested with do not play in realtime on a ProRes Sequence until they are rendered (into ProRes) on the sequence. This would lead us to the conclusion that realtime editing of native DNxHD files is not possible on a ProRes Sequence.

Editing on a DNxHD Sequence

When viewing the unrendered files in the Canvas Window from a ***FCP Sequence with DNxHD*** set as the Sequence codec, **DNxHD-RGB-REFMXF & DNxHD-RGB-GAMMA-REFMXF & XDCAM-MOV** are visually the same; however **DNxHD-709-REFMXF** is much brighter than the other 3 files**.**

Please make sure that you have setup the 'Advanced Options' for the DNxHD Codec in the Sequence settings to match the height/width, framerate and bitrate of your DNxHD files in your sequence.

When selecting to Render All in the FCP Sequence:

(a) ***"Always Render in RGB with Color Levels set to 709 in Advanced Options of DNxHD Codec"*** – **DNxHD-RGB-GAMMA-REFMXF** & **DNxHD-RGB-REFMXF** are visually the same; however **DNxHD-709-REFMXF** is much brighter than them. **XDCAM-MOV** file is much darker than all three DNxHD files**.**

(b) ***"Always Render in RGB with Color Levels set to RGB in Advanced Options of DNxHD Codec"*** – results of this test appear to be the same as Test (a) above

(c) ***"Render in 8-bit YUV with Color Levels set to 709 in Advanced Options of DNxHD Codec"*** - **DNxHD-RGB-GAMMA-REFMXF** & **DNxHD-RGB-REFMXF** are visually the same, and **DNxHD-709-REFMXF and XDCAM-MOV** are visually the same is and are much brighter than **DNxHD-RGB-GAMMA-REFMXF** & **DNxHD-RGB-REFMXF**.

(d) ***"Render in 8-bit YUV with Color Levels set to RGB in Advanced Options of DNxHD Codec"*** - **DNxHD-RGB-GAMMA-REFMXF** & **DNxHD-RGB-REFMXF & XDCAM-MOV** are visually the same, however **DNxHD-709-REFMXF** is much brighter than the other three files.

(e) ***"Render all YUV material in High-Precision YUV" –*** the results of this test were the same as Test (c) with Color Levels set to 709 in Advanced Options of DNxHD Codec and Test (d) with Color Levels set to RGB in Advanced Options of DNxHD Codec

DNxHD files appear to play in realtime on a DNxHD Sequence; however we did not mix and match different types of DNxHD resolutions, bit rates or framerates on a DNxHD Sequence.

While not tested, it could be possible that RGB-based effects performed on a 'Render in 8-bit YUV' Sequence could produce similar color shifts that are found when 'Always Render in RGB' is selected for a Sequence.

Possible Issue in 2.3.7 Avid QT Codecs for 709/RGB Color Levels: It appears that when working with DNxHD MOV files with SMPTE Color Level Settings and DNxHD MOV files with RGB Color Level settings on the same DNxHD Sequence that the DNxHD MOV files with SMPTE Color Level Settings (when unrendered) can 'appear' to look like Full Range RGB on the Sequence at times. This is being investigated.

RECOMMENDATION

Whenever you **change** the 'dnxhd' options – please be aware that if you had 'Auto-Rendering' enabled in FCP then you would have to re-render any sequences that had been auto-rendered in FCP with a different 'dnxhd' option.

We did not perform any 'Send to Compressor' export tests, nor in-depth rendering/effects tests, nor did we perform any in-depth editing speed tests, and no third-party hardware I/O boards were used in this test. All visual comparison tests were performed on the computer monitor by sight.

If you are editing on a ProRes Sequence in FCP7, it appears that playback/editing of DNxHD video will NOT be in realtime until the DNxHD is rendered to ProRes on the sequence. Also it appears that ONLY the 'dnxhd' option: **Full RGB (0-255) & Gamma Ext.** will render DNxHD to have the same color levels as other rendered FCP-supported video compressions (like XDCAM MOV). It is NOT recommend to use either **'SMPTE RGB (16-235)'** or **'Full RGB (0-255)'** when editing on a ProRes Sequence as that could produce unexpected color level shifts.

If you are editing on a DNxHD Sequence in FCP7, it appears that playback/editing of DNxHD video will be in realtime although no exact speed tests were performed and no third party i/o cards were tested. Also it appears that setting up a

DNxHD Sequence with ***"Render in 8-bit YUV with Color Levels set to RGB in Advanced Options of DNxHD Codec"*** and setting the 'dnxhd' option to either: **Full RGB (0-255) & Gamma Ext.** or **'Full RGB (0-255)'** would appear to have the most consistent color levels since FCP expects RGB video to be in the Full Range. Also it appears that the added Gamma Extensions of **Full RGB (0-255) & Gamma Ext.** has no difference and is visually the same to the option **'Full RGB (0-255)'** when a DNxHD Sequence is setup with ***"Render in 8-bit YUV with Color Levels set to RGB in Advanced Options of DNxHD Codec"*** in our above tests.

Although you could set the 'dnxd' option to **SMPTE RGB (16-235)** and you could setup a DNxHD FCP Sequence to ***"Render in 8-bit YUV with Color Levels set to 709 in Advanced Options of DNxHD Codec"*** to work in SMPTE RGB Range – please note that this would be a more complicated workflow and this *could* produce unpredictable color level shifts when working with different effects or with i/o boards as they would be expecting Full Range RGB.

'dnxhd' options for FCP-X 10.0.3

*Control file used was the **XDCAM-MOV** file.*

Test was performed on a Mac OSX 10.6.8 system with all of the latest updates and no third-party hardware I/O boards were used in this test.

Please note that no realtime editing speed tests were done with the QT Ref MOV files on a FCP-X timeline.

We did not perform any 'Send to Compressor' export tests. **All visual comparison tests were performed on the computer monitor by sight.**

FCP-X does not use Calibrated{Q} MXF Import to natively import MXF files so your workflow would be to create QuickTime Reference MOV files of DNxHD MXF files using Calibrated{Q} Import Assist and import the QT Ref MOV files into FCP-X. After importing the QT Ref MOV files into FCP-X you could either edit with them or convert them into ProRes.

In our FCP-X tests the files**, DNxHD-RGB-GAMMA-REFMXF** & **DNxHD-RGB-REFMXF** are visually the same – so the Gamma Extension appears to not make a difference in FCP-X.

We transcoded the **XDCAM-MOV, DNxHD-RGB-REFMXF, and DNxHD-709-REFMXF** to ProRes 422 MOV files from the FCP-X timeline. The ProRes MOV files generated from the XDCAM-MOV and DNxHD-RGB-REFMXF files appeared virtually the same while the ProRes MOV file generated from the DNxHD-709-REFMXF file was much brighter.

RECOMMENDATION

It would appear that FCP-X is requesting RGB video from the Avid QuickTime Codecs and FCP-X is expecting the RGB to be in Full Range RGB Color Levels. So you should only work with **DNxHD MXF files using the 'Full Range' option or with DNxHD MOV files embedded with the 'RGB" Color Levels** in FCP-X.

'dnxhd' options for Compressor 3.5.3 & 4.0.2

*Control file used was the **XDCAM-MOV** file.*

IMPORTANT: Any change in the 'dnxhd' options may require you to restart your computer for the changes to be 'seen by Compressor, as Compressor can run silently in System Memory.

For the below tests, all files were imported manually into Compressor. We did not use the 'Send to Compressor' feature in FCP-7 or FCP-X which could make a difference in test results. **All visual comparison tests were performed on the computer monitor by sight.**

In the Preview Window in Compressor,

DNxHD-RGB-GAMMA-REFMXF & DNxHD-RGB-REFMXF are visually the same.

DNxHD-709-REFMXF appears brighter than **DNxHD-RGB-REFMXF.**

XDCAM-MOV is much darker than both.

CONCLUSION: Based on the above results it would appear that for display in the Preview Window, Compressor is requesting RGB from the Avid QuickTime Codecs due to the fact that we see a Color Level difference between **DNxHD-709-REFMXF & DNxHD-RGB-REFMXF –** there would be no Color Level difference with YUV data. Also since **DNxHD-RGB-GAMMA-REFMXF & DNxHD-RGB-REFMXF** are visually the same then the added Gamma Extension appears to make no difference when viewing in the Preview Window.

Exporting from Compressor as ProRes 422, ProRes422 HQ, and ProRes444

When exporting we used all default setups in Compressor and all files were manually imported into Compressor. We did not use the 'Send to Compressor' feature in FCP-7 or FCP-X which could make a difference in test results.

All ProRes MOV files generated from all of the DNxHD tests file, regardless of options or Color Level Settings, were visually the same as the corresponding ProRes MOV files generated from the **XDCAM-MOV** file. This would lead us to the conclusion that when converting to ProRes with the above setup parameters that Compressor will perform conversions using YUV data and ignore reported YUV Gamma thus avoiding any color level changes or gamma shifts.

RECOMMENDATION

It appears that Color Level settings do not make a difference when exporting DNxHD to ProRes with default manual setups in Compressor. Please note that we did not try exporting any DNxHD nor did we perform any 'Send to Compressor' tests from FCP, which could make a difference in test results.

'dnxhd' options for After Effects CS5.5

*Control file used was the **XDCAM-MXF** file.*

Please note that After Effects CS5.0 was not tested but presumably should act in the same manner as CS5.5 Also the Working Space color was set to none for the project.

We performed our tests on a Windows 7 64-bit computer with QuickTime Player 7.7.1 installed. Also, no third-party hardware I/O boards were used in this test. **All visual comparison tests were performed on the computer monitor by sight.**

After Effects CS5.5/5.0 will use Calibrated{Q} MXF Import to natively import DNxHD MXF files – please see the '*After Effects CS5.0.3 & CS 5.5'* section in either the *'Use with Windows Applications'* chapter or '*Use with Mac OSX Applications'* chapter in this User Guide. This section will only cover how the 'dnxhd' options apply to DNxHD MXF files imported into After Effects.

Other things to be aware of when working with DNxHD MXF Files in After Effects/Premiere Pro CS5/5.5:

(a) When video and audio are stored in separate MXF files, AE/PPro will natively import the Audio Only MXF files, but AE/PPro will use Calibrated{Q} MXF Import to import the Video only DNxHD MXF files. It is unknown if Audio Only MXF files without a TimeCode Track will import at the correct frame rate in AE/PPro.

(b) For reasons unknown any DNxHD MXF file with embedded 24-bit Audio will have the audio play as 'silent' even though Premiere Pro/After Effects are able to see and correctly report all of the audio properties.

In a normal setup, After Effects will work with DNxHD as either 16-bit RGBA (for 16- and 32-bit projects) or 8-bit RGBA (for 8-bit projects)

In our After Effects tests the files**, DNxHD-RGB-GAMMA-REFMXF** & **DNxHD-RGB-REFMXF** are visually the same – so the Gamma Extension does not make a difference in After Effects.

When working in 8-bit and 16-bit AE projects,, the **XDCAM-MXF** file was visually the same as **DNxHD-RGB-REFMXF** in an AE composition, while the file **DNxHD-709-REFMXF** was brighter than the other two files in the AE composition.

This would mean that AE is working in Full Range RGB Color Levels.

Please note that even though After Effects is working in Full Range RGB Color Levels, some Avid Editors will still use the SMPTE RGB setting when importing DNxHD MXF files or DNxHD MOV files with an embedded 601/709 Color Level in order to preserve the Super Black and Super White values of DNxHD in AE. The video will have a slightly 'washed out' look in AE. This is a more complex workflow since you have to be careful how effects are applied and working with any file formats that AE natively supports as RGB will be processed as Full Range RGB in those cases.

When exporting out of After Effects to the Avid QuickTime Codecs, please make sure to select the proper Color Level setting in the Avid QuickTime Codec settings that match the DNxHD Color Level that you are using in AE. If you are exporting out files that AE natively supports (like the XDCAM-MXF file) then you would select the 'RGB" Color Level setting in the Avid QuickTime Codecs since native AE file formats will work in Full Range RGB.

RECOMMENDATION

Since After Effects works in Full Range RGB it would be recommended to set the 'dnxhd' options to **Full RGB (0-255)** when importing DNxHD MXF files into After Effects or when creating QT Ref MOV files from DNxHD MXF files. If you are working on a Mac with FCP7 installed it appears that the setting **Full RGB (0-255) & Gamma Ext.** will be visually the same as the setting **Full RGB(0-255)** setting and the added Gamma Extension will have no effect in After Effects.

Even though we do recommend working in Full Range RGB with DNxHD in After Effects, you still can work in SMPTE RGB if that is your desired workflow. It would be a more complicated workflow, but many Avid Editors do work this way in AE.

As an ADVANCED OPTION: The 8-bit importing of DNxHD MXF and DNxHD MOV files can be set to 8-bit YUV422 instead of 8-bit RGB. Bit depths greater than 8-bit (such as 10-bit YUV422) would still be decoded as 16-bit RGB in AE/PPro which most likely would impact playback speed. This is an advanced setting in AE/PPro and **should only be**

used for playback and editing performance increases in PPro when working with DNxHD MXF files using the 'Full Range' option or with DNxHD MOV files embedded with the 'RGB" Color Levels. You should **NOT** set this option when working with DNxHD MXF files using the 'SMPTE Range' option or with DNxHD MOV files embedded with the '601/709" Color Levels. Please note that if you do change this you may have to re-import any DNxHD MXF or DNxHD MOV files into After Effects. Please see the next sub-section about Premiere Pro for more information about this advanced option.

'dnxhd' options for Premiere Pro CS5.5

*Control file used was the **XDCAM-MXF** file.*

Please note that Premiere Pro CS5.0 was not tested but presumably should act in the same manner as CS5.5

We performed our tests on a Windows 7 64-bit computer with QuickTime Player 7.7.1 installed. Also, no third-party hardware I/O boards were used in this test. **All visual comparison tests were performed on the computer monitor by sight.**

Please note that no realtime editing speed tests were done with the DNxHD MXF files or QT Ref MOV files on a Premiere Pro sequence.

Premiere Pro CS5.5/5.0 will use Calibrated{Q} MXF Import to natively import DNxHD MXF files – please see the '*Premiere Pro CS5.0.3 & CS 5.5'* section in either the *'Use with Windows Applications'* chapter or '*Use with Mac OSX Applications'* chapter in this User Guide. This section will only cover how the 'dnxhd' options apply to DNxHD MXF files imported into Premiere Pro.

