

Final Cut Pro Media Management

A Basic Reference

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I. FCPX Media Management

Final Cut Pro X (FCPX) is a database, metadata based non-linear editing (NLE) system. It is the quickest, most affordable, and easiest professional editor to learn on the market today. Once learned it is a very powerful system to work with, in conjunction with Motion 5 for graphic and template work, and Compressor 4 for transcoding work. This document will attempt to explain the *basics* of FCPX media management to help you quickly gain a level of *basic* proficiency.

**A video version to accompany this document may be released in the near future.*

A. Physical Storage & Libraries

Physical storage medium can take the form of hard drives, be they spinning disk (HHD) or solid state (SSD) and any combination of those (RAID, NAS, etc). The Library is the equivalent of a “project file” used by other applications, and resides on physical storage medium of some type. Thus the Storage Medium name is the top level of media management, and the Library name is the second level of media management, as we will see.

1. Storage

The top level of FCPX media management is your storage medium. This can be a 7200rpm hard drive connected directly to your Mac, a RAID system, a networked NAS system, a centralized server via Ethernet, Fibre or conceptually an online service. Each has pros and cons not covered here. The most common are secondary drives and RAID systems directly connected to the Mac edit bay. These must be a very fast connection types, either USB 3.0 or

Thunderbolt. Note that 5200rpm drives, USB 1/2 and Firewire are unacceptable for today's 720 to 8K video formats.

Storing FCPX work on the system drive is not recommended. The operating system and applications need to write hidden, temporary, working files non-stop and very quickly. This eats up the limited bandwidth the CPU uses to access the system drive. Video editing utilizes multiple simultaneous streams of video, audio and metadata in real-time and needs all the bandwidth it can get.

Also, a drive equal in capacity (speed doesn't matter) to the secondary drive your Libraries and media are on should be incorporated for a nightly backup. Drives die without warning, new and old, that's a fact of life. A regular backup WILL one day save your professional life one day. It has for me on several occasions. This is not an "if" situation, this is a "when" situation.

Network systems can get more complex and you should consult a network specialist who is well versed in Apple and FCPX systems to configure these types of storage.

2. Libraries

The FCPX Library resides on a drive somewhere, as discussed previously. Thus, they are physical entities, a bundle of electronic digital databases and files on a physical hard drive. Thus, a Library can be physically moved, copied, even damaged (nightly backups, please).

Any number of Libraries can be on one drive, or multiple Libraries can be spread across multiple drives. Two Libraries on the same drive can share the same name, although logistically this would be very bad practice. Obviously Libraries can be moved or copied between storage locations, which will be discussed later.

Thus an FCPX Library is a container that holds the media, databases, and generated files the application needs to do its work.

To track Libraries on a Mac system easily, here is a guide for creating a Smart Folder in the Finder.

http://finalcutprox.guru/blogs-main/techniques-blog/files/smart_folders.html

Inside of the FCPX application, the upper left of the window is the Library Browser, where we see currently open Libraries, their Events and Collections, but not the media assets. Those are viewed per each Event in the Event Browser. More on that later.

B. Managing Physical Media

Managing media in FCPX is done on two planes: physically with the actual files on the storage medium, and digitally with metadata. We have covered the physical storage medium and what a Library is. Now let's look at the actual media files themselves and how FCPX manages them physically.

1a. Original Media

Original media are the files that were generated by your camera. It is advised to have a backup drive you keep exact duplicates of these. You can make these manually or let FCPX do it. In the Import window select a camera card in the left hand pane. Then in the lower left, click the Create Archive button. This will create an exact duplicate (with an FCPX metadata file) for FCPX to access later. This is also the preferred method if you want to edit directly from the original camera card structure.

1b. Optimized Media

Optimized media is a ProRes version of your Original media. This is used when your hardware is not able to playback and edit highly compressed Original media well enough. It is not normally

recommended to import Original media and create Optimized media at the same time. Use of one or the other is the typical workflow, but there can be exceptions. This means choosing Leave Files In Place and Create Optimized Media while in the Import window.

Optimized Media can be created in the Import window by selecting Create Optimized Media. It can also be done later in the Browser by selecting one or more clips at once, right-click, then select the Transcode Media option.

