

Editing **AVCHD** with Final Cut Express 4

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THE AVCHD WORKFLOW ON APPLE COMPUTERS



Apple Intel-based Mac computers (MacBookPro laptops, iMac or Mac Pro Towers) work really well with Panasonic AVCCAM cameras shooting AVCHD footage. Working on a Mac platform presents four editing solutions, based on your budget and the complexity of your final edit. The four editing applications are: iMovie '08 or '09, Final Cut Express 4, Final Cut Pro (v.6.05 or higher) and Adobe Premier Pro as part of CS4 or CS5.

THIS PAPER WILL DISCUSS A TYPICAL AVCHD WORKFLOW FOR EDITING WITH AND OUTPUTTING FROM FINAL CUT EXPRESS 4.



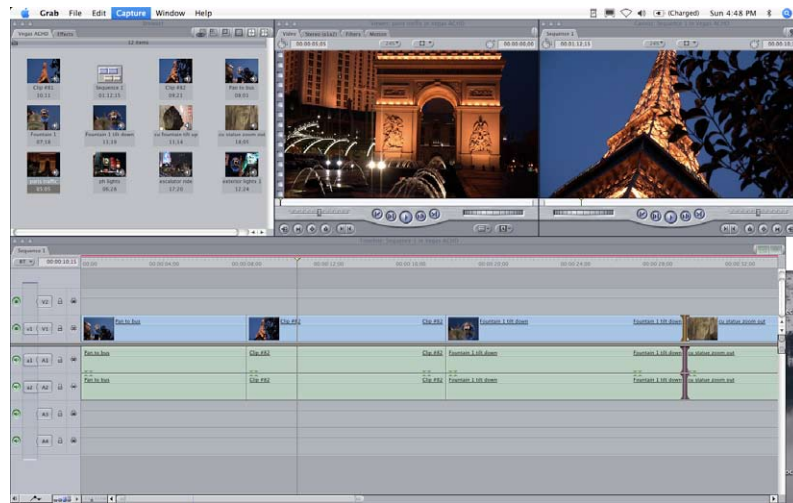
We will explain how to get your AVCHD footage into Final Cut Express and then once you have edited your footage, how to deliver on DVD, Blu-ray, and an AVCHD disc. We will also look at alternative delivery such as iPod, and You Tube. Finally, we will look at various archiving options including copying your content onto a hard drive, a Blu-ray or DVD disc.

SYSTEM REQUIREMENTS

- A Mac computer with a 1.25GHz or faster PowerPC G4, PowerPC G5, Intel Core Duo, Intel Core 2 Duo, or Intel Xeon processor
- 1GB of RAM or more
- An AGP or PCI Express graphics card compatible with Quartz Extreme; or an Intel GMA integrated graphics processor in a MacBook or Mac mini computer
- A display with 1024-by-768 resolution or higher
- A DVD drive for installation
- Mac OS X v10.4.10 or later, QuickTime 7.2 or later
- 500MB of disk space to install Final Cut Express and LiveType
- Additional 500MB to install LiveType content
- (As stated on Apple Final Cut Express website)

EDITING AND OUTPUTTING AVCHD WITH APPLE FINAL CUT EXPRESS 4

KEY POINT #1. TO EDIT AVCHD IN FINAL CUT EXPRESS 4 YOU MUST HAVE AN INTEL BASED MAC COMPUTER.



KEY POINT #2. WHILE AVCHD IS A SUPERIOR ACQUISITION FORMAT, IT IS NOT A GREAT EDITING ONE. FINAL CUT EXPRESS WILL AUTOMATICALLY TRANSCODE YOUR FOOTAGE INTO APPLE INTERMEDIATE CODEC DURING THE TRANSFER PROCESS.

Please remember that transcoded AVCHD files require more disc space than native AVCHD files. A rough rule of thumb is that your transcoded Apple Intermediate Codec files will require 10 times the hard drive space. So, look at the size of your native AVCHD file before log and transfer operations in Final Cut Express. It is possible to overrun your hard disc space during this process, so again, it is good practice to calculate the disc space your footage will need before beginning.