Other things to be aware of when working with DNxHD MXF Files in After Effects/Premiere Pro CS5/5.5:

(a) When video and audio are stored in separate MXF files, AE/PPro will natively import the Audio Only MXF files, but AE/PPro will use Calibrated{Q} MXF Import to import the Video only DNxHD MXF files. It is unknown if Audio Only MXF files without a TimeCode Track will import at the correct frame rate in AE/PPro.

(b) For reasons unknown any DNxHD MXF file with embedded 24-bit Audio will have the audio play as 'silent' even though Premiere Pro/After Effects are able to see and correctly report all of the audio properties.

In a normal setup, Premiere Pro will work with DNxHD as either 16-bit RGBA (Sequences set to Maximum Bit Depth and/or Maximum Render Quality) or 8-bit RGBA (when the Maximum settings are not checked for a Sequence)

In our Premiere Pro tests the files**, DNxHD-RGB-GAMMA-REFMXF** & **DNxHD-RGB-REFMXF** are visually the same – so the Gamma Extension does not make a difference in Premiere Pro.

In Premiere Pro Sequences, the **XDCAM-MXF** file was visually the same as **DNxHD-RGB-REFMXF** in a a PPro timeline, while the file **DNxHD-709-REFMXF** was brighter than the other two files in the PPro timeline.

This would mean that PPro is working in Full Range RGB Color Levels.

Please note that even though Premiere Pro is working in Full Range RGB Color Levels, some Avid Editors will still use the SMPTE RGB setting when importing DNxHD MXF files or DNxHD MOV files with an embedded 601/709 Color Level in order to preserve the Super Black and Super White values of DNxHD in PPro. The video will have a slightly 'washed out' look in PPro. This is a more complex workflow since you have to be careful how effects are applied and working with any file formats that PPro natively supports as RGB will be processed as Full Range RGB in those cases.

When exporting out of Premiere Pro to the Avid QuickTime Codecs, please make sure to select the proper Color Level setting in the Avid QuickTime Codec settings that match the DNxHD Color Level that you are using in PPro. If you are exporting out files that PPro natively supports (like the XDCAM-MXF file) then you would select the 'RGB" Color Level setting in the Avid QuickTime Codecs since native PPro file formats will work in Full Range RGB.

RECOMMENDATION

Since Premiere Pro works in Full Range RGB it would be recommended to set the 'dnxhd' options to **Full RGB (0-255)** when importing DNxHD MXF files into Premiere Pro or when creating QT Ref MOV files from DNxHD MXF files. If you are working on a Mac with FCP7 installed it appears that the setting **Full RGB (0-255) & Gamma Ext.** will be visually the same as the setting **Full RGB(0-255)** setting and the added Gamma Extension will have no effect in Premiere Pro.

Even though we do recommend working in Full Range RGB with DNxHD in Premiere Pro, you still can work in SMPTE RGB if that is your desired workflow. It would be a more complicated workflow, but many Avid Editors do work this way in PPro.

As an ADVANCED OPTION: The 8-bit importing of DNxHD MXF and DNxHD MOV files can be set to 8-bit YUV422 instead of 8-bit RGB. Bit depths greater than 8-bit (such as 10-bit YUV422) would still be decoded as 16-bit RGB in AE/PPro which most likely would impact playback speed. This is an advanced setting in AE/PPro and **should only be used for playback and editing performance increases in PPro when working with DNxHD MXF files using the 'Full Range' option or with DNxHD MOV files embedded with the 'RGB" Color Levels**. You should **NOT** set this option when working with DNxHD MXF files using the 'SMPTE Range' option or with DNxHD MOV files embedded with the '601/709" Color Levels.

To set this ADVANCED OPTION – please make sure all Adobe applications are closed and then go to the below folder on your computer. The 'AppData' folder on your Windows computer may be a hidden folder.

Windows:
[System Drive]\Users\[YourAccount]\AppData\Roaming\Adobe\Common\

Mac OSX:
/Users/[YourAccount]/Library/Application Support/Adobe/Common/

Open the file MediaCoreQTCodecRulesCS5.xml in Notepad on Windows or TextEdit on Mac.

For Mac OSX – edit this line and change 'argb' to '2vuy' and save the file – please sure you are editing the line that has 'AVdn' 'mactel' 'decode' in it – do NOT edit the line that has 'encode'

<QTCodec codec='AVdn' vendor='****' platform='mactel' direction='decode' versionlow='0x00000' versionhigh='*' gammatag='false' cvbuffertag='0' deepdecodefourcc='b64a' decodefourcc='argb' />

For Windows – edit this line and change 'argb' to '2vuy' and save the file – please sure you are editing the line that has 'AVdn' '"windows' 'decode' in it – do NOT edit the line that has 'encode'

<QTCodec codec='AVdn' vendor='****' platform='windows' direction='decode' versionlow='0x00000' versionhigh='*' gammatag='false' cvbuffertag='0' deepdecodefourcc='b64a' decodefourcc='argb' />

After saving the file, you can re-open After Effects and Premiere Pro and now whenever you import DNxHD MOV files or DNxHD MXF files they will decode as 8-bit YUV422 when working at lower bit depths – they still will be decoded as 16-bit RGB at higher bit depths.

Please be aware that

1. Setting this option will impact the workflow of any DNxHD media decoding RGB at SMPTE RGB Levels as the 8-bit YUV will be converted to Full Range by Adobe but the Avid QuickTime Codecs will deliver SMPTE RGB when 16-bit RGB is used.
2. This setting will apply to both Premiere Pro and After Effects
3. This setting will apply to any type of DNxHD MXF file or DNxHD MOV file imported into Premiere Pro or After Effects
4. Premiere Pro and After Effects will always convert the 8-bit YUV to Full Range RGB

'dnxhd' options for Sony Vegas 11 (Build 512) 64-bit

*Control file used was the **XDCAM-MXF** file.*

QuickTime Player 7.7.1 was also installed for the test, and no third-party hardware I/O boards were used in this test. **All visual comparison tests were performed on the computer monitor by sight.**

Sony Vegas does not use Calibrated{Q} MXF Import to natively import MXF files so your workflow would be to create QuickTime Reference MOV files of DNxHD MXF files using Calibrated{Q} Import Assist and import the QT Ref MOV files into Vegas. After importing the QT Ref MOV files into Vegas you could either edit with them or convert them into a native Vegas format. Please note that no realtime editing speed tests were done with the QT Ref MOV files on a Vegas timeline.

In our Vegas tests the files**, DNxHD-RGB-GAMMA-REFMXF** & **DNxHD-RGB-REFMXF** are visually the same – so the Gamma Extension appears to not make a difference in Vegas.

Sony Vegas has 3 Pixel Formats for their Projects:

1.) 8-bit
2.) 32-bit floating point (video levels)
3.) 32-bit floating point (full range)

The first two Project Pixel Formats (8-bit and 32-bit video levels) seem to display and work with RGB data in the SMPTE RGB Range on the timeline, and the third Project Pixel Format (32-bit full range) seems to display and work with RGB data in the Full Range RGB on the timeline.

The Trimmer Window appears to always display RGB in the SMPTE RGB Range; regardless of what Pixel Format the project is set to.

When working in Pixel Format 8-bit and Pixel Format 32-bit video levels Vegas projects, the **XDCAM-MXF** file was visually the same as **DNxHD-709-REFMXF** on a Vegas timeline, while the file **DNxHD-RGB-REFMXF** was darker than the other two files a Vegas timeline.

Likewise while working in a Pixel Format 32-bit full range Vegas project, the **XDCAM-MXF** file was visually the same as **DNxHD-RGB-REFMXF** on a Vegas timeline, while the file **DNxHD-709-REFMXF** was brighter than the other two files on a Vegas timeline.

RECOMMENDATION
It would appear that Vegas will always request RGB video from the Avid QuickTime Codecs, and whether to create QT Ref MOV files with a SMPTE RGB Color Level or a Full Range RGB Color Level would depend on the Pixel Format in the Vegas project you are working in.

No exporting or render tests were done in Vegas. Please note that no realtime editing speed tests were done with the QT Ref MOV files on a Vegas timeline, presumably playback speeds would be slower than realtime since you are not working in a native Vegas format.

'dnxhd' options for eyeon Fusion

eyeon Fusion has their own recommended workflow for importing DNxHD MXF files into Fusion using Calibrated{Q} MXF Import. You can learn more from this Video Tutorial that was created by eyeon:

http://www.youtube.com/watch?feature=player_detailpage&v=hHsphBE1QoQ

Please direct any questions on this workflow to eyeon Fusion.

'dnxhd' options for Edius6.06

*Control file used was the **XDCAM-MXF** file.*

QuickTime Player 7.7.1 was also installed for the test, and no third-party hardware I/O boards were used in this test. **All visual comparison tests were performed on the computer monitor by sight.**

Edius does not use Calibrated{Q} MXF Import to natively import MXF files so your workflow would be to create QuickTime Reference MOV files of DNxHD MXF files using Calibrated{Q} Import Assist and import the QT Ref MOV files into Edius. After importing the QT Ref MOV files into Edius you could either editi with them or convert them into a native Edius format. Please note that no realtime editing speed tests were done with the QT Ref MOV files on a Edius timeline.

In our Edius tests the files**, DNxHD-RGB-GAMMA-REFMXF** & **DNxHD-RGB-REFMXF** are visually the same – so the Gamma Extension appears to not make a difference in Edius.

In our test, we created a 1280x720p59.94 8-bit Project with Canopus HQ Standard as the render format.

When working in the Edius project, the **XDCAM-MXF** file was visually the same as **DNxHD-RGB-REFMXF** on the Edius timeline, while the file **DNxHD-709-REFMXF** was brighter than the other two files on the Eduis timeline.

RECOMMENDATION

It would appear that Edius will always request RGB video from the Avid QuickTime Codecs, and Edius would expect the RGB to be in Full Range RGB. Therefore setting the 'dnxhd' options to **Full RGB (0-255)** when creating QT Ref MOV files from DNxHD MXF files should yield the best results for you in Edius.

No exporting or render tests were done in Edius. Please note that no realtime editing speed tests were done with the QT Ref MOV files on an Edius timeline, presumably playback speeds would be slower than realtime since you are not working in a native Edius format.

'dnxhd' options for creating QuickTime Reference MOV files

For creating QuickTime Reference MOV files of DNxHD MXF files, it is recommended that you use Calibrated{Q} Import Assist (the 'helper' application that comes with Calibrated{Q} MXF Import). Please see the Calibrated{Q} Import Assist User Guide for more information on how to create QT Ref MOV files.

Please note that

(1) When creating a QT Ref MOV file, Calibrated{Q} Import Assist will NOT join together any separate DNxHD MXF files and Audio MXF files into a single QT Ref MOV file, and it will not auto-join any spanned MXF files into a single QT Ref MOV file.

(2) Changing the 'dnxhd' options in Calibrated{Q} MXF Import Options application will only apply to new QT Ref MOV files that you create. Any previously created QT Ref MOV files will retain the Color Level setting that they were created with.

(3) If you change the 'dnxhd' options in Calibrated{Q} MXF Import Options application, then you will need to close and re-open Calibrated{Q} Import Assist for the new options to take affect for any QT Ref MOV files you create.

'dnxhd' options for other applications

Please use the information in this chapter to help you determine the *best 'dnxhd' options* to set for any application that we haven't listed above that you work with.

Just remember that:

1. If an application does not allow Calibrated{Q} MXF Import to natively import the DNxHD MXF file, you can always create QT Ref MOV files of the DNxHD MXF files and import the QT Ref MOV files into your application.

2. More applications work in Full Range RGB than SMPTE RGB, so if the DNxHD video looks 'washed out' in your application then that usually means that the application is expecting Full Range RGB. YUV support for QuickTime codecs is seen more on the Mac than on Windows.

3. Anytime you change the '*dnxhd' options* you need to close and re-open an application for them to take affect and in rare circumstances you may need to restart your computer (that's if the application runs in System Memory all the time). Also, *'dnxhd' options* you set are Global, so they would apply to any DNxHD MXF file being opened by Calibrated{Q} MXF Import.

‘auto-ref’ options

(See the Chapter 4: Auto-Referencing for more information regarding workflows)

Auto-Referencing

(Please see next chapter ‘Auto-Referencing’ for more information)

ENABLE – This will enable auto-referencing for VBE or Indexed MXF Files – This is **recommended** for working with XDCAM, Ikegami, Grass Valley and other MPEG2 MXF files and other types of Indexed MXF Files.

Panasonic P2 MXF Files (or other types of Constant Bit Rate video compressions) do not need Auto-Referencing hence this setting will not apply to them.

Please note that QT Ref MOV files created by the ‘Auto-Referencing’ process should NOT be directly used by you in an application – the QT Ref MOV files created by ‘Auto-Referencing’ are only intended to be used in the background by Calibrated{Q} MXF Import - if you need to create QT Ref MOV files for use in your workflow please use the ‘qt ref’ feature in Calibrated{Q} Import Assist.

As of v2.1.2 this feature does not work in DEMO MODE or if a MXF file is less than 600 frames. ‘Auto-Referencing’ will only work in LICENSED mode when a MXF file is over 600 frames in duration.