Note that file playback ease or difficulty to the computers is based on compression, not file size. The more highly compressed a video file is, the more muscle required to play it back due to de-compression issues.

1c. Proxy Media

Proxy media is a 1/2 quality version of your Original Media. It is the same frame size and rate, just 1/2 of the image data/resolution. It is not meant to color grade or do detailed masking with. Also, it is not meant to export with, unless you want a proxy version for simple reviews.

Video files are transcoded into ProRes Proxy codec, and still images are transcoded into JPEG, unless there is an alpha channel then it is transcoded into PNG. Audio MP3 files are transcoded into MOV files. Originals of these are retained for online editing and export.

The exception are UHD, 4K, 8K, etc. video files, when a 1080 frame size (but same frame rate) file is created in ProRes Proxy codec.

Creating proxies can initially be done in the Import window by selecting Create Proxy Media. After importing, it can be done in the Browser by selecting one or more clips at once, right-click, then select the Transcode Media option.

During the editing process, you can decide which version FCPX will work directly with by going to the View menu in the upper right of the Viewer. The Media section of that menu will allow you to quickly switch between using Original/Optimized or Proxy media. For final exports always be sure to change this setting to Original/Optimized!

2a. Managed Media

Managed media is when FCPX stores media inside of a Library, physically. In the Import window you'd choose "Copy To Library". You can verify this by selecting a Library in the Browser, going to the Inspector, click "Modify Settings" and verify Media and Cache are set to Library.

2b. External Media

External Media is when FCPX references media that is physically stored outside of the Library. In the Import window you'd choose "Leave Files In Place". Again, you can verify this by checking the Library's settings in the Inspector as above.

When media is External, FCPX creates an alias of it inside the Library. An alias (or link file) is a file that is only a few kilobytes in size, and simply points to where the original is.

For more information about how FCPX uses UNIX link files, see this tutorial.

<https://youtu.be/OrmwWdTkrbQ>

2c. Migrating Managed Media To External Media

If you want to convert a Library from Managed Media to External Media, select the Library in the Browser, go to the Inspector, click “Modify Settings”. Then for the Media setting, select “Chose” and pick a folder somewhere to store the physical media in and click OK. Then in the Inspector, in the Media section, click the “Consolidate” button.

This moves (not copies) all media to the folder you designated, and then replaces the original physical media inside the Library with aliases (see External Media above).

2d. Migrating External To Managed

If you want to convert External Media to Managed Media, select the Library in the Browser, go to the Inspector, click “Modify Setting”. Then for the Media setting select “Library” and click OK. Then in the Inspector, in the Media section, click the “Consolidate” button.

This copies all media from the external folder to inside the FCPX Library, as it will not touch external media. Now you will have two physical copies of your media; one in the external folder, one inside the FCPX Library. Do what you wish with the external folder, FCPX is no longer concerned with it.

3a. Motion Templates - External (default)

All effects, transitions, titles and generators that are created in the Motion 5 application are stored in your user home folder, in the Movies folder, in the Motion Templates folder. This is the default. When you share templates with others, this is where you get them from, and copy them to.

Note that not all of these are created in Motion. Some are created with coding using the FxPlug markup language, along with possible code from Quartz Composer, XCode or other programming languages. When these coded “plugins” are installed, they are not

in the Motion Templates folder, but can be spread across various system library level locations.

3b. Motion Templates - Internal

There are situations when you desire to move the Library to another Macintosh system that has FCPX installed on it. It may not have all the Motion created templates that the original had installed. In this situation select the Library in the Browser, go to the Inspector, click the Modify Settings button. For the Motion Content setting change it to “In Library” then click OK. Finally, in the Inspector, in the Motion Content section, click the “Consolidate” button.

FCPX copies (originals are left untouched, in place) only those templates used in the Library to be physically stored inside the Library.

To verify, when browsing templates in FCPX, you will see a menu at the top right of the template browser which gives you two settings to choose from. One option is labeled “Installed” and the other will be labeled with the title of that specific Library. Installed looks at what is installed in the Motion Templates folder. The other will show what has been copied to inside of the Library.

4. Moving Libraries

On the most basic level, you can duplicate to the same drive, or copy to another drive any Library as is, simple as that. There are caveats to be aware of.