TRANSFERRING AVCHD FOOTAGE TO YOUR MAC.



When you are ready to transfer your AVCHD footage from your camera to your computer, the fastest and easiest method is to simply place your camera in PC mode and connect to MAC via USB cable. Or, if you don't want to tie up your camera for this process, just remove your SDHC card from the camera and use either your Mac's SD card slot or an external SDHC card reader.

KEY POINT #3. WRITE PROTECT YOUR SDHC CARD PRIOR TO MOUNTING.

Your SDHC card has a small little slider on the left hand side of the card labeled Lock. Push this slider down to write protect the data on your card. This is a critical step to protect your footage before you insert the SDHC card into your Card reader, Camera, or computer SDHC Slot for mounting. Your Mac will see the SDHC card as a No Name Drive (see below) and immediately try to index the card. In indexing the card, it will try to write data to it. If you have not write protected the card, you could lose some of your footage as the Mac does this indexing. Don't risk it, just write protect the SD card as soon as you remove it from your camera.

Many new Macs have an SD card slot. Just insert the SDHC card in the slot.

If you are using an older Mac, then you will need a SDHC-to-USB reader/writer like this one.



Just insert your SDHC card into the reader and connect it to a USB port on your Mac. It will appear as a No Name hard drive on your desktop. You will now be ready to open Final Cut Express and begin editing.

COPYING AVCHD FOOTAGE TO A HARD DRIVE

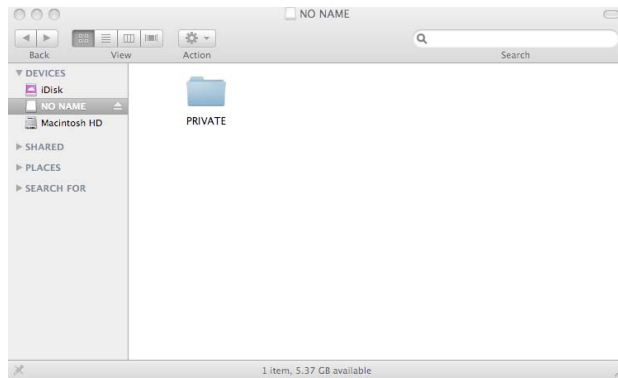
STEP #1 – MOUNT THE SDHC CARD ON YOUR COMPUTER

Many people prefer to copy their footage to a hard drive before editing. This is a good practice. Not only does this free up the SDHC card so that you can use it again after verifying that the transfer is successful, but it gives you a back up if you choose to keep the SDHC card. After you have inserted the SDHC Card into the USB reader, find the No Name Hard Drive on your desktop.



STEP #2 – OPEN THE NO NAME HARD DRIVE

When you open No Name you will see a folder named Private. You will want to copy this folder to your hard drive. Do not try to copy from any other folder within the "private" folder, as the structure of folders inside is important. Create a destination folder that you have named with an easily recognizable identifier, such as the project and the date. It is highly recommended to verify the integrity of the copy before re-formatting your SDHC cards. Also, consider your backup strategy as you begin to accumulate larger numbers of folders and projects. The more planning up front, the easier your life will be when you decide to re-visit material for different sessions (re-purposing content).



NOTE: Panasonic recommends 3rd party applications such as Shot Put Pro from Imagine Products for copy and verification. Shot Put Pro provides a safe backup to multiple simultaneous target locations (such as hard drives and/or Blu-ray burners) with validation of the copy. Please see www.imagineproducts.com for more information.

TRANSFERRING AVCHD FOOTAGE DIRECTLY FROM THE PANASONIC AVCCAM CAMCORDERS TO YOUR MAC.

You can transfer your AVCHD footage directly from your camera. The next few steps will show you how to do this. Unfortunately, this ties up your camera and precludes you from shooting with it while you are transferring.

Note: AVCCAM cameras do not have a IEEE1394 Fire Wire output, only USB. Since the AVCHD format is file based (not streaming oriented), there is no requirement for a Fire Wire output.

STEP #1 - CONNECT YOUR PANASONIC CAMERA VIA A USB CABLE TO YOUR COMPUTER.