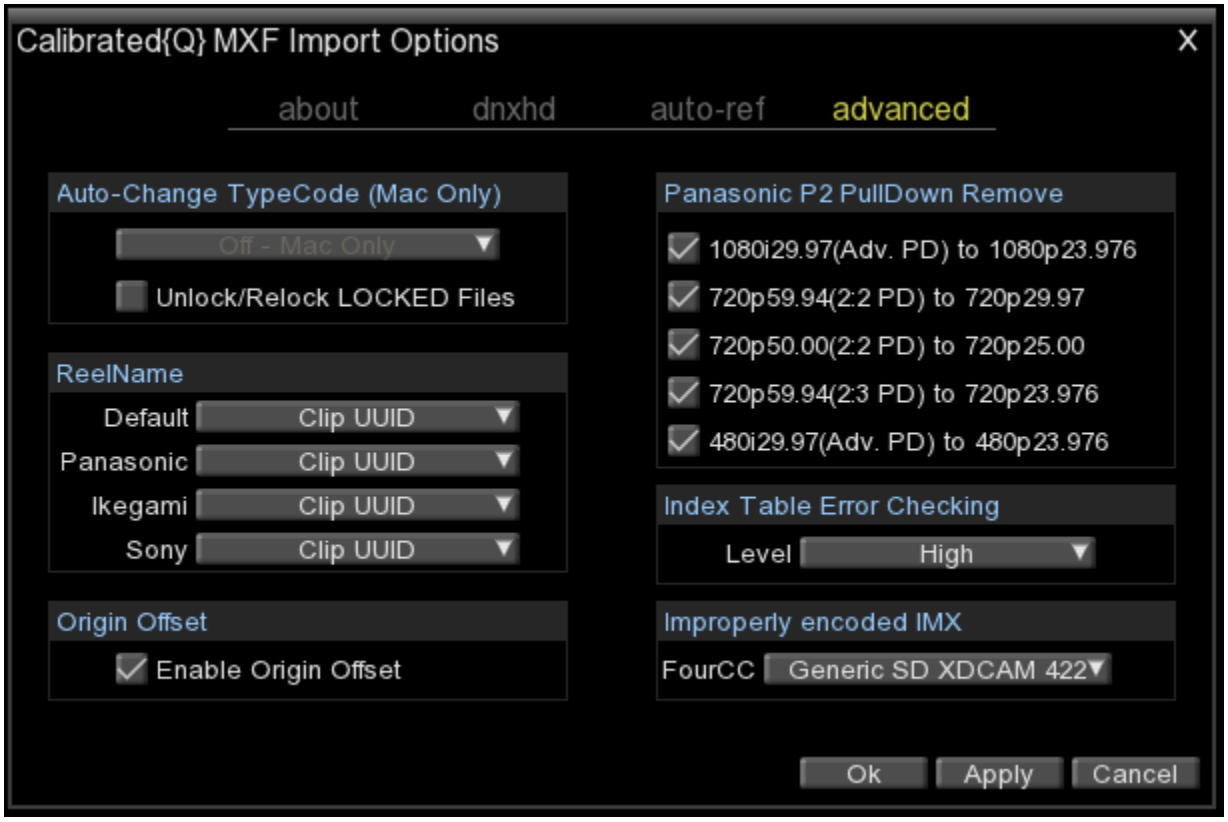
Auto-Referencing Folder

This determines where QuickTime Reference Movies will be auto-saved to.

a. **Clip Folder** – the folder where the MXF file resides.
b. **Custom Folder** – A user-chosen folder.
c. **Clip and Custom Folder** (deprecated)

‘advanced’ options

The **advanced** page contains options for various advanced options when Calibrated{Q} MXF Import opens a MXF file.



Auto-Change TypeCode (Mac Only)

With this options, Calibrated{Q} MXF Import component can auto-change the typecode of MXF files – this does NOT change the MXF file in anyway rather it changes how OSX identifies the file. The default if ‘Off’ – the other options are MooV (which is QuickTime TypeCode), ???? (which is Generic TypeCode), or to Remove the TypeCode (usually MXF files have no TypeCode associated with them).

Switching to MooV has a few advantages in Final Cut Pro – with MXF files with a TypeCode of MooV you can apply the SmoothCam Filter as well as perform certain Media Management features.

The Auto-Change TypeCode feature can only work if the MXF file is ‘unlocked’ and on writeable storage (i.e. if the harddrive that the MXF file is non-writeable then the Auto-Change TypeCode will not work)

If the MXF file is ‘locked’ BUT on writeable storage you can check the “Unlock/Relock” LOCKED Files option – this will ‘unlock’ a LOCKED MXF file thereby letting the TypeCode to be changed and then the MXF will be ‘relocked’.

Changing TypeCode of a file does NOT alter the actual file; rather it changes how the OSX filesystem interprets the file.

IMPORTANT for FCP: In Final Cut Pro – certain Media Management functions will not work properly if the typecode of a MXF file is not ‘MooV’. In those cases where the typecode of a MXF file is NOT set to ‘MooV’, then if you perform any Media Management in FCP – the MXF files are simply copied by FCP instead of FCP rewrapping the MXF files into a MOV file; and in cases of P2 and Ikegami MXF files where the video/audio MXF files are stored separately then FCP will only copy the Video MXF file during Media Management functions if the typecode of the MXF file is not set to ‘MooV’ .

Starting with v2.0 – the DEFAULT is set to MooV on Mac OSX computers.

ReelName

(Deprecated – this will be removed in a future version and all ReelNames will be reported using the Clip ID)

This option will allow the user to select the ReelName reported to QuickTime.

- **Panasonic P2 MXF files** – ReelName can either be determined by the Parent Directory, Creation Date, Clip UUID, Program Name (from XML), or SceneName (from XML). **Default is Clip UUID**
- **Ikegami GFCAM MXF files** - ReelName can either be determined by the Parent Directory, Creation Date, Clip UUID, Bin Title (from XML), or GFPAK ID (from XML) . **Default is Clip UUID (this was changed in v2.0.3 – previously the Bin Name from the XML file was used as the ReelName)**
- **Sony MXF files** - ReelName can either be determined by the Parent Directory, Creation Date, Clip UUID, or UserDisc ID (from XML). **Default is Clip UUID**
- **All other MXF files** – ReelName can either be determined by the Parent Directory, Creation Date, or Clip UUID. **Default is Clip UUID**

Origin Offset

Beginning in v2.0.7 support has been enabled for the Origin key which we have (on rare occasions) seen in partial restored XDCAM MXF files from hardware servers (like Omneon and Thomson servers) – the **vast majority** of MXF file we have seen do NOT have an Origin Offset. If an Origin Offset is present in a MXF file, it offsets the start of the video and/or audio in a MXF file by a given frame amount. For example, if an MXF file had 300 frames with an Origin Offset of 11 for video and audio then the first frame of the MXF file would be frame 11 and the visible duration of the MXF file would be 289 frames (300-11=289), so you would not see the first 11 frames of video/audio in an application using Calibrated{Q} MXF Import with the Origin Offset enabled.

You can see if a MXF file has an Origin Offset by opening the MXF file in Calibrated MXF QuickStat and checking to see if an Origin Offset is present in the video and/or audio properties.

Some applications like VLC Player and Adobe After Effects/Premiere Pro CS5/5.5 do not honor the Origin Offset so in the above example you would see all 300 frames of the MXF file. However other applications like XDCAM Transfer, Sony Vegas, and Edius do honor the Origin Offset so in the above example you would see only 289 frames of the MXF file with the first frame starting at frame 11. Beginning in v2.0.7 of Calibrated{Q} MXF Import, the Origin Offset is now honored, in previous versions of Calibrated{Q} MXF Import it was not – you can disable support for the Origin Offset in the Calibrated{Q} MXF Import Options application for any older projects or if you do not wish for the Origin Offset to be honored.

IMPORTANT: When disabling or re-enabling this option you will have to manually delete any QT Ref MOV files created if you had 'Auto-Referencing' enabled, and you may have to re-import MXF files with an Origin Offset into the application you are using to reflect the change.

Improperly Encoded IMX

Before v2.1.1, all IMX files were 'tagged' to use the Apple IMX Codec that comes with FCP6/7/X and the Calibrated{Q} IMX Decode codec. IMX video should be encoded at 720x608 for PAL where the top 32 rows are not displayed and at 720x512 for NTSC where the top 26 rows are not displayed. **However** – there are very rare circumstances when a software application or hardware device has not properly encoded the IMX video so that the IMX video is improperly encoded at 720x576 for PAL and 720x486 for NTSC. These incorrectly encoded IMX MXF files will show with all 'green' frames in FCP 6/7/X since they are not properly encoded. To workaround the issue, these IMX MXF files are now 'tagged' to be decoded and opened using the FourCC XDCAM MPEG2 422 that comes in the v1.6 (or later) Apple XDCAM Codec that comes with FCP7.0.3 (or later) – this FourCC XDCAM MPEG2 422 codec is also in Calibrated{Q} XD Decode v1.9.1 (or later). Calibrated{Q} IMX Decode v1.9.1 (or later) has the ability to properly display these improperly encoded IMX MXF files – so customers that have only purchased Calibrated{Q} IMX Decode (and not Calibrated{Q} XD Decode) can unchecked this option to have Calibrated{Q} MXF Import 'tag' the improperly encoded IMX MXF files to be opened with Calibrated{Q} IMX Decode v1.9.1 (or later).

IMPORTANT: When disabling or re-enabling this option you will have to manually delete any QT Ref MOV files created if you had 'Auto-Referencing' enabled, and you may have to re-import MXF files with any improperly encoded IMX MXF files into the application you are using to reflect the change.

PullDown for P2 MXF Files Only

Selecting the respective checkboxes automatically removes pulldown for the listed type of video. P2 MXF File structure must be valid with valid XML file. **MOST USERS WILL NOT WANT TO ADJUST THIS.**

Index Table Error Checking

This option was added in v2.2.0. Occasionally a MXF file may be created with an Invalid Index Table – this has been usually found in MXF files created by hardware servers – the below options instruct Calibrated{Q} MXF Import on how to deal with errors in the Index Table.

- **High** – **(DEFAULT - RECOMMENDED)** Calibrated{Q} MXF Import will try to fix small 'Display Order' errors in an invalid Index Table and try to open the full MXF file – however if there are too many errors in the Index Table then Calibrated{Q} MXF Import will report that the MXF file has an invalid Index Table and not open the MXF file. This setting should catch small 'Display Order' errors in the Index Table but it is not guaranteed to catch all 'Display Order' errors. *Mac OSX Only – if you are attempting to view the MXF file in QuickLook then Index Error Checking will have at least a threshold of Medium to partially view the MXF file as a debugging tool.*

- **Medium** – *(This setting should only be used for testing MXF files with Invalid Index Tables)* Calibrated{Q} MXF Import will only open the video/audio up to the point of the first bad frame in the invalid Index Table. Thus if a MXF file is 6000 frames but has an invalid Index Table on frames 100-200 then Calibrated{Q} MXF Import will open the MXF file but only frames 0-99 of the MXF file will be shown.

- **Low** – *(This setting should only be used for testing MXF files with Invalid Index Tables)* Calibrated{Q} MXF Import will try to open the full MXF file but if the damage in the Index Table is too great then the MXF file still may not open or if the MXF file does open, the MXF file may crash applications (like FCP) if the Index Table is too damaged.

Auto-Referencing 4

Overview

As of v2.1.2 this feature does not work in DEMO MODE or if a MXF file is less than 600 frames. 'Auto-Referencing' will only work in LICENSED mode when a MXF file is over 600 frames in duration. This change was made to cut down on unnecessary QT Ref MOV files that were created when 'Auto-Referencing' is enabled.

IMPORTANT: QT Ref MOV files created by the 'Auto-Referencing' process should NOT be directly used by you in an application – the QT Ref MOV files created by 'Auto-Referencing' are only intended to be used in the background by Calibrated{Q} MXF Import - if you need to create QT Ref MOV files for use in your worklow please use the 'qt ref' feature in Calibrated{Q} Import Assist.

Setting up Auto-Referencing will lead to a more productive workflow when using Calibrated{Q} MXF Import for OSX with XDCAM HD/EX MXF, Ikegami MXF and other types of Variable-Bit Rate (i.e. MPEG2, etc) or Indexed MXF files.

Because of the Long-GOP structure of MPEG2 MXF Files and the fact that MPEG2 MXF Files are not technically limited to a 4GB file size, it can take a bit more time to build the Index that QuickTime requires when Calibrated{Q} MXF Import is used with MPEG2 and other types of Indexed MXF Files. This can led to slower load times when a FCP project is opened using Calibrated{Q} MXF Import with MPEG2 and other types of Indexed MXF files.

Auto-Referencing is a way to take advantage of the fact that Calibrated{Q} MXF Import can auto-create a QuickTime Reference Movie when a user opens a MXF file in an application. Once this QuickTime Reference Movie is created, Calibrated{Q} MXF Import can be setup to search for that QuickTime Reference Movie whenever that same MXF file is opened again – and then instead of re-parsing the MXF file it uses the saved file index in its matching QuickTime Reference Movie. Thus eliminating the need to re-parse MPEG2 and other types of Indexed MXF Files every time they are opened.

The best part about Auto-Referencing is you don't have to manage QuickTime Reference Movies at all – the Calibrated{Q} MXF Import plugin does that for you. If a QuickTime Reference Movie is not found it's simply recreated and used next time the MXF clip is opened.

Setting Up Auto-Referencing

1. First open the Calibrated{Q} MXF Import Options application

   Location in Windows:
   [System Drive]\Program Files\Calibrated\Applications\Options\CalibratedQMXFOptions.exe

   Location in OSX:
   /Applications/Calibrated/Applications/Options/CalibratedQMXFOptions.app

2. Go to the 'auto-ref' page of Calibrated{Q} MXF Import Options application

3. Check 'ENABLE (Recommended).

4. Select to save the QT Ref MOV files in the Clip Directory or a Custom Directory.

-The Clip directory will save the QT Ref MOV files in the folder that the MXF file is located in.

-If you are saving to a Custom Directory, the QT Ref MOV files will be separated by folders labeled by the Creation Date and Company name Metadata found in the MXF File.

Congratulations – you have now setup Auto-Referencing for Indexed MXF files.

Some of the benefits of using a Custom Directory on your ***local*** video harddrive is that the created QT Ref MOV files are out of the way (as the Clip directory where the MXF file resides tends to have a few other ancillary metadata files) and there's a lot less of a chance that you will inadvertently use the QT Ref MOV file in your workflow or an application.

Please choose the directory that fits your workflow best.

Software License 5

Software License Agreement

By downloading, installing, ordering, or using the software - you are agreeing to the Software License Agreement. You can download or view the Software License Agreement on our website:

http://www.calibratedsoftware.com/softwarelicenseagreement.asp

http://www.calibratedsoftware.com/downloads/SoftwareLicenseAgreement.pdf (PDF – requires Adobe Acrobat)

After Purchase - Software License Instructions

After payment is received for your order, you will be able to generate a Software License in your Customer Account on our website for Calibrated{Q} MXF Import. **Please note that one(1) Software License is for a single activation on one(1) physical computer (a Software License is tied to the computer's motherboard), and you cannot deactivate/activate a Software License from one computer to another computer. Orders are allowed a limited number of Software License reset(s)** – where you can reset your Software License in your Customer Account in the event of a new motherboard on your current computer or if you upgrade to a new computer – please check your order to see how many Software License reset(s) your order came with – once you have used up all Software License reset(s) then you would have to purchase a new Software License. You can only reset a Software License in your Customer Account if **(A)** you have removed the software from the previous computer and **(B)** it has been at least 30 days since you previously generated or reset your Software License.