If you have External Media, or if you’re moving this Library to another Mac, you’ll want to verify all your Media is Managed and that your Motion templates are set to be stored inside the Library. Once that is verified, to be safe, click the Consolidate buttons in the Inspector for both.

If you want to keep your media external when moving/copying a Library to a new drive, copy the FCPX Library to its new location on the new drive, then copy the folder(s) with the external media to that same drive. Since FCPX is looking for the original drive name, you may have to Re-Link (File menu) the media when opening the new copy of the Library on the new drive.

5a. Generated Files

FCPX can generate files as the post-production process moves along. These are Cache, Render and Backup files. Optimized and Proxy files are also a form of Generated files, but they've been covered previously. Generated files discussed here, as well as Proxy files (and usually Optimized files if the original files are not detailed) files can be deleted when a Library is ready to be archived, as FCPX can recreate them later.

5b. Generated Files - Cache

Most of the time you can leave the Cache file location inside the Library. These are analysis, render, thumbnail and audio waveform files that FCPX uses to work efficiently. In rare instances you may want to store these files externally. To do this, select the Library in the Browser, go to the Inspector, click the Modify Settings button. For the Cache setting change it to a folder on a drive. Cache files will be written to that location from that point on.

5c. Generated Files - Render Files

Render files are created only when the render command is enacted via one of three ways. Background Rendering runs automatically, (I recommend turning this off in the preferences), or by using the Render All command, or the Render Selected command. The later two are found in the Modify menu.

Often we want to delete these to save space for archiving or to troubleshoot an issue. To do this select a Library, Event or Project in the Browser. Go to the File menu, to the “Delete [Library/Event/Project] Generated Files” function. There you can chose to delete unused or all render files, as well as Optimized and Proxy media if desired. This option also allows you to delete Proxy and/or Optimized media, also.

5d. Generated Files - Backups

FCPX automatically makes database backups of active Libraries. These are stored in the users’s Movies folder by default in a “Final Cut Backups” folder. To change this, select a Library in the Browser, in the Inspector click Modify Settings. The Backups setting menu allows you to chose the default location, a new location, or to simply not save backup files at all.

Note these are database backups of a Library and do not contain any media at all. To backup media, use an application such as TimeMachine or Carbon Copy Cloner to copy whole Libraries, as well as all External Media to a backup drive on a regular basis.

C. Managing With Metadata

As stated before, managing media in FCPX is done on two planes: physically with the actual files on the storage medium, and digitally with metadata. Metadata is “data about your data”. The 1’s and 0s that make up the video you see playing is the “data”. Metadata is digital information about that video, and is either embedded in the video file itself, or created and stored by FCPX in its internal Library databases. Metadata for a video file can contain information such as frame size, frame rate, data created, last date modified, Role assignments, audio channel configurations, color space information, camera type, aperture setting, etc.

1. Library Browser - Events

An Event is a container inside of a Library. Physically on the drive it is a folder inside the Library that you don't see or interact with directly. You as an editor access Events via the Library Browser. Multiple Events can be created within a Library. Events contain your media and Collections. Collections will be cover later. Thus, Events are the third level of media management in FCPX (Drive > Library > Events).

Inside the FCPX Window, in the Library Browser, with an Event selected, the Event's contents are displayed in the adjoining Event Browser. This Event Browser can be toggled between Filmstrip View and List View, both very literal descriptions.

Inside this Event Browser pane are some of FCPX's most game changing, powerful, flexible and easy to use media management tools.

2. Event Browser - List View Columns

You can sort/search for media assets in the Event Browser's List view. These columns are based on metadata and physical characteristics of your media assets.

Right-Click any header in the Event Browser's List view for the menu to configure what columns are shown or hidden. You can also click and drag headers left and right to further customize their layout. Clicking on a header will sort the contents by that criteria. Clicking repeatedly will toggle between sorting in ascending and descending order.

3. Roles

Role metadata comes in two flavors; Video Role assignments and Audio Role assignments. These can specify what the purpose an assets or its components play in the production. There are the

factory default roles, but you can also customize your own Roles. Each Role can also contain one or more Sub-Roles. Any place in FCPX you can right-click an assets, or see its metadata in the Inspector, you have access to Role assignments and editing the Roles used in that Library.