Note: It is recommended to connect your camera to an AC power supply, as a low battery could damage your transferring footage. Also, write protect the card as instructed before.

STEP #2 - TURN THE CAMERA TO THE PC ON POSITION



On the **AG-HMC70** shoulder-mount camcorder, this is accomplished by moving the record button to PC. This puts the camera into USB device mode, making it appear as a card reader to the MAC OS. The SDHC card inside the camera will mount on the desktop as a No Name Volume.



On the **AG-HMC150** handheld camcorder, you must push the mode button on the back of the camera. The light will change from Cam to PB for playback, push again and the PC light will turn on. This puts the camera into USB device mode, making it appear as a card reader to the MAC OS. The SDHC card inside the camera will mount on the desktop as a No Name Volume.



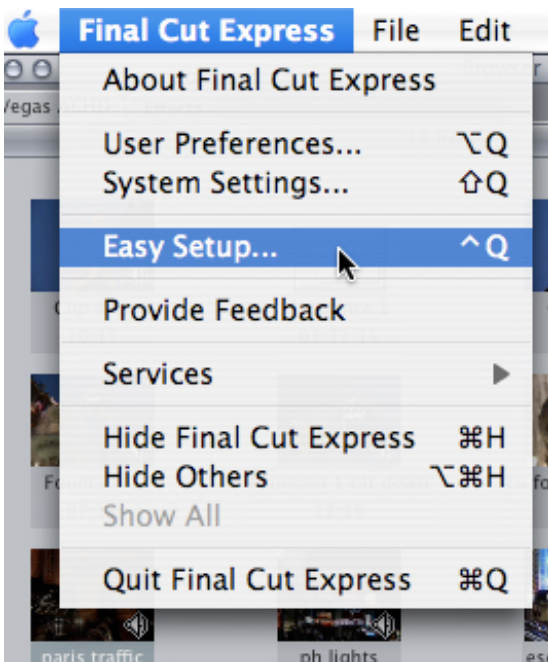
On the **AG-HMC40** camcorder, when you connect your USB cable to your computer, the LCD display on the camera will prompt you to touch either the PC or Printer Device button. Touch PC. The Printer Option here is for the still picture functionality of the camera, and has nothing to do with this video file transfer.

STEP #3 – TRANSFER THE FILES.

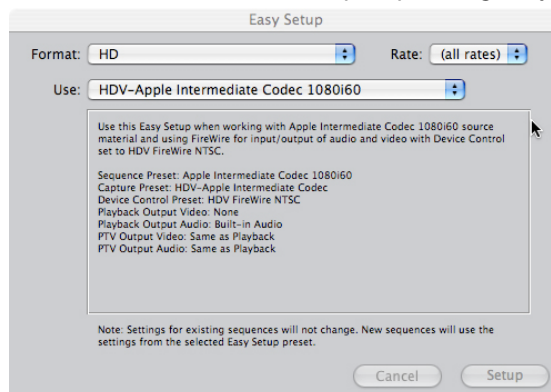
The camera will appear as a hard drive on your computer. Simply copy the contents of the Private Folder as described earlier, make sure you verify the copy. You will now be ready to open Final Cut Express and begin editing.

EDITING WITH FINAL CUT EXPRESS 4

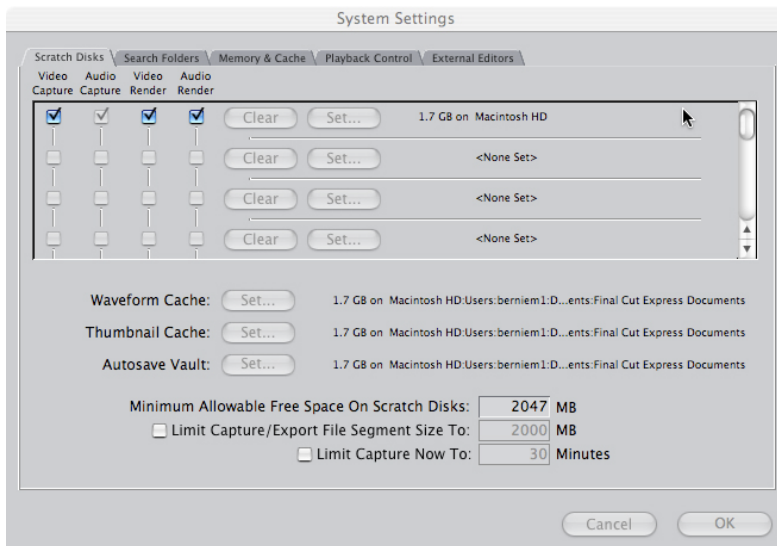
STEP #1 –OPEN FINAL CUT EXPRESS AND CLICK ON FINAL CUT EXPRESS > EASY SET UP.