Instructions - Generating a new Software License

Step 1: Download and install the software

Skip this step if you have already downloaded and installed the software. If you have NOT already done so, please download and install Calibrated{Q} MXF Import on the computer you want to license. Please remember that if you purchased a Software License for Mac OSX then you can only generate a Software License for a Mac OSX computer, and likewise for Windows.

Step 2: Retrieve your 'Computer ID' from the software

Go to the folder:

***Windows**:* C:\Program Files\Calibrated\Applications\Options folder
***Mac OSX**:* /Applications/Calibrated/Applications/Options folder

Open the **"Calibrated{Q} MXF Import Options" application** located in the above folder and then press the 'Enter Software License' button and copy our 'Computer ID' from the window that pops up.

Step 3: Generate your Software License in your Customer Account

Sign in to your Customer Account on the Calibrated Software website and then click on the 'license' tab in our Customer Account and then press the green "Generate" button and paste in your 'Computer ID' on the website when prompted. Your Software License will then be generated and presented to you, and saved in your Customer Account. This Software License is tied to your computer's motherboard and will only work on this specific computer.

Step 4: Enter in your Software License into the software

Go back to the 'about' page of "Calibrated{Q} MXF Import Options" application and press the "Enter Software License" button and paste in your Software License in the window that pops up, press the 'Apply' button and then restart your computer. After restarting, your software will have the DEMO MODE limitation removed and be fully functional.

Step 5: For Final Cut Pro or Final Cut Express
IMPORTANT for Final Cut Pro or Final Cut Express: Please read the 'Calibrated QuickRefresh' chapter in the this User Guide and use the 'refresh' feature in the 'Calibrated{Q} Import Assist.app' to refresh the duration of any MXF file you had imported into Final Cut Pro or Final Cut Express while running Calibrated{Q} MXF Import in DEMO MODE.

Instructions – Resetting a saved Software License

Please Note: Order are allowed a limited number of Software License reset(s) – where you can reset your Software License in your Customer Account in the event of a new motherboard on your current computer or if you upgrade to a new computer – please check your order to see how many Software License reset(s) your order came with – once you have used up all Software License reset(s) then you would have to purchase a new Software License. You can only reset a Software License in your Customer Account if **(A)** you have removed the software from the previous computer and **(B)** it has been at least 30 days since you previously generated or reset your Software License.

Step 1: Remove the software from the older computer and install the software on the new computer
Skip this step if you have already downloaded and installed the software. If you have NOT already done so, please download and install Calibrated{Q} MXF Import on the computer you want to license. Please remember that if you purchased a Software License for Mac OSX then you can only reset a Software License for a Mac OSX computer, and likewise for Windows.

Step 2: Retrieve your 'Computer ID' from the software on the new computer
Go to the folder:

***Windows**:* C:\Program Files\Calibrated\Applications\Options folder
***Mac OSX**:* /Applications/Calibrated/Applications/Options folder

Open the **"Calibrated{Q} MXF Import Options" application** located in the above folder and then press the 'Enter Software License' button and copy our 'Computer ID' from the window that pops up.

Step 3: Reset your Software License in your Customer Account
Sign in to your Customer Account on the Calibrated Software website and then click on the 'license' tab in our Customer Account and then press the blue "View" button. In the window that pops up, find the name of your previous computer in the 'Computer Name' column and press the blue "Reset" button in that row, and then paste in your 'Computer ID' on the website when prompted. Your Software License will then be reset to the new computer and presented to you, and saved in your Customer Account. This Software License is tied to your new computer's motherboard and will only work on this new computer.

Step 4: Enter in your Software License into the software
Go back to the 'about' page of "Calibrated{Q} MXF Import Options" application and press the "Enter Software License" button and paste in your Software License in the window that pops up, press the 'Apply' button and then restart your computer. After restarting, your software will have the DEMO MODE limitation removed and be fully functional.

Refund Policy
A refund for the purchase price of an order may only be given if you have NOT generated a Software License for your order, AND the refund request is within 30 days of the order purchase date. For more details see our refund policy.

Use with Windows Applications

6

Overview

This chapter describes using Calibrated{Q} MXF Import in Windows applications. Calibrated{Q} MXF Import is a QuickTime component that lets QuickTime Player, CatDV, etc. understand the MXF file wrapper; **however the proper Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, DV50, IMX, and XDCAM HD video found in MXF files.**

Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files. **IMPORTANT**: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

Special Note: With Panasonic P2 and Ikegami GFCAM MXF files, you will only have to open the Video MXF Files and Calibrated{Q} MXF Import will found and 'auto-join' the matching Audio MXF Files for those Video MXF Files.

Calibrated MXF QuickStat

Calibrated MXF QuickStat is a standalone application that lets you conveniently view the video, audio, timecode, and metadata properties of MXF Files. Please see the Calibrated MXF QuickStat section in this User Guide for more details.

QuickTime Player 7.6 & 7.7

Open QuickTime Player 7.6/7.7. Choose from the QuickTime Player Menu – "File" and then "Open File". In the Open File Dialog, select the supported MXF file you wish to open. Playback performance in QuickTime Player is dependent upon the speed of your CPU and harddrive. If you are using a Calibrated{Q} Decode codec to decompress the video then please see that Calibrated{Q} Decode User Guide for more information regarding playback performance.

Users can also choose QuickTime Player as the default application for MXF Files. To do so – navigate to a MXF file within Windows Explorer and then right-click on the MXF file and choose 'Open With…" and then navigate to QuickTime Player when prompted by Windows Explorer in asking how to open the file.

To create QuickTime Reference Movies of MXF files in QuickTime Player on Windows, users should change "Create TC Track" to "On Disc" in the Calibrated{Q} MXF Options Panel. If this is not done, then QuickTime Player will not create a QT Ref MOV file; rather it will create a self-contained QT MOV file. See Chapter 3: Global Options for more details.

Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, DV50, IMX, and XDCAM HD video found in MXF files.

Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files. **IMPORTANT**: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

CatDV 8.1.11 & 9.0

Getting Started

1. Make sure you have updated to at least CatDV 8.1.11 or 9.0

2. Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, DV50, IMX, and XDCAM HD video found in MXF files.

3. Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files. **IMPORTANT**: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

4. Make sure 'Auto-Referencing' is enabled. Please see Chapter 4: Auto-Referencing for details

5. Calibrated{Q} components are needed both on the client and worker nodes.

6. CatDV MXF Option is needed.

7. **IMPORTANT - After entering in your Software License**: You may have to re-import the MXF files that you had imported into CatDVwhile running in DEMO MODE.

8. It is **highly important** to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Import into CatDV

Open CatDV and choose File from the menu then Open/Import and then select the MXF file you wish to import.

Please see the CatDV manual for any further details.

Troubleshooting

If you have trouble importing MXF files into CatDV or any other issues, please see Chapter: Troubleshooting for the most common issues.

After Effects CS5.0.3 & 5.5

Getting Started

1. Make sure you have updated to at least After Effects CS5.0.3 or 5.5

2. Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, DV50, IMX, and XDCAM HD video found in MXF files.

3. Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files.
   IMPORTANT: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

4. Make sure 'Auto-Referencing' is enabled. Please see Chapter: Auto-Referencing for details

5. **IMPORTANT - After entering in your Software License**: You may have to re-import the MXF files that you had imported into After Effects while running in DEMO MODE.

6. It is **highly important** to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Import into After Effects

Open After Effects and import a MXF file like you normally would into After Effects.

Please note that After Effects will ONLY use Calibrated{Q} MXF Import if its own native MXF importer does not open a MXF file AND hands it off to Calibrated{Q} MXF Import to open the MXF File – this mainly happens with DNxHD MXF files. When After Effects doesn't import a MXF file and doesn't ask Calibrated{Q} MXF Import to import the MXF file this usually means that After Effects is 'confused' by how to open the MXF file. If this happens you can always make a Quicktime Ref MOV file of the MXF file using Calibrated{Q} Import Assist, and then you can import the QT Ref MOV file into After Effects. Please note that you will need the proper Calibrated{Q} Decode codecs installed so the video in the QT Ref MOV file can be decoded.

Adobe CS5.0.3/5.50 Performance booster: This modified Adobe XML file can greatly improve performance in Adobe CS 5.0.3/5.5.0 applications when Calibrated{Q} MXF Import is used in conjunction with Calibrated{Q} Decode codecs to open and decode AVC-Intra, DVCProHD, DV50, IMX, and XDCAM HD MXF files. You can learn more and download it by clicking here.

DNxHD MXF Files: When working with DNxHD MXF files, please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files, and specifically the section titled **'dnxhd' options for After Effects CS5/5.5.**

Other things to be aware of when working with DNxHD MXF Files in After Effects/Premiere Pro CS5/5.5:

(c) When video and audio are stored in separate MXF files, AE/PPro will natively import the Audio Only MXF files, but AE/PPro will use Calibrated{Q} MXF Import to import the Video only DNxHD MXF files. It is unknown if Audio Only MXF files without a TimeCode Track will import at the correct frame rate in AE/PPro.

(d) In the section titled 'dnxhd' options for Premiere Pro CS5/5.5, we show how to modify an Adobe XML file so that AE/PPro will decode DNxHD to 8-bit YUV422 instead of 8-bit RGB444 in 8-bit projects and sequences, and this should speed up DNxHD decoding at 8-bit depths. However bit depths greater than 8-bit (such as 10-bit YUV422) would still be decoded as 16-bit RGB in AE/PPro which most likely would impact playback speed.

(e) For reasons unknown any DNxHD MXF file with embedded 24-bit Audio will have the audio play as 'silent' even though Premiere Pro/After Effects are able to see and correctly report all of the audio properties.

Possible AE Bug: Avid XDCAM MXF files may not import into AE CS 5.0/5.5 with Calibrated{Q} MXF Import – this seems limited to 25fps files (but could also happen with other frame rates). The same files will open fine in other applications including Premiere Pro CS 5.0/5.5. The only workaround at this time is to create a QT Ref MOV file of the MXF file using Calibrated{Q} Import Assist or QT Player Pro 7.6/7.7 and import the QT Ref MOV file into AE.

Troubleshooting

If you have trouble importing MXF files into After Effects or any other issues, please see Chapter: Troubleshooting for the most common issues or consult Adobe Tech Support and/or your After Effects CS5 Manual.

Premiere Pro CS5.0.3 & 5.5

Getting Started

1. Make sure you have updated to at least Premiere Pro CS5.0.3 or 5.5

2. Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, DV50, IMX, and XDCAM HD video found in MXF files.

3. Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files. **IMPORTANT**: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

4. Make sure 'Auto-Referencing' is enabled. Please see Chapter 4: Auto-Referencing for details

5. **IMPORTANT - After entering in your Software License**: You may have to re-import the MXF files that you had imported into Premiere Pro while running in DEMO MODE.

6. It is **highly important** to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Import into Premiere Pro

Open Premiere Pro and import a MXF file like you normally would into Premiere Pro.

Please note that Premiere Pro will ONLY use Calibrated{Q} MXF Import if its own native MXF importer does not open a MXF file AND hands it off to Calibrated{Q} MXF Import to open the MXF File – this mainly happens with Avid DNxHD MXF files. When Premiere Pro doesn't import a MXF file and doesn't ask Calibrated{Q} MXF Import to import the MXF file this usually means that Premiere Pro is 'confused' by how to open the MXF file. If this happens you can always make a Quicktime Ref MOV file of the MXF file using Calibrated{Q} Import Assist, and then you can import the QT Ref MOV file into Premiere Pro. Please note that you will need the proper Calibrated{Q} Decode codecs installed so the video in the QT Ref MOV file can be decoded.

Adobe CS5.0.3/5.50 Performance booster: This modified Adobe XML file can greatly improve performance in Adobe CS 5.0.3/5.5.0 applications when Calibrated{Q} MXF Import is used in conjunction with Calibrated{Q} Decode codecs to open and decode AVC-Intra, DVCProHD, DV50, IMX, and XDCAM HD MXF files. You can learn more and download it by clicking here.

DNxHD MXF Files: When working with DNxHD MXF files, please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files, and specifically the section titled **'dnxhd' options for Premiere Pro CS5/5.5.**

Other things to be aware of when working with DNxHD MXF Files in After Effects/Premiere Pro CS5/5.5:

(f) When video and audio are stored in separate MXF files, AE/PPro will natively import the Audio Only MXF files, but AE/PPro will use Calibrated{Q} MXF Import to import the Video only DNxHD MXF files. It is unknown if Audio Only MXF files without a TimeCode Track will import at the correct frame rate in AE/PPro.

(g) In the section titled 'dnxhd' options for Premiere Pro CS5/5.5, we show how to modify an Adobe XML file so that AE/PPro will decode DNxHD to 8-bit YUV422 instead of 8-bit RGB444 in 8-bit projects and sequences, and this should speed up DNxHD decoding at 8-bit depths. However bit depths greater than 8-bit (such as 10-bit YUV422) would still be decoded as 16-bit RGB in AE/PPro which most likely would impact playback speed.

(h) For reasons unknown any DNxHD MXF file with embedded 24-bit Audio will have the audio play as 'silent' even though Premiere Pro/After Effects are able to see and correctly report all of the audio properties.

Troubleshooting

If you have trouble importing MXF files into Premiere Pro or any other issues, please see Chapter 9: Troubleshooting for the most common issues or consult Adobe Tech Support and/or your Premiere Pro Manual.

Other Windows Applications

Other ‘QuickTime-centric’ applications (i.e. applications that use the QuickTime SDK to open media files) may work; however it is up to the user to test out and insure compatibility with those applications and Calibrated{Q} MXF Import.

Playback performance in any other application is dependent upon the speed of your CPU and harddrive as well as the application. If you are using a Calibrated{Q} Decode codec to decompress the video then please see that Calibrated{Q} Decode User Guide for more information regarding playback performance.

Use with Mac OSX Applications

7

Overview

This chapter describes using Calibrated{Q} MXF Import in Mac OSX applications. Calibrated{Q} MXF Import is a QuickTime component that lets QuickTime Player, CatDV, etc. understand the MXF file wrapper; **however the proper QuickTime codecs need to be installed to decompress the video found in a MXF files – this means that for Mac OSX systems without Final Cut 6.0.6 or greater or Final Cut Pro 7 installed or Final Cut Server 1.5 installed then the proper Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, IMX, and XDCAM HD video found in MXF files. Do not install Calibrated{Q} Decode codecs for OSX on any Mac OSX computer with any version of Final Cut Pro installed.**

Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files. **IMPORTANT**: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

Special Note: With Panasonic P2 and Ikegami GFCAM MXF files, you will only have to open the Video MXF Files and Calibrated{Q} MXF Import will found and 'auto-join' the matching Audio MXF Files for those Video MXF Files.