Note that Roles are Library specific, so that customizing them in one Library will not translate into other Libraries automatically.

4. Ratings

In FCPX we can assign one of three Rating to assets. These are Favorite, Rejected or Unrated. You can assign these to either an entire asset in the Event Browser, or to one or more Ranges in an asset. Once assigned, a colored bar of either green or red is placed along the top of the filmstrip thumbnail of that asset in the Event Browser to indicate the Rating status.

To assign a Rating, select an asset in the Event Browser. If desired select a specific Range within that asset. Then use of of these keyboard shortcuts: F for Favorite, green bar. Control-Delete for Rejected, red bar. U for Unrated, no color bar assigned.

If a Rating is assigned to a range on a clip, and the same rating is applied to a new, overlapping range, the two ranges combine as one.

5. Used Media

This is similar to Ratings above in that an orange bar is placed along the bottom of the asset's thumbnail when viewed in the Event Browser. Yet a Used Media Rating is assigned automatically when an asset, or a Range of an asset is used in a Timeline. To see these, go to the View menu, to the Browser sub-menu, and make sure a check is next to Used Media Ranges.

6a. Library Browser Collections - Finder Metadata

FCPX recognizes Finder metadata; specifically Folder names, Finder Tags and Finder Keywords. Thus one could organize media on-location without FCPX, in the macOS Finder, using folders, Finder Tags and Finder Keywords. When importing into FCPX, the Import window's right hand pane allows you to specify assigning FCPX Keyword Collections (see below) according to folder names, Finder Tags and Finder Keywords.

Note that I specify "Finder" with these titles because what the Finder assigns a file is not using the same database as when FCPX assigns these to a file.

To create a Folder in the Finder, go to the File menu and select New Folder. To create a Tag, right-click a file in the Finder, and select a color dot. These color dots are Finder Tags. To assign a Finder Keyword, right-click a file in the Finder, go the word "Tags..." above the color dots. This allows you so assign custom keywords to files in the Finder.

6b. Library Browser Collections - FCPX Keywords

Keyword collections gather media assets according to customized keywords the editor has assigned to media assets. Media assets are *manually* added to Keyword Collections. If new media is then imported into the Event, it must *manually* be added to that collection.

To create a keyword collection, select a media asset, Command-K brings up the Keyword Editor, then type a keyword into the text field, hit enter and that asset has been assigned that keyword. No assets are duplicated at all, this is all simply assignments in the Library's internal database.

Or you can right-click an Event and choose New Keyword Collection. Then rename it to be the keyword you wish it to represent.

You can also select one or more assets at once and drag them to an existing Keyword collection to add them.

Be aware that Keyword Collections are not limited to a single word, they can be multiple words making up a single collection. Also, this does not duplicate any physical media.

6c. Library Browser Collections - Smart Filter Collections

Smart Collections gather assets together based on specific physical characteristics and/or metadata the editor specifies. Media assets are added to these automatically once the criteria is set. If new assets meeting the criteria are then imported, they automatically join that Smart Search Collection.

To create a Smart Collection, click on the Search Field icon, the magnifying glass at the top right of the Event Browser. Then click the Filter HUD icon just to the right of the text search field. Assign criteria, then click the New Library Smart Collection button in the lower right.

You can also right-click an Event and choose New Smart Collection. Then rename it something descriptive and double-click to open the Filter HUD to assign or change criteria.

6d. Library Browser Collections - Folders

Folders are simply folders, which you can drag Keyword Collections and Smart Collections into. For example; I can gather all audio only media, audio media that is grouped a music, others grouped as voice overs, and others grouped as sound effects in various Smart and Keyword Collections, into a Folder that is titled Audio

Assets. This helps speed access to those assets, and save in my Library Browser real estate.

To create a Folder right-click an Event and choose New Folder, rename it something descriptive, then drag your desired collections into it.

7. Metadata In The Inspector

Select an item in the Browser or Timeline (Library, Event, Project, media asset) and in the Inspector's Info section is all the metadata for that item. Some metadata can be customized, some is set in stone, some simply doesn't exist for that file and isn't pertinent. You can also customize these views. Operations such as searches, multicam configurations, and other functions will rely on this metadata.