Set Format to HD and Set Use to HDV-Apple Intermediate Codec 1080i/60 or 720p depending on your footage. Here we have chosen 1080i/60.

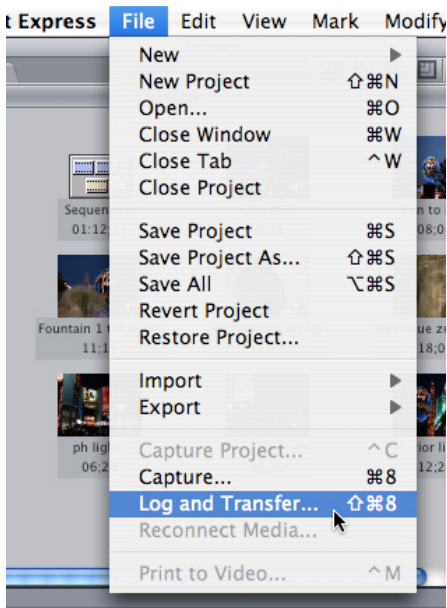


STEP #2 – SET YOUR SCRATCH DISC

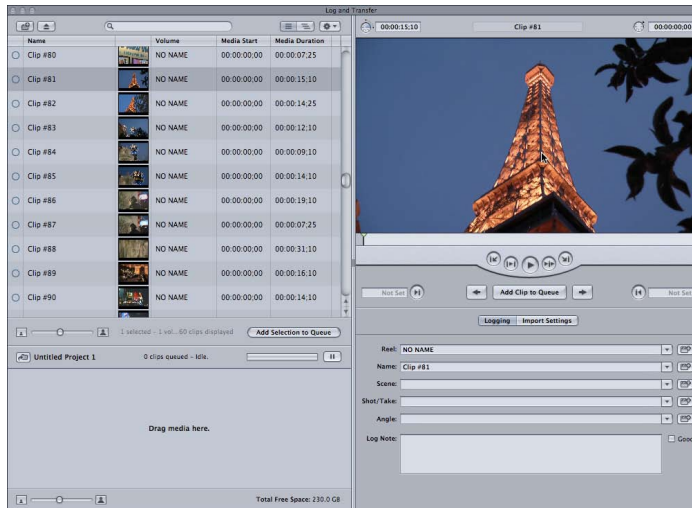


Designate your Primary Scratch Disc. Make sure you have enough disc space! Click OK.