Calibrated MXF QuickStat

Calibrated MXF QuickStat is a standalone application that lets you conveniently view the video, audio, timecode, and metadata properties of MXF Files. Please see the Calibrated MXF QuickStat section in this User Guide for more details.

QuickTime Player X & 7

Open QuickTime Player X or 7.6. Choose from the QuickTime Player Menu – "File" and then "Open File". In the Open File Dialog, select the supported MXF file you wish to open. Playback performance in QuickTime Player is dependent upon the speed of your CPU and harddrive. If you are using Calibrated{Q} MXF Import with a Calibrated{Q} Decode codec, please see that Calibrated{Q} Decode codec User Guide for more information about playback performance

Users can choose QuickTime Player X/7 as the default application for MXF Files. To do so – navigate to a MXF file within Finder and then right-click on the MXF file and choose 'Get Info" and then choose QuickTime Player X/7 as the default application for the file.

BUG with QT Player X on Lion with IMX MXF files with AES3 audio: When an IMX MXF file with AES3 audio tracks is loaded into QuickTime Player X (on 10.7 or greater - Lion only), scrubbing the MXF file will be fine but QT Player X will hang. This appears to an issue with QT Player X using the built in AES3 audio decoder in Calibrated{Q} MXF Import for OSX – we believe this is an Apple bug and have sent the information to them. Starting in v2.2.0, IMX MXF files with AES3 will have the audio track disabled when loaded into QuickTime Player X on Lion – so while you will not be able to hear audio, QT Player X will not hang and will still play the video in the file. The workaround is to install QuickTime Player 7 and use that for playback. You can download QuickTime Player 7 from Apple here: http://support.apple.com/kb/DL923 and it will install into the /Applications/Utilities folder and can co-exist fine with QT Player X on the same computer.

Final Cut Pro 6/7

Getting Started

1. Make sure you have updated Final Cut Pro 6.0.6 or Final Cut Pro 7 or greater

2. Avid QuickTime Codecs (v2.3.4 or v2.3.7) are required for Avid DNxHD , Meridian, 1-1 10b MXF Files. **IMPORTANT**: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

3. Final Cut Pro 7 or greater is required for AVC-Intra editing in Final Cut Pro.

4. Make sure 'Auto-Referencing' is enabled. Please see Chapter 4: Auto-Referencing for details

5. To take advantage of certain features in Final Cut Pro 6 or 7, such as SmoothCam Filter and Select Media Management features, it is recommended that you change the Auto-change Typecode to **MooV** in the Calibrated{Q} MXF Options application (see Chapter 3: Global Options and Chapter 9: Troubleshooting for more details)

   IMPORTANT: In Final Cut Pro – certain Media Management functions will not work properly if the typecode of a MXF file is not 'MooV'. In those cases where the typecode of a MXF file is NOT set to 'MooV', then if you perform any Media Management in FCP – the MXF files are simply copied by FCP instead of FCP rewrapping the MXF files into a MOV file; and in cases of P2 and Ikegami MXF files where the video/audio MXF files are stored separately then FCP will only copy the Video MXF file during Media Management functions if the typecode of the MXF file is not set to 'MooV' .

6. **IMPORTANT - After entering in your Software License**: For any MXF files imported into Final Cut Pro while in DEMO MODE , users while have to run 'refresh' in Calibrated{Q} Import Assist application for FCP to tell FCP to 're-look' at the duration of MXF files imported in FCP while in DEMO MODE. After running 'refresh' in Calibrated{Q} Import Assist application (according to instructions in Chapter: Calibrated Refresh for FCP/FCE), the MXF files will have the proper duration in the FCP Bin. After 'refreshing' the MXF files in your FCP Bin, MXF files placed in a sequence while in DEMO MODE will have to be manually stretched out to their full duration in the sequence or you can create a new sequence and drop the MXF files in the new sequence and their full duration will show in the sequence.

7. It is **highly important** to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Import into FCP

To import MXF files into Final Cut Pro, simply import the MXF files just like you would MOV files (i.e. drag-n-drop MXF files into the FCP Bin or choose File->Import Files, etc.)

DNxHD MXF Files: When working with DNxHD MXF files, please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files, and specifically the section titled **'dnxhd' options for Final Cut Pro 7.**

Please note: It is highly important to always backup your footage first and to never move the MXF files out of their original folder structure on disc

To take advantage of certain features in Final Cut Pro 6 or 7, such as SmoothCam Filter and Select Media Management features, it is recommended that you change the Auto-change Typecode to **MooV** in the Calibrated{Q} MXF Options application (see Chapter 3: Global Options and Chapter 9: Troubleshooting for more details)

IMPORTANT for FCP: In Final Cut Pro – certain Media Management functions will not work properly if the typecode of a MXF file is not 'MooV'. In those cases where the typecode of a MXF file is NOT set to 'MooV', then if you perform any Media Management in FCP – the MXF files are simply copied by FCP instead of FCP rewrapping the MXF files into a

MOV file; and in cases of P2 and Ikegami MXF files where the video/audio MXF files are stored separately then FCP will only copy the Video MXF file during Media Management functions if the typecode of the MXF file is not set to 'MooV' .

Special Note: With Panasonic P2 and Ikegami GFCAM MXF files, you will only have to import the Video MXF Files and Calibrated{Q} MXF Import will found and 'auto-join' the matching Audio MXF Files to those Video MXF Files.

Playback in FCP

You can playback MXF files in a FCP Sequence just like you would a MOV file of the same type of video. Just create a New Sequence in FCP and then drag a MXF file to that New Sequence and select 'Yes' if FCP prompts you if you want to have the Sequence settings match the clip settings.

The actual decoding of video frames is handled by QuickTime Codecs that come with FCP or by the Avid QuickTime Codecs if you are using Avid MXF files, so realtime playback of MXF files is dependent upon those codecs as well as the speed of your CPU and harddrive.

Special Note on IMX Audio: AES3 Audio found in most IMX Standard Definition MXF files will have to be rendered on a FCP sequence and IMX MXF files with AES3 audio will play back choppy in the FCP 'Viewer' window.

DNxHD MXF Files: When working with DNxHD MXF files, please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files, and specifically the section titled **'dnxhd' options for Final Cut Pro 7.**

Special Note on XDCAM MXF Proxy files: XDCAM Proxy MXF Files have BETA support in v2.0.3 – in FCP, XDCAM Proxy audio will show as needing to be rendered in a FCP Sequence; however when attempting to render the audio – FCP will report a 'General Error' and the audio will not be rendered.

Troubleshooting

If you have trouble importing MXF files into FCP or any other issues, please see Chapter 9: Troubleshooting for the most common issues.

Final Cut Studio 2/3 Applications

Getting Started

1. Make sure you have updated Final Cut Pro to 6.0.6 for FC Studio 2 or that you are using FC Studio 3.

2. Avid QuickTime Codecs (v2.3.4 or v2.3.7) are required for Avid DNxHD, Meridien, and 1-1 10b MXF Files. **IMPORTANT**: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

3. Make sure 'Auto-Referencing' is enabled. Please see Chapter 4: Auto-Referencing for details

4. **IMPORTANT - After entering in your Software License**: You may have to re-import the MXF files that you had previously imported into FC Studio applications while running in DEMO MODE.

5. It is **highly important** to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Import into FC Studio Applications

To import MXF files into FC Studio Applications, simply import the MXF files just like you would MOV files

Apple Color 1.0 in FC Studio 2 requires that the TypeCode of MXF files be set to 'MooV' to import. Apple Color 1.5 does not have this limitation. Please see Chapter 3: Global Options on how to set the Auto-change TypeCode.

With Shake, you must set the BaseFile Type to QuickTime Movie for MXF Files.

Please note: It is highly important to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Special Note: With Panasonic P2 and Ikegami GFCAM MXF files, you will only have to import the Video MXF Files and Calibrated{Q} MXF Import will found and 'auto-join' the matching Audio MXF Files to those Video MXF Files.

Special Note on working with DNxHD MXF Files: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF, and specifically the section titled **'dnxhd' options for Compressor 3.5/4.**

Playback in FC Studio Applications

Playback of MXF files in the may or may not be in realtime - performance depends on the CPU and harddrive speed of your computer, as well as the FC Studio Application you are using.

Troubleshooting

If you have trouble importing MXF files into FC Studio Applications or any other issues, please see Chapter 9: Troubleshooting for the most common issues.

Media 100 1.6.2

Getting Started

1. Make sure you have updated to at least Media 100 1.6.2

2. **Calibrated{Q} AVC-Intra Decode for OSX v1.0.1 or greater is required. This is a separate product available for purchase from the Calibrated Online Store.**

3. **Currently, Calibrated{Q} MXF Import has only been tested with and supported using P2 AVC-Intra MXF Files with Media 100 1.6.2.**

4. Make sure 'Auto-Referencing' is enabled. Please see the Auto-Referencing chapter in this User Guide for details

5. **IMPORTANT - After entering in your Software License for Calibrated{Q} MXF Import and Calibrated{Q} AVC-Intra Decode**: You may have to re-import the MXF files that you had imported into Media 100 while running in DEMO MODE and/or re-generate your Bin Thumbnails to remove the Calibrated{Q} AVC-Intra Decode DEMO MODE Watermark from the cached thumbnails in your bin.

6. It is **highly important** to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Import into Media 100

Open Media 100 and choose File from the menu then Import->AVC-Intra and then select the P2 AVC-Intra MXF files from the P2 CONTENTS/VIDEO folder that you wish to import – the matching P2 Audio MXF Files will be automatically imported with the P2 AVC-Intra Video MXF files.

You can now edit and play the P2 AVC-Intra MXF Files within Media 100. Playback performance is highly dependent on your computer CPU and harddrive speed.

Please see the Media 100 manual for any further details

Troubleshooting

If you have trouble importing P2 AVC-Intra MXF files into Media 100 1.6.2, please see Chapter 9: Troubleshooting for the most common issues or consult with technical support at Media 100.

Please see http://www.media100.com/ for more information.

Final Cut Express 4.0.1

Getting Started

1. Make sure you have updated Final Cut Express 4 with the 4.0.1 update

2. For long-form editing project, it is recommended that users should use either Final Cut Pro 6 or 7.

3. Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, IMX, and XDCAM HD video found in MXF files; this is **ASSUMING** that you do not also have either Final Cut Pro or Final Cut Server installed on the same computer. You should turn Gamma Correction ON in the Calibrated{Q} Decode Options application. Please see the proper Calibrated{Q} Decode User Guide for further details.

4. Avid QuickTime Codecs (v2.3.4 or v2.3.7) are required for Avid DNxHD , Meridian, 1-1 10b MXF Files. IMPORTANT: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

5. Make sure 'Auto-Referencing' is enabled. Please see Chapter 4: Auto-Referencing for details

6. **IMPORTANT - After entering in your Software License**: For any MXF files imported into Final Cut Express while in DEMO MODE , users while have to run 'refresh' in Calibrated{Q} Import Assist application for FCE to tell FCE to 're-look' at the duration of MXF files imported in FCE while in DEMO MODE. After running 'refresh' in Calibrated{Q} Import Assist application (according to instructions in Chapter: Calibrated Refresh for FCP/FCE), the MXF files will have the proper duration in the FCE Bin. After 'refreshing' the MXF files in your FCE Bin, MXF files placed in a sequence while in DEMO MODE will have to be manually stretched out to their full duration in the sequence or you can create a new sequence and drop the MXF files in the new sequence and their full duration will show in the sequence.

7. It is **highly important** to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Import into FCE

To import MXF files into Final Cut Express 4.0.1, simply import the MXF files just like you would MOV files (i.e. drag-n-drop MXF files into the FCE Bin or choose File->Import Files, etc.) .

Please note: It is highly important to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Special Note: With Panasonic P2 and Ikegami GFCAM MXF files, you will only have to open the Video MXF Files and Calibrated{Q} MXF Import will found and 'auto-join' the matching Audio MXF Files for those Video MXF Files.

Playback in FCE

Playback of MXF files in the Viewer window in FCE should play much faster than on a sequence with performance depending on the CPU and harddrive speed of your computer.

To playback in the Canvas monitor from a sequence you need to change the sequence to "Unlimited RT" – if the sequence is set to "Safe RT" then you will only see a blue 'unrendered' frame when playing back MXF files. Even with "Unlimited RT" set for a sequence, playback will most likely NOT be in RealTimefor MXF files in a sequence. This is due to the fact that FCE is centered on using the 'Apple Intermediate Codec' for editing and playback of MOV files so to get the best performance in FCE, MXF files should be rendered or converted to 'Apple Intermediate Codec' MOV files within FCE.

Please note: that not all MXF frame rates match those within Final Cut Express. In HD, FCE supports 720p25 and 720p30; and 25i and 29.97i in 1440x1080 and 1920x1080 - MXF file framerates/resolutions that don't match those

framerates/resolutions will play even slower on a sequence if not rendered into a ‘Apple Intermediate Codec’ MOV file. You should match up a sequence in FCE as close as possible to the framerate/resolution of your MXF files.

Troubleshooting

If you have trouble importing MXF files into FCE or any other issues, please see Chapter 9: Troubleshooting for the most common issues.

iMovie 09 & 11

Getting Started

1. Make sure you have updated to at least iMovie 09 or iMovie 11

2. Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, IMX, and XDCAM HD video found in MXF files; **this is assuming that you do not also have either Final Cut Pro or Final Cut Server installed** on the same computer. You should turn Gamma Correction ON in the Calibrated{Q} Decode Options application. Please see the proper Calibrated{Q} Decode User Guide for further details.

3. Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files. **IMPORTANT**: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

4. For long-form editing project, users should use either Final Cut Pro 6 or 7.

5. Make sure 'Auto-Referencing' is enabled. Please see Chapter 4: Auto-Referencing for details

6. **IMPORTANT - After entering in your Software License:** Any MXF files imported into iMovie 09 or iMovie 11 while in DEMO MODE will have to be **re-imported** into iMovie 09 or iMovie 11 after the Calibrated components are licensed. The MXF files need to be re-imported into a New Project and New Event.