C. Audio Channel Configuration

FCPX can handle audio based on metadata very easily. Channel configurations and Roles help to make an editor's job much easier and manageable.

1. Channel Settings

Audio files can have one, two or more channels inside of them. Video files containing audio are the same. For example, a video file recorded with two microphones, one in the left channel and one in the right channel, will import with both channels configured in some default configuration. This configuration can be changed with metadata which will never change the original physical file on the drive itself. A stereo pair can be reassigned to be dual mono channels. A 5.1 surround audio file can be changed into 6 mono channels, or groups of stereo pairs with mono channels, etc.

To reassign audio channel configurations, select a media asset in the Event Browser that contains audio. Go to the Inspector, to the audio section, and towards the bottom is the Audio Configuration block. The upper right corner of the waveform display here has a menu that states the asset's current configuration. Open that menu to reassign the channels to your liking.

Note that once an asset is in a Timeline, changing its channel configuration will have no effect on the original copy in the Browser.

D. Managing Timeline Media

In the Timeline media assets can be managed by a variety of metadata. This helps with identifying media at a glance or by arranging assets into groups called Lanes.

1. Clip Identification

In the upper left corner of each asset in a Timeline is the asset's own name. By default this is the name it came in with from the Event Browser. You can right-click an asset in the Timeline and choose Rename Clip. This will have no effect on the original in the Event Browser.

From the Clip Appearance menu, top right of the Timeline pane, there are three options, each can be enabled or disabled, as to what is displayed as the Clip Name. These are Clip Name, Angle, Clip Roles.

2. Clip Icon

Specialty clips have icons in front of their name in the Timeline. There are icons to indicate Compound, Multicam, Sync and Audition clip types.

3. Timeline Index

The Timeline Index in general allows us to list all used assets in order, search for, organize and get great advantage from metadata of all types when working in the Timeline. Please see the FCPX Help document for more details, as they are too extensive to cover in this article. A link is provided at the end of this document.

4. Role Lanes

In the Timeline, Roles are represented by the clip being that assigned color to match. But all clips below the Primary Storyline are grouped by Audio Role. Which appear over or below which is determined in the Roles section of the Timeline Index. Dragging the Audio Roles into various orders will be reflected in clips of those Audio Roles moving above or below each other in the Timeline.

Also, Lanes can be segregated off, expanded into Sub-Role lanes and soloed. Please see the FCPX Help document for more details, as they are too extensive to cover in this article. A link is provided at the end of this document.

E. Managing Exported Media

FCPX offers some convenient ways to manage media upon export (Share). These are simple, yet handy little tools that can help make an editor's day flow smoothly.

1. Export - Metadata

Before exporting from FCPX, select the asset or Project in the Browser. Go to the Inspector, to the Info section. There you can customize some of the metadata for exporting an asset. But for Projects you can customize much more.

Select a Project in the Browser and go to the Share section of the Inspector. Here you can assign and modify automatically added metadata and manually added metadata. You can configure

layouts of what metadata to include or not. To the right of the “Attributes” header is a menu that allows you to show or hide metadata fields including copyright, title, tags, genre and much more.

2. Sharing (Exporting) - Tracking

In the section of the Inspector previously discussed for the metadata of a Project, in the Share section, in the upper half of this pane will be the metadata that will be embedded in the Shared (exported) file. This is customizable via the menu in the upper right.

In the lower half of this pane is found a record of each time that Project was Shared with time and date. A menu to the right of each entry allows you to “Reveal In Finder” if that exported file still exists in it’s original location. If it has been moved or deleted, the link to find it won’t work.

E. Conclusion

FCPX offers a great deal of powerful and flexible media management tools. This document only covers the very basics. To find more information, please reference these online documents from Apple.

Final Cut Pro X Help

<http://help.apple.com/finalcutpro/mac/10.3/>

Managing Media With FCPX Libraries

https://www.apple.com/final-cut-pro/docs/Media_Management.pdf

FCPX Ecosystem - Asset Management

<https://www.apple.com/final-cut-pro/resources/ecosystem.html#asset-management>

About Apple ProRes

<https://support.apple.com/en-us/HT202410>