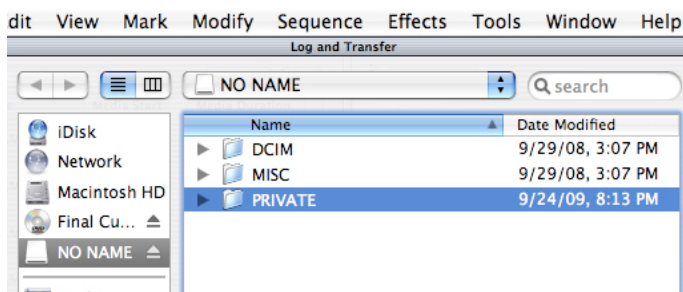
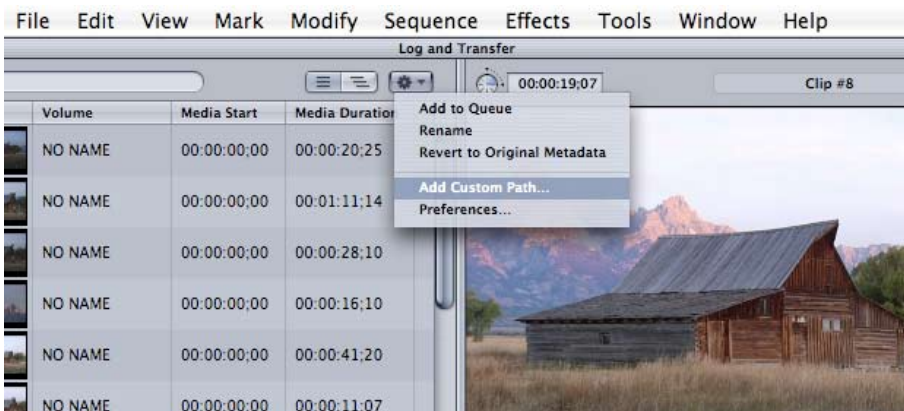
STEP #3 – SELECT FILE > LOG AND TRANSFER.



Your AVCHD media will appear in the Log and Transfer Window.

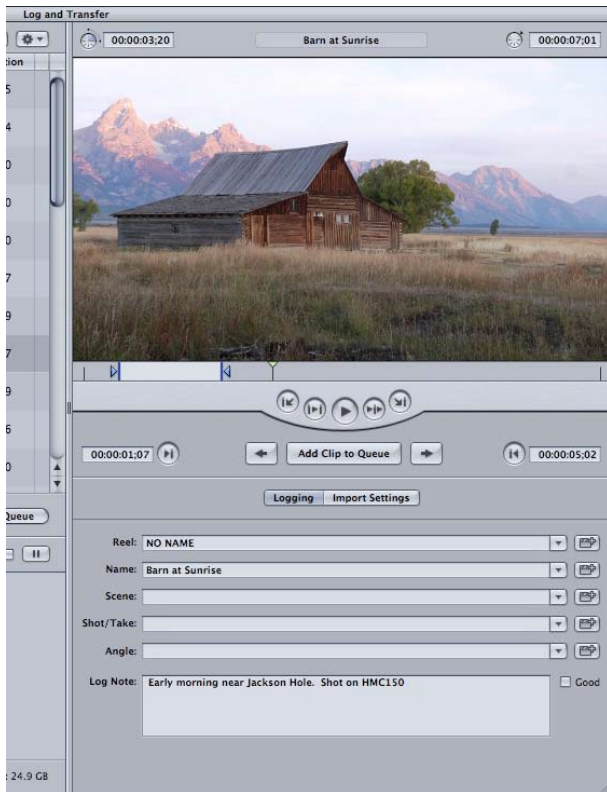


If Final Cut Express does not display your clips, you will need to point it to the hard drive or folder where your footage is stored. To do this click on the gear icon at the top right of the log and transfer window. In the drop down menu, click on Add Custom Path. Then find the folder containing your footage, click on Private and then open.



This will cause your footage to be displayed in the Log and Transfer Window

STEP #4 – SELECT A CLIP.



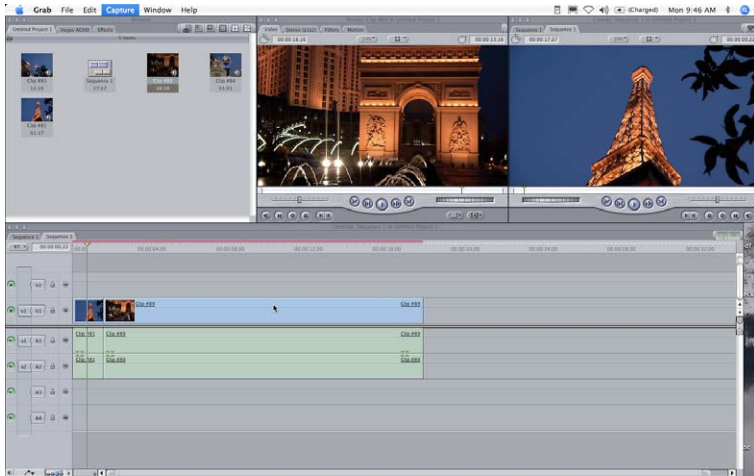
You can now view the selected clip in the Preview area. Here you can change the reel and clip name and add any logging notes you prefer. You can also make your rough “in” and “out” points here. This is a good idea as only that section of your native AVCHD footage will be transcoded in the next step, making the process much faster.