7. It is **highly important** to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Setting up a Project in iMovie

First make sure that your iMovie Project is a Wide-Screen project and the framerate of the project matches the framerate of the files as closely as possible. New with **iMovie 11** – You can now set a Project's Framerate to 24, 25 or 30 fps.

Import into iMovie

(1) To import into iMovie, choose "File" from the menu and then "Import" and then "Movies…"

(2) IMPORTANT: In the Import Movie Window that pops up, make sure that "Copy Files" is CHECKED! If "Move Files" is checked this can delete your Original MXF files after importing them into iMovie.

(3) In the Import Movie window, navigate to the folder structure containing the MXF files and type in '.MXF' in the top-right search bar in the Import Movie window – and only the .MXF files will be shown. Alternatively, you can manually search folders for .MXF files.

(4) Select any or all of the .MXF files in the Import Movie window

(5) Then you should do either of the below options. Most users will want to **use Option A** and have iMovie convert the MXF files to either a Full-Size or 960x540 'Apple Intermediate Codec' MOV file to work with in iMovie. This is because iMovie is optimized for editing with the 'Apple Intermediate Codec'.

OPTION A: CONVERTING

CHECK "Optimized video: Full-Original Size" or "Optimized video: Large - 960x540" and click the "Import" button. iMovie will convert the MXF files and create "Apple Intermediate Codec" MOV files in the iMovie Event folder. The MOV file will either be Full-Original Size or 960x540 depending upon what you had selected.

Advantages for converting: You will be able to share the AIC MOV files with almost anyone that has a Mac OSX 10.5/10.6/10.7 computer, iMovie is centered around using AIC MOV files so editing will be much faster, most all Mac OSX applications can work with AIC MOV files

Disadvantages for converting: it takes more time and more harddrive space to convert the MXF files to AIC MOV files, a tiny bit of quality of the video is lost, you cannot share the AIC MOV files with anyone on a Windows computer – so you would have to convert the AIC MOV files to a MOV file support on Windows – usually H264, PhotoJPEG, or Animation MOV file.

OPTION B: COPYING

UNCHECK "Optimized video" and click the "Import" button. iMovie will then COPY the MXF file into the iMovie Event folder.* **iMovie 11 (build 1073) BUG #2** – this option will NOT work in iMovie 11 (build 1073) as the MXF file will not be copied but actually converted to a AIC MOV file as per Option A. This bug is not present in iMovie 09.

Advantages for copying: Importing is much faster, maintain exact quality, save harddrive space as AIC MOV files are bigger, can still convert MXF files to AIC MOV files inside iMovie at a later date

Disadvantages for copying: Not all Mac OSX applications will be able to work with the MXF files, you cannot share the MXF files with anyone that does not have software that can natively work with the MXF files, MXF files may not playback in realtime in iMovie – as iMovie is centered around editing in with AIC MOV files.

iMovie 11 (build 1073) BUG #3 – If you choose to import a folder with multiple MXF files – iMovie 11 will report no movies were found (unlike iMovie 09 which allowed this). To import multiple MXF files in sub folders you can type in .MXF in the top-right search bar of the iMovie 11 import window – this will then give you all of the MXF files in the subfolders which you can then highlight and import into iMovie 11.

iMovie 11 (build 1073) BUG #4 – It has been reported that MXF files imported directly (i.e. not converting to AIC MOV Files) with iMovie 09 into an Event – will show up as unreadable by iMovie 11. We have not been able to duplicate this bug – but wanted to point it out. This may be related to iMovie 11 BUG #2 above.

iMovie 11 and iMovie 09 (all builds) BUG #5 – When processing any interlaced video (i.e. on conversion during import), iMovie uses single-field processing essentially converting 1080i material to 1080p by a single field process – this can result in i1080i material looking less sharp in iMovie after it is imported. This is an internal iMovie bug that affects any interlaced video.

*The above iMovie 11(build 1073) bugs have been sent to Apple and these bugs are not caused by Calibrated{Q} MXF Import.

Please note: not all MXF file resolutions and framerates match those within iMovie. iMovie 09 support 25 and 29.97, and iMovie 11 added 24fps support.

Special Note: With Panasonic P2 and Ikegami GFCAM MXF files, you will only have to import the Video MXF Files and Calibrated{Q} MXF Import will found and 'auto-join' the matching Audio MXF Files to those Video MXF Files.

Troubleshooting

If you have trouble importing MXF files into iMovie or any other issues, please see Chapter: Troubleshooting for the most common issues.

CatDV 8.1.11 & 9.0

Getting Started

1. Make sure you have updated to at least CatDV 8.1.11 or 9.0

2. Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, IMX, and XDCAM HD video found in MXF files; this is **assuming** that you do not also have either Final Cut Pro or Final Cut Server installed on the same computer.

3. Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files.
   IMPORTANT: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

4. Make sure 'Auto-Referencing' is enabled. Please see Chapter 4: Auto-Referencing for details

5. Calibrated{Q} components are needed both on the client and worker nodes.

6. CatDV MXF Option is needed.

7. **IMPORTANT - After entering in your Software License**: You may have to re-import the MXF files that you had imported into CatDVwhile running in DEMO MODE.

8. It is **highly important** to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Import into CatDV

Open CatDV and choose File from the menu then Open/Import and then select the MXF file you wish to import.

Please see the CatDV manual for any further details.

Troubleshooting

If you have trouble importing MXF files into CatDV or any other issues, please see Chapter 9: Troubleshooting for the most common issues.

After Effects CS5.0.3 & 5.5

Getting Started

1. Make sure you have updated to at least After Effects CS5.0.3 or 5.5

2. Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, DV50, IMX, and XDCAM HD video found in MXF files.

3. Avid QuickTime Codecs (v2.3.4 or v2.3.7) required for Avid DNxHD , Meridian, 1-1 10b MXF Files.
   IMPORTANT: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

4. Make sure 'Auto-Referencing' is enabled. Please see Chapter: Auto-Referencing for details

5. **IMPORTANT - After entering in your Software License**: You may have to re-import the MXF files that you had imported into After Effects while running in DEMO MODE.

6. It is **highly important** to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Import into After Effects

Open After Effects and import a MXF file like you normally would into After Effects.

Please note that After Effects will ONLY use Calibrated{Q} MXF Import if its own native MXF importer does not open a MXF file AND hands it off to Calibrated{Q} MXF Import to open the MXF File – mainly this happens with DNxHD MXF files. When After Effects doesn't import a MXF file and doesn't ask Calibrated{Q} MXF Import to import the MXF file this usually means that After Effects is 'confused' by how to open the MXF file. If this happens you can always make a Quicktime Ref MOV file of the MXF file using Calibrated{Q} Import Assist, and then you can import the QT Ref MOV file into After Effects. Please note that you will need the proper Calibrated{Q} Decode codecs installed so the video in the QT Ref MOV file can be decoded.

Adobe CS5.0.3/5.50 Performance booster: This modified Adobe XML file can greatly improve performance in Adobe CS 5.0.3/5.5.0 applications when Calibrated{Q} MXF Import is used in conjunction with Calibrated{Q} Decode codecs to open and decode AVC-Intra, DVCProHD, DV50, IMX, and XDCAM HD MXF files. You can learn more and download it by clicking here.

DNxHD MXF Files: When working with DNxHD MXF files, please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files, and specifically the section titled **'dnxhd' options for After Effects CS5/5.5.**

Other things to be aware of when working with DNxHD MXF Files in After Effects/Premiere Pro CS5/5.5:

(a) When video and audio are stored in separate MXF files, AE/PPro will natively import the Audio Only MXF files, but AE/PPro will use Calibrated{Q} MXF Import to import the Video only DNxHD MXF files. It is unknown if Audio Only MXF files without a TimeCode Track will import at the correct frame rate in AE/PPro.

(b) In the section titled 'dnxhd' options for Premiere Pro CS5/5.5, we show how to modify an Adobe XML file so that AE/PPro will decode DNxHD to 8-bit YUV422 instead of 8-bit RGB444 in 8-bit projects and sequences, and this should speed up DNxHD decoding at 8-bit depths. However bit depths greater than 8-bit (such as 10-bit YUV422) would still be decoded as 16-bit RGB in AE/PPro which most likely would impact playback speed.

(c) For reasons unknown any DNxHD MXF file with embedded 24-bit Audio will have the audio play as 'silent' even though Premiere Pro/After Effects are able to see and correctly report all of the audio properties.

Possible Bug in AE: Avid XDCAM MXF files may not import into AE CS 5.0/5.5 with Calibrated{Q} MXF Import – this seems limited to 25fps files (but could also happen with other frame rates). The same files will open fine in other applications including Premiere Pro CS 5.0/5.5. The only workaround at this time is to create a QT Ref MOV file of the MXF file using Calibrated{Q} Import Assist or QT Player Pro 7.6/7.7 and import the QT Ref MOV file into AE.

Troubleshooting

If you have trouble importing MXF files into After Effects or any other issues, please see Chapter 9: Troubleshooting for the most common issues or consult Adobe Tech Support and/or your After Effects CS5 Manual.

Premiere Pro CS5.0.3 & 5.5

Getting Started

1. Make sure you have updated to at least Premiere Pro CS5.0.3 or 5.5

2. Calibrated{Q} Decode codecs are required to decompress AVC-Intra, DVCProHD, DV50, IMX, and XDCAM HD video found in MXF files.

3. Avid QuickTime Codecs (v2.3.4 or v2.3.7) are required for Avid DNxHD , Meridian, 1-1 10b MXF Files. **IMPORTANT**: Please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files.

4. Make sure 'Auto-Referencing' is enabled. Please see Chapter: Auto-Referencing for details

5. **IMPORTANT - After entering in your Software License**: You may have to re-import the MXF files that you had imported into Premiere Pro while running in DEMO MODE.

6. It is **highly important** to always backup your footage first and to never move the MXF files out of their original folder structure on disc.

Import into Premiere Pro

Open Premiere Pro and import a MXF file like you normally would into Premiere Pro.

Please note that Premiere Pro will ONLY use Calibrated{Q} MXF Import if its own native MXF importer does not open a MXF file AND hands it off to Calibrated{Q} MXF Import to open the MXF File – mainly this happens with DNxHD MXF files. When Premiere Pro doesn't import a MXF file and doesn't ask Calibrated{Q} MXF Import to import the MXF file this usually means that Premiere Pro is 'confused' by how to open the MXF file. If this happens you can always make a Quicktime Ref MOV file of the MXF file using Calibrated{Q} Import Assist, and then you can import the QT Ref MOV file into Premiere Pro. Please note that you will need the proper Calibrated{Q} Decode codecs installed so the video in the QT Ref MOV file can be decoded.

Adobe CS5.0.3/5.50 Performance booster: This modified Adobe XML file can greatly improve performance in Adobe CS 5.0.3/5.5.0 applications when Calibrated{Q} MXF Import is used in conjunction with Calibrated{Q} Decode codecs to open and decode AVC-Intra, DVCProHD, DV50, IMX, and XDCAM HD MXF files. You can learn more and download it by clicking here.

DNxHD MXF Files: When working with DNxHD MXF files, please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files, and specifically the section titled **'dnxhd' options for Premiere Pro CS5/5.5.**

Other things to be aware of when working with DNxHD MXF Files in After Effects/Premiere Pro CS5/5.5:

(a) When video and audio are stored in separate MXF files, AE/PPro will natively import the Audio Only MXF files, but AE/PPro will use Calibrated{Q} MXF Import to import the Video only DNxHD MXF files. It is unknown if Audio Only MXF files without a TimeCode Track will import at the correct frame rate in AE/PPro.

(b) In the section titled 'dnxhd' options for Premiere Pro CS5/5.5, we show how to modify an Adobe XML file so that AE/PPro will decode DNxHD to 8-bit YUV422 instead of 8-bit RGB444 in 8-bit projects and sequences, and this should speed up DNxHD decoding at 8-bit depths. However bit depths greater than 8-bit (such as 10-bit YUV422) would still be decoded as 16-bit RGB in AE/PPro which most likely would impact playback speed.

(c) For reasons unknown any DNxHD MXF file with embedded 24-bit Audio will have the audio play as 'silent' even though Premiere Pro/After Effects are able to see and correctly report all of the audio properties.

Troubleshooting

If you have trouble importing MXF files into Premiere Pro or any other issues, please see Chapter 9: Troubleshooting for the most common issues or consult Adobe Tech Support and/or your Premiere Pro CS5 Manual.

Final Cut Pro X (not supported)

At this time, Calibrated{Q} MXF Import does not work directly with FCP-X or Motion 5. We are investigating the situation but at this time we do not have an ETA on when or if Calibrated{Q} MXF Import for OSX will work directly in FCP-X.

Possible Beta Workflows:

1. It does appear that Calibrated{Q} MXF Import will work with Compressor 4 – so you convert MXF files to ProRes MOV files in Compressor 4 and then work with the ProRes MOV files in FCP-X and Motion 5.

2. You could also use Calibrated{Q} Import Assist to batch create QT Ref MOV files of MXF files, and then you could import the QT Ref MOV files to edit with in FCP-X. When importing in QT Ref MOV files to FCP-X, please make sure that 'Copy files to Final Cut Events folder' is UNCHECKED and for unknown reasons FCP-X will not allow you to 'Create optimized media' (i.e. converting to ProRes MOV files) for QT Ref MOV files. Also, please note that you may have issues when trying to share projects when editing with QT Ref MOV files in FCP-X as there is a possibility when you move QT Ref MOV files from one computer to another that the 'reference link' can be lost or broken.

Please note, that you should consider the possible workflows listed above as **BETA workflows** due to the fact that FCP-X, Motion 5, and Compressor 4 are extremely new applications and may be updated by Apple which can alter or change the above possible workflows.

DNxHD MXF Files: When working with DNxHD MXF files, please read the 'DNxHD Options' section in this User Guide for setting up either RGB SMPTE (16-235) or RGB Full (0-255) Color Ranges for DNxHD MXF files, and specifically the section titled **'dnxhd' options for FCP-X.**

Other Mac OSX Applications

Other 'QuickTime-centric' applications (i.e. applications that use the QuickTime SDK to open media files) may work; however it is up to the user to test out and insure compatibility with those applications.

Playback performance in any other application is dependent upon the speed of your CPU and harddrive, as well as the application. If you are using a Calibrated{Q} Decode codec to decompress the video then please see that Calibrated{Q} Decode User Guide for more information regarding playback performance.