STEP #5 – CLICK ON ADD CLIP TO QUEUE.



Your clip will appear in the transfer queue area, where you can watch the status of the transfer. Once the clip has been transcoded it will appear in the bin section.

From this point on you edit your AVCHD transcoded footage, just like you edit any other footage in Final Cut Express.

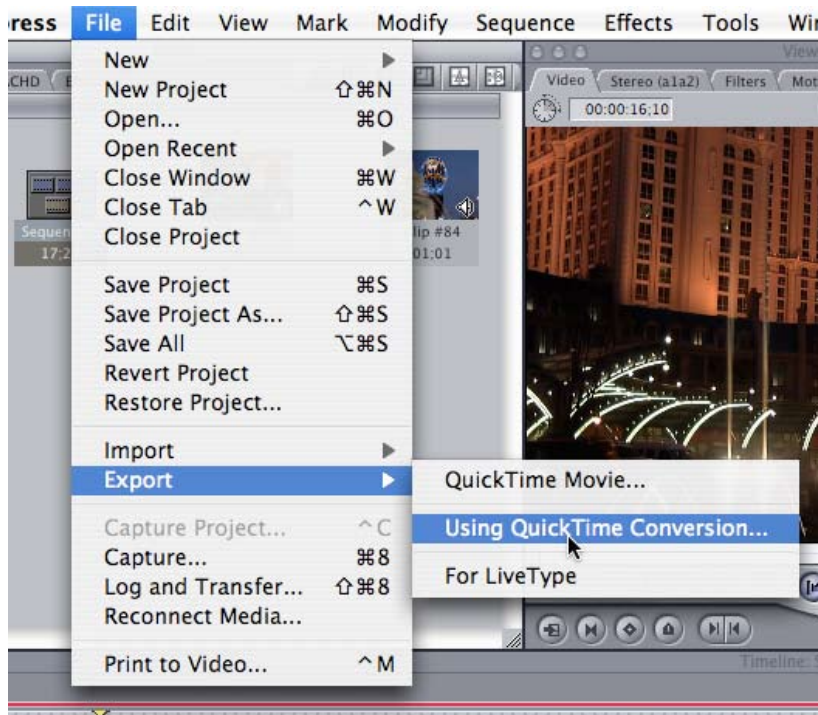


For further details on editing in Final Cut Express, please visit: www.apple.com/support/finalcutexpress

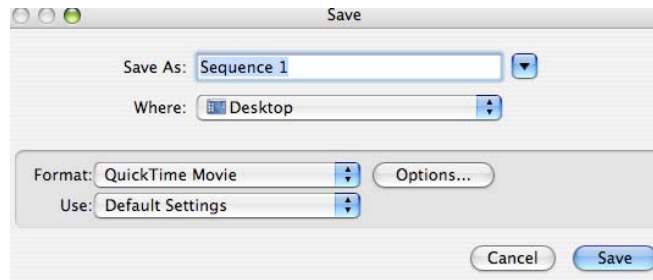
OUTPUTTING TO STANDARD DEFINITION DVD

Even though you have shot your material on high definition and edited it in HD, you still might need to downconvert it to standard definition. AVCHD footage will make dazzling standard definition DVDs.