MXF MetaData in QuickTime

8

Overview

This chapter describes where Calibrated{Q} MXF Import adds various parts of the Camera MetaData of the MXF file into QuickTime MetaData (QTMetaDataRef). The **Public** QuickTime MetaData can be seen in the “Show Movie Properties” function when using QuickTime Player Pro 7.6 in Windows or Mac OSX. **The Public or Private QuickTime MetaData is not automatically mapped into Final Cut Pro or other applications.**

Calibrated{Q} Import Assist uses the Private MetaData in constructing FCP XML files – please see the Calibrated{Q} Import Assist User Guide for more details.

Public MetaData

1. MXF User Clip Name is mapped to the **Display Name QuickTime MetaData Tag**
2. MXF Clip UMID is mapped to the **Author QuickTime MetaData Tag.**
3. MXF Company Name, Product Name, Product Version, Manufacturer, Model Name, Serial Number, Lens Model and Creation Date are mapped to **Software QuickTime MetaData Tag.**

General Private MetaData

1. "org.smpte.mxf.package.material.packagename" – Clip Name
2. "org.smpte.mxf.package.material.packageid" – UMID
3. "org.smpte.mxf.identification.applicationsuppliername" – Company Name
4. "org.smpte.mxf.identification.applicationname" – Product Name
5. "org.smpte.mxf.identification.applicationversionstring" – Product Version
6. "org.smpte.mxf.package.material.creationtime" – Creation Date

P2 Specific Private MetaData

1. QuickTime Album MetaData Key – Global Shot ID and Top Clip Name (if span)
2. "com.calibrated.proapps.clipcommenta" – Location Name, Altitude, Longitude, Latitude, Source
3. "com.calibrated.proapps.mastercomment1" – opposite Eye name (if 3D) and Creator Name and Creation Date
4. "com.calibrated.proapps.mastercomment2" – Last Update Person and Last Update Date
5. "com.calibrated.proapps.mastercomment3" – Shooter Name, Start Date, End Date
6. "com.calibrated.proapps.isGood" – Clip Shot Mark

7. "com.calibrated.proapps.logNote" – Program Name
8. "com.calibrated.proapps.scene" – Scene
9. "com.calibrated.proapps.shot" – Take
10. "com.calibrated.proapps.3DType" – (if 3D Clip) 2 = Left Eye, 3 = Right Eye
11. "com.panasonic.professionalplugin.p2.clipmetadata.userclipname" – Clip Name
12. "com.panasonic.professionalplugin.p2.clipmetadata.device.manufacturer" - Manufacturer
13. "com.panasonic.professionalplugin.p2.clipmetadata.device.modelname" – Camera Model
14. "com.panasonic.professionalplugin.p2.clipmetadata.device.serialno" – Camera Serial #
15. "com.calibrated.proapps.mastercomment4" – Reporter Name, Purpose, Object
16. "com.panasonic.professionalplugin.p2.clipmetadata.news.reporter" – Reporter Name
17. "com.panasonic.professionalplugin.p2.clipmetadata.news.purpose" – News Purpose
18. "com.panasonic.professionalplugin.p2.clipmetadata.news.object" – News Object
19. "com.panasonic.professionalplugin.p2.clipmetadata.datasource" – Data Source
20. "com.panasonic.professionalplugin.p2.clipmetadata.scenario.takeno" - Take
21. "com.panasonic.professionalplugin.p2.clipmetadata.scenario.sceneno" - Scene
22. "com.panasonic.professionalplugin.p2.clipmetadata.scenario.programname" – Program Name
23. "com.panasonic.professionalplugin.p2.clipmetadata.shotmark" – Shot Mark
24. "com.panasonic.professionalplugin.p2.clipmetadata.shoot.shooter" – Shooter Name
25. "com.panasonic.professionalplugin.p2.clipmetadata.shoot.startdate" – Start Date
26. "com.panasonic.professionalplugin.p2.clipmetadata.shoot.enddate" – End Date
27. "com.panasonic.professionalplugin.p2.clipmetadata.access.lastupdateperson" – Last Update Person
28. "com.panasonic.professionalplugin.p2.clipmetadata.access.lastupdatedate" – Last Update Date
29. "com.panasonic.professionalplugin.p2.clipmetadata.access.creator" – Creator
30. "com.panasonic.professionalplugin.p2.clipmetadata.access.creationdate" – Creation Date
31. "com.panasonic.professionalplugin.p2.clipmetadata.shoot.location.placename" – Location Name
32. "com.panasonic.professionalplugin.p2.clipmetadata.shoot.location.altitude" – Altitude
33. "com.panasonic.professionalplugin.p2.clipmetadata.shoot.location.longitude" – Longitude
34. "com.panasonic.professionalplugin.p2.clipmetadata.shoot.location.latitude" – Latitude
35. "com.panasonic.professionalplugin.p2.clipmetadata.shoot.location.source" - Source

Sony XDCAM Specific Private MetaData

1. "com.sony.professionaldisc.nonrealtimemeta.title.alias" – Title 2
2. "com.sony.professionaldisc.nonrealtimemeta.title" – Title 1
3. "com.sony.professionaldisc.nonrealtimemeta.device.manufacturer" – Manufacturer
4. "com.sony.professionaldisc.nonrealtimemeta.device.modelname" – Model Name
5. "com.sony.professionaldisc.nonrealtimemeta.device.serialno" – Serial #
6. "com.sony.professionaldisc.nonrealtimemeta.device.lensmodel" – Lens Model
7. "com.sony.professionaldisc.nonrealtimemeta.description" – Description
8. "com.sony.professionaldisc.nonrealtimemeta.status" – Status
9. "com.sony.professionaldisc.nonrealtimemeta.creator" - Creator
10. "com.calibrated.proapps.logNote" – Description
11. "com.calibrated.proapps.isGood" – Status
12. "com.calibrated.proapps.mastercomment1" – Creator and Creation Date

Ikegami GFCAM Specific Private MetaData

1. "com.calibrated.proapps.isGood" – Clip Mark
2. "com.calibrated.proapps.mastercomment1" – User Defined MetaData 1-25
3. "com.calibrated.proapps.mastercomment2" – User Defined MetaData 26-50
4. "com.calibrated.proapps.mastercomment3" – Data Source, Start Date, End Date
5. "com.calibrated.proapps.mastercomment4" – Clip Memo1
6. "com.calibrated.proapps.logNote" – User Defined MetaData tagged as ‘LogNote’
7. com.calibrated.proapps.scene" – User Defined MetaData tagged as ‘Scene’
8. "com.calibrated.proapps.shot" – User Defined MetaData tagged as ‘Take’
9. "com.calibrated.proapps.clipcommenta" – User Defined MetaData tagged as ‘ClipCommentA’
10. QuickTime Album MetaData Key – Bin Name and Top File Name in spanning clips and Global Shot ID for spanning clips

Grass Valley Infinity Specific Private MetaData

1. "com.calibrated.proapps.clipcommenta" – Location Kind, Street #, Street Name, City, Province, Zipcode, Country
2. "com.calibrated.proapps.mastercomment1" – Project Name and Number, Take and Version
3. "com.calibrated.proapps.mastercomment2" – Annotation Kind, Synopsis, Description, CueWords
4. "com.calibrated.proapps.mastercomment3" – Event Indication, Start Time ,End Time
5. "com.calibrated.proapps.mastercomment4" – Reporter Name and Producer Name
6. "com.calibrated.proapps.isGood" - Status

Calibrated Refresh For FCP/FCE

9

Overview

Calibrated QuickRefresh no longer exists as a separate application **– it has now been incorporated into Calibrated{Q} Import Assist.**

You can access it by opening Calibrated{Q} Import Assist application and clicking on the word ‘refresh’

‘Refreshing’ is needed to update the duration of any MXF files that you had previously imported into FCP/FCE while in DEMO MODE. It can also be used to update the ReelName if you change the reported ReelName using the Global Options in Chapter 3.

IMPORTANT: Calibrated{Q} Import Assist is not part of the Calibrated{Q} MXF Installer. Calibrated{Q} Import Assist is an optional installer in the DMG file downloaded from our website that contained the Calibrated{Q} MXF Installer.

After proper licensing your Calibrated{Q} MXF Import component on Mac OSX, you may still encounter that MXF files that you had imported into Final Cut Pro or Final Cut Express while running in DEMO MODE will still only show 30 seconds of duration. This is due to the fact that Final Cut Pro/Express will ‘remember’ the duration of an imported MXF file and FCP/FCE has to be told to ‘re-look’ at the MXF file to see the proper duration.

Calibrated{Q} Import Assist ‘refresh’, is sending Final Cut Pro/Express a command to 'silently' reconnect to the MXF file. This silent reconnect command tells Final Cut Pro/Express to re-look at the MXF file and update its properties (including duration) if necessary.

Instructions

1. **Open Final Cut Pro or Final Cut Express**
2. Open the project (s)where MXF files are still only showing 30 seconds
3. Run Calibrated{Q} Import Assist and click on the word ‘refresh’ to take you to the refresh page
4. Do either Option A, or B below:

Option A:
-Press the **Green Double Arrows** button to refresh all MXF files in the open projects in Final Cut Pro/Express

Option B:
- Press **Green Single Arrow with a Search Glass** button - then this will open a 'Choose File Dialog'.
- In the 'Choose File Dialog', navigate to a MXF File that is only showing 30 seconds in Final Cut Pro/Express and choose it and click 'Open'

5. The MXF file duration should now be updated in Final Cut Pro/Express

Calibrated{Q} Import Assist

10

Overview

Calibrated{Q} Import Assist is a ‘helper’ application for Calibrated{Q} Import software products. With a Software License for Calibrated{Q} MXF Import – using Calibrated{Q} Import Assist, you will be able to batch create QT Ref MOV files from MXF files, batch unlock/lock MXF files, batch change OSX TypeCode of MXF files, and create a FCP XML file from MXF files. Please see the Calibrated{Q} Import Assist User Guide for more information.

Calibrated{Q} Import Assist is a separate optional installer that comes with our Calibrated{Q} Import software products.

Calibrated MXF QuickStat

11

Overview

Calibrated MXF QuickStat is a standalone application that lets you conveniently view the video, audio, timecode, and metadata properties of MXF Files.

Windows

After installing, Calibrated MXF QuickStat will be found here:

For 32-bit systems:
[System Drive]\Program Files\Calibrated\Applications\Stats\CalibratedMXFQStat.exe

For 64-bit systems:
[System Drive]\Program Files (x86)\Calibrated\Applications\Stats\CalibratedMXFQStat.exe

Calibrated MXF QuickStat is the default application associated with MXF Files upon installing. Users can change the default application for MXF files very easily by right-clicking on an MXF File and choosing “Open With…” and selecting the desired application.

Mac OSX

After installing, Calibrated MXF QuickStat will be found here:

/Applications/Calibrated/Applications/Stats/CalibratedMXFQStat.app

Users can change the default application for MXF files very easily by right-clicking on an MXF File and choosing “Open With…” and selecting the desired application.

Interface

The Calibrated MXF QuickStat Interface is an OpenGL GUI with three pages: ‘format’, ‘metadata’, and ‘about’.

The ‘format’ page is the default page that is displayed when the application is started. This page displays the Video/Audio/Timecode Information for MXF files.

The ‘metadata’ page can be reached by clicking on the word ‘metadata’. This page displays the MetaData for MXF files.

The ‘about’ page can be reached by clicking on the word ‘about’. This page contains the version number of the currently installed Calibrated MXF QuickStat applications as well as options for Calibrated MXF QuickStat.

Please note that Calibrated MXF QuickStat does not fully parse the MXF file hence reported Video Frame and Audio Sample durations may not be accurate in Calibrated MXF QuickStat. For MXF files that are indexed or contain pulldown – reported Video Frame Count will be approximated and labeled as such. Audio Sample duration for MXF files that are indexed will only be reported as ‘audio indexed’. To get an accurate Video Frame or Audio Sample duration, please open a MXF file in QuickTime Player (or other supported application) with Calibrated{Q} MXF Import in LICENSED MODE.

Troubleshooting a MXF file not opening

1. Is Calibrated{Q }MXF Import installed properly?

   On Mac OSX, please make sure that the CalibratedMXFQ.component is in the /Library/QuickTime folder (that's the Library folder on the Main Harddrive NOT the Library folder in the User directory)

   On Windows, make sure QuickTime Player 7.6 is installed, the proper Calibrated{Q} Decode is installed and that the CalibratedMXFQ.qtx component is in the [System Drive]/Program Files/QuickTime/QTComponents folder (on Windows 64-bit systems it would be the Program Files (x86) folder)

2. Did you restart your computer after installing?

   If you haven't, then please restart.

3. Is there a non-standard ASCII character in either the folder pathway or the MXF filename? A non-ASCII character is any non-Latin based character or any Latin based character with an accent, two dots over it, etc.

   Non-ASCII file names are not supported. This means that if either the MXF filename or any folder names in the MXF file path have any characters other than standard ASCII characters then there will be an error when trying to open the MXF file. Non-ASCII characters include any Non-Latin letters or any Latin-based letters with accents or two dots over them, etc. If there is a non-ASCII in a folder name or the MXF filename, change it to an ASCII character and try to open the MXF file again.

4. Is the application you are trying to open the MXF file with, one of the supported applications for use with Calibrated{Q} MXF Import?

   If you can open the MXF file in QuickTime Player using Calibrated{Q} MXF Import but not with the other application – then it would appear that the other application is not using Calibrated{Q} MXF Import.

5. Has the MXF file been on a 'recovered' harddrive or disc?

   If so, then the MXF file is still too 'damaged' to be opened by Calibrated{Q} MXF Import.

6. I get an error when trying to import a MXF file into FCP/FCE, the error is "**FILE ERROR: UNKNOWN FILE"**

   The TypeCode of the MXF file may not be one that FCP recognizes. **If** you can open the MXF file fine in QuickTime Player but not in FCP then this is probably the case. If QT Player 7.6 CANNOT open the MXF file then that means that there most likely is a different reason that FCP/FCE cannot open the MXF file.

   To change the MXF TypeCode to one recognized by FCP/FCE.

   Set the 'Auto-Change TypeCode' to 'MooV' in the Calibrated{Q} MXF Options application (see Auto-Change TypeCode in Chapter 3: Global Options).

   Make sure the MXF file is 'Unlocked' and on writeable media, changing the TypeCode cannot be done on 'Locked' media. Changing the TypeCode of a file does NOT affect the MXF file at all – rather it updates how the file system identifies the MXF file.

Open the MXF File in QT Player first, this changes the TypeCode to the one set in Calibrated{Q} MXF Options, and then you should have no problem importing the MXF file into FCP as the TypeCode has now been updated.

7. I have a problem with importing MXF files into Shake.

   With Shake on Mac OSX, you must set the BaseFile Type to QuickTime Movie for MXF Files.

8. I'm trying to open a MXF file in QuickTime Player, but I get an error saying 'Invalid Sample Table?

   Please see the section 'Index Table Error Checking' in the 'Global Options' chapter in this User Guide.

Troubleshooting in Final Cut Pro/Express

1. MXF Camera MetaData does not import into Final Cut Pro/Express

   Only Reelname (as set in the Global Options) and TimeCode is reported for FCP/FCE. Other Camera Metadata is not reported to FCP/FCE.

2. I updated how my ReelName is reported in CalibratedQMXFOptions.app but FCP/FCE still reports the same previous ReelName.

   FCP/FCE 'remembers' the past ReelName that MXF files have reported; to tell FCP/FCE to 're-look' and update any new properties of a MXF file, use 'refresh' in Calibrated{Q} Import Assist. Please see Chapter: Calibrated Refresh for FCP/FCE – the same instructions in that chapter will also update the ReelName of a MXF file.

3. I get an error when trying to import a MXF file into FCP/FCE, the error is "**FILE ERROR: UNKNOWN FILE"**

   Please see this question/answer in the previous troubleshooting section.

4. I can import MXF files into Final Cut Express; however I see a white screen where the video should be but I hear the audio.

   Please download and install Calibrated{Q} XD Decode for OSX. On Mac OSX computers, without Final Cut Pro or Final Cut Server installed then Calibrated{Q} XD Decode for OSX is required.

5. I have a clip that is spanned across multiple MXF files, while Calibrated{Q} MXF Import make the multiple MXF files be seen as one clip in FCP/FCE?

   Auto-assembling of spanned MXF files is not supported. This means that if a shot is 'spanned' over multiple MXF files the MXF files will still only be opened or imported as individual MXF files.

6. MXF files into are not playing in RealTime in Final Cut Pro or Final Cut Express.

   For Final Cut Pro – please insure that your timeline is setup properly. If your timeline is setup properly, your computer may not be fast enough for RealTime playback in FCP. All video decoding in FCP is handled by the Apple QuickTime codecs.

   For Final Cut Express – FCE is centered around playing 'Apple Intermediate Codec' files so other types of compressed files will not play in realtime. You can greatly improve playback performance by rendering the MXF files into 'Apple Intermediate Codec' MOV files. Please see the section about Final Cut Express in Chapter 5: Use with Mac OSX Applications.

7. I have enter in my Software License and can see the MXF files in their full duration in QuickTime Player but I'm only still seeing up to 30 seconds in Final Cut Pro/Express?

   On Mac OSX, after purchasing and licensing Calibrated{Q} MXF Import for OSX, you will have to use the 'refresh' in Calibrated{Q} Import Assist to update the duration of any MXF files you had imported into Final Cut Pro or Final Cut Express while in DEMO MODE. (see Chapter: Use with Mac OSX Applications and Chapter: Calibrated Refresh for FCP/FCE for more details)

8. I can't use the SmoothCam Filter in Final Cut Pro?

   To take advantage of certain features in Final Cut Pro 6 or 7, such as SmoothCam Filter and Select Media Management features, it is recommended that you change the Auto-change Typecode to **MooV** in the Calibrated{Q} MXF Options application (see Chapter 3: Global Options and Chapter 5: Use with Mac OSX Applications for more details)

9. I can't use the some of the Media Management functions in Final Cut Pro?

   To take advantage of certain features in Final Cut Pro 6 or 7, such as SmoothCam Filter and Select Media Management features, it is recommended that you change the Auto-change Typecode to **MooV** in the Calibrated{Q} MXF Options application (see Chapter 3: Global Options and Chapter 5: Use with Mac OSX Applications for more detail

   IMPORTANT for FCP: In Final Cut Pro – certain Media Management functions will not work properly if the typecode of a MXF file is not 'MooV'. In those cases where the typecode of a MXF file is NOT set to 'MooV', then if you perform any Media Management in FCP – the MXF files are simply copied by FCP instead of FCP rewrapping the MXF files into a MOV file; and in cases of P2 and Ikegami MXF files where the video/audio MXF files are stored separately then FCP will only copy the Video MXF file during Media Management functions if the typecode of the MXF file is not set to 'MooV' .

Troubleshooting in Final Cut Pro-X

1. I cannot importMXF files into Final Cut Pro-X using Calibrated{Q} MXF Import for OSX.

   At this time, Calibrated{Q} MXF Import does not work directly with FCP-X or Motion 5. We are investigating the situation but at this time we do not have an ETA on when or if Calibrated{Q} MXF Import for OSX will work directly in FCP-X or Motion 5.

Version History 13

Version 2.2.0

- Added new 'dnxhd' options in Calibrated{Q} MXF Import Options application. See the '*dnxhd' options section* in this User Guide for more information.
- Added error checking so MXF files with large corrupt Index Tables would not open. See 'Index Error Checking' in the Global Options chapter for more details.
- 'Tag' P2 Audio MXF files, Avid Audio MXF files and other single-channel audio only MXF files as SoundDescription version 2 which fixed some loading issues in CatDV – previously these files were tagged as SoundDescription version 1.
- DVCProHD MXF files are now 'tagged' as with their encoded dimensions in the Image Description; previously they were tagged as their display dimensions per early Apple guidelines. This should not affect any workflows.
- DNxHD MXF files now report as 24bit depth, previously they were reported as 32 bit depth. Depending on the application, this change may force you to re-render any effects you had applied on the DNxHD MXF file that you had imported in an application using Calibrated{Q} MXF Import.
- Fixed issue with some VC-3(DNxHD) MXF files not opening properly.
- BETA support for DNxHD 444 MXF files created by Avid Media Composer 6.
- BETA support for DNxHD MXF files captured by ARRI ALEXA. Please note that even though ARRI DNxHD MXF files *may or may not* have an embedded ReelName or Sound ReelName in the XML MetaData of the MXF file, in keeping a consistent workflow with across all the different MXF files we support the ReelName will still be reported as the UUID of the MXF file and a secondary Sound ReelName is not supported.
- BETA support for BlackMagic Design DNxHD MXF files captured by HyperDeck. The separate Video and Audio MXF files will not be 'auto-joined' and will be opened as separate MXF files. Please note that at the time of this release (January 2012) BMD only had BETA support for capturing DNxHD MXF files in HyperDeck.
- Added support to add a 'fake' TimeCode Track for MXF files without a TimeCode Track – when this happens TimeCode is set to 00:00:00:00 (always NDF if 29.97 or 59.94) at the video rate embedded in the MXF file. This was done so that (a) the MXF files would have a UUID ReelName and (b) Audio only MXF files could be identified with the proper video framerate. Please note that Audio only MXF files without any associated video framerate cannot have a TimeCode Track associated with them.
- Added Premiere Pro CS 5.0/5.5 section in the User Guide
- IMX MXF with AES3 audio tracks will have not have the audio loaded when trying to play the file in QT Player X on Mac OSX 10.7 Lion. Please see the "QuickTime Player X & 7" section in the "Mac OSX Applications" chapter for more details and workaround.
- Updated Calibrated{Q} MXF Import Options GUI

Version 2.1.2

- Fixed issue with audio not being read correctly for some K2 DV50 MXF files.
- For Windows only – 25fps Standard Definition MXF files are now reported as 25000/1000 previously they were reported as 25/1. For unknown reasons reporting the framerate as 25/1 could freeze QT Player during playback, changing to 25000/1000 for 25fps SD MXF files on Windows appears to fix the issue. This does not apply to Mac OSX or for HD 25fps files on Windows.
- 'Auto-Referencing' will only work in LICENSED mode. If Calibrated{Q} MXF Import is being run in DEMO MODE or if running in LICENSED MODE and the MXF file is less than 600 frames then 'Auto-Referencing' will not do anything(i.e. a QT Ref MOV will not be created for the MXF file). This change was made to cut down on unnecessary QT Ref MOV files that would be created when 'Auto-Referencing' is enabled.

Version 2.1.1

- Fixed issue with Indexed MXF file with multiple audio tracks where audio tracks had different number of audio channels.
- Added check and workaround for OpenCube MXF file which had improper Temporal Offset in Index Table and improper labeling of Closed-GOP I-frames.
- Fixed issue where crash would occur when trying to open a single-frame indexed video only MXF file
- Fixed issue where 1920x1080p29.97 DNxHD 220 and DNxHD220X MXF files would not open.
- Fixed issue for improperly encoded IMX MXF files which showed all green frames when used in FCP – improperly encoded IMX MXF files are now 'tagged' with the FourCC XDCAM MPEG2 422 - please see the '*Improperly Encoded IMX'* option in the 'Global Options' chapter for more details.
- Added BETA support for ProRes MXF files created by Avid Media Composer 6
- Fixed issue in CatDV where very large (100+MB) Avid Audio-only Mono-Channel MXF files were not playing back or loading slowly.
- IMX NTSC MXF files are now 'tagged' as Upper-Field First on Windows.

Version 2.1.0

- Lion OSX Support for Mac OSX Version
- Fixed issue with Cinegy IMX MXF files that were showing green/blue frames.
- Fixed issue where some Convergent Design MXF files would crash QuickTime Player on opening.
- Fixed issue where spanned Ikegami MXF files after 1st MXF file in span would only report the first 30 characters of the ReelName if 'Auto-Referencing' is enabled.

Version 2.0.7

- Updated User Guide – merged Calibrated MXF QuickStat User Guide with this User Guide and updated calculations for frame and sample durations for Calibrated MXF QuickStat (see Calibrated MXF QuickStat chapter)
- Added MXF formats

- Added support for the 'Origin' key which has been found (on rare occasions) in partial restored XDCAM MXF files from hardware servers (like Omneon and Thomson) – if this key is present in a MXF file, it offsets the start of the video and/or audio in a MXF file by a given frame amount – the **vast majority** of MXF file we have seen do NOT have an Origin Offset. Please see the 'Origin Offset' section in this User Guide for more details.

- Fixed issue with spanned Ikegami IMX30 MXF files that were being incorrectly tagged as IMX50 files.

Version 2.0.6

- Updated User Guide

- Fixed a minor bug in Calibrated{Q} Import Assist (see Calibrated{Q} Import Assist User Guide for details)

Version 2.0.5

- Slightly updated 'Auto-Referencing' so that any capturing or copying MXF files should not be indexed until they are done capturing/copying. If 'Auto-Referencing' was enabled then MXF files will automatically be re-indexed when re-opened.

- Fixed issue where some types of XDCAM MXF camera files that were recorded with newer firmware were not showing the last few seconds.

Version 2.0.4

- QT Ref MOV files created via 'Auto-Referencing' are now created as Read-Only

- Added MXF formats

Version 2.0.3

- Updated User Guide

- XDCAM Proxy MXF Files have BETA support in v2.0.3 – please note that FCP does not support the audio found in XDCAM Proxy files

- Changed default ReelName of Ikegami MXF files from BIN NAME to Clip UUID. This now matches the default ReelName for all MXF files.

- ReelName Options have been deprecated – in the future the ability to select different ReelNames will be removed and the Reelname will always be set to the Clip ID (which is currently the default value)

- Slightly updated 'Auto-Referencing' - if that was enabled then MXF files will automatically be re-indexed

- Updated text in Options application

- (Mac OSX Only) 29.97 FPS files are now report as 2997/100 previously they were reported as 30000/1001. Even though 30000/1001 is supported by QuickTime and FCP (see http://developer.apple.com/library/mac/#qa/qa1447/_index.html), FCP has a bug where 29.97 FPS files that are multiples of 30 minutes exactly(i.e. exactly 30 minutes, exactly 60 minutes, etc) would report as 1 frame less than they were in FCP only – reporting as 2997/100 fixed this problem in FCP. 29.97 FPS files at other durations than exact multiples of 30 minutes reported the correct duration and are not affected by this FCP bug.

- Fixed issue where some types of XDCAM MXF files generated by Sony XDCAM Transfer were not showing the last few seconds.

- Various bug fixes and improvements

Version 2.0.2

- Updated User Guide
- Fixed issue with Avid Uncompressed MXF files
- Fixed issue when using Google Chrome on Mac OSX to generate your Software License

Version 2.0.1

- Updated User Guide
- Added MXF formats
- Updated Options Application

Version 2.0.0

- Updated User Guide
- Opening XDCAM or other types of Indexed MXF Files is much much faster. Auto-Referencing has been simplified.
- (Mac OSX) Rewrote QuickLook component (i.e. when you press Spacebar in Finder to play a file)
- Removed redundant options from the Options application
- Added more MXF File support
- Added support for Calibrated{Q} Import Assist (see Calibrated{Q} Import Assist User Guide)
- **(Windows)** Global Options are now stored in "[SystemDrive]:\Program Data\Calibrated" for Vista and Windows 7 or "[SystemDrive]:\Documents and Settings\All users\Application Data\Calibrated" for Win XP. The Options now require Admin Rights to change and are the same for all users on the computer.
- **(Mac OSX)** Global Options are now stored in "/Library/Application Support/Calibrated". The Options now require Admin Rights to change and are the same for all users on the computer.
- Updated 'about' page of the Calibrated{Q MXF Options application

Version 1.9.6

- The Default for the ReelName has been switched to the Clip UUID. Previously the default ReelName was the Parent folder.
- a new User Guide
- Optimizations

Version 1.9.0

- **(Mac OSX)** The License file is now stored in "/Library/Application Support/Calibrated" folder – this will not affect any previous license files. All previous license files are still valid and will work fine.
- **(Windows)** The License file is now stored in "[SystemDrive]:\Program Data\Calibrated" for Vista and Windows 7 or "[SystemDrive]:\Documents and Settings\All users\Application Data\Calibrated" for Win XP – this does not affect any previous license files. All previous license files are still valid and will work fine.
- Bug Fixes

- More MXF File support

- Removed rarely used features from the Options application

Version 1.8.0

- Auto-Referencing has been made much simpler and easier HOWEVER this means that all MXF files will need to be re-indexed which can take a lot of time.

- Removed many redundant features.

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