STEP #1 - CHOOSE FILE > EXPORT> USING QUICK TIME CONVERSION

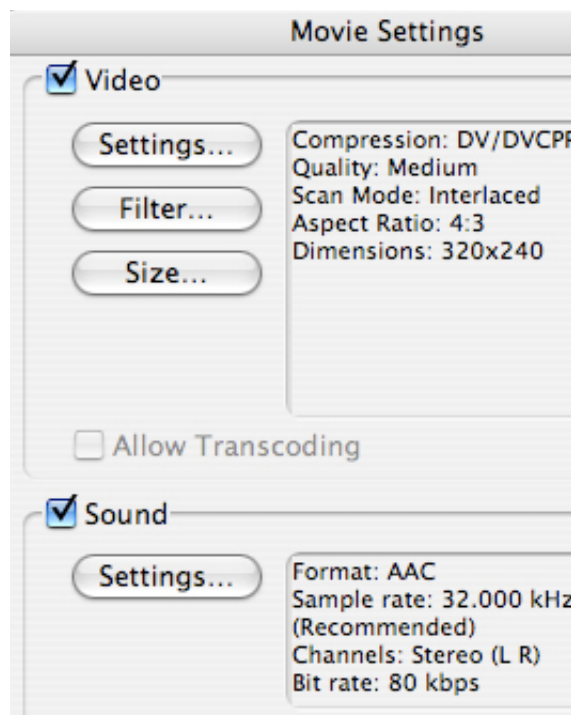


STEP 2 - NAME YOUR MOVIE AND CHOSE A FILE LOCATION, THEN CLICK ON OPTIONS

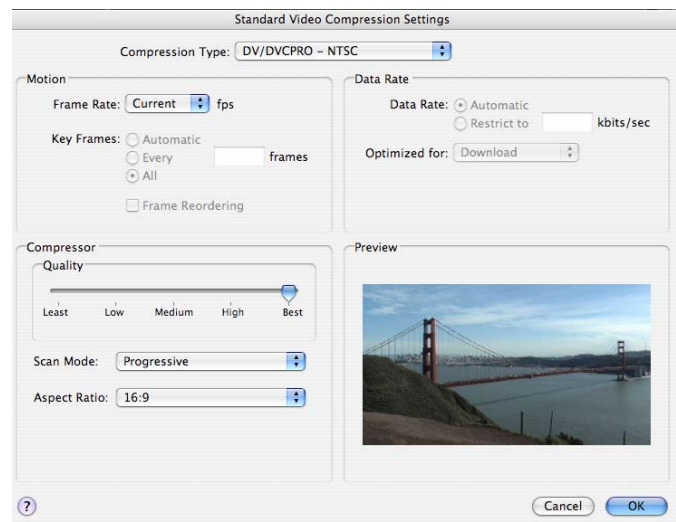


STEP 3 - AT THE VIDEO SECTION, CLICK ON SETTINGS.

Set Compression Type to DV/ DVCPR0-NTSC, this sets up the down conversion to standard definition.

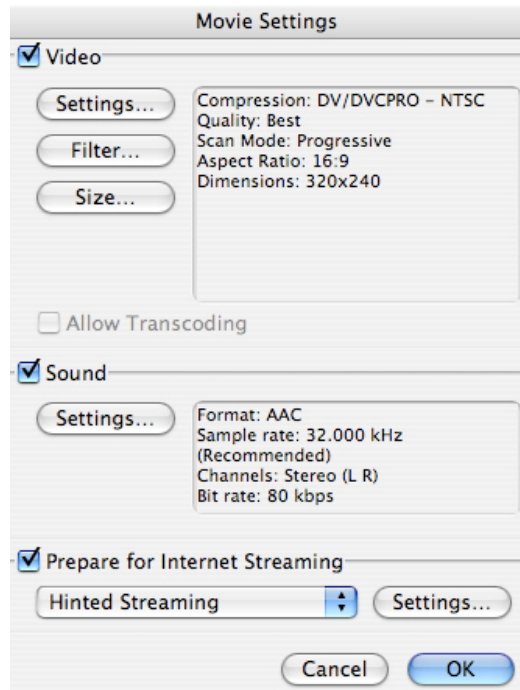


In the compression section, adjust your quality from least to best and set the scan mode and aspect ratio.



STEP 4 - IF NECESSARY, IN THE MOVIE SETTINGS WINDOW CHANGE YOUR SOUND AND INTERNET STREAMING OPTIONS AND CLICK OK.

At this point, if you want to transfer this movie to a DVD, you will need a DVD burning software, such as iDVD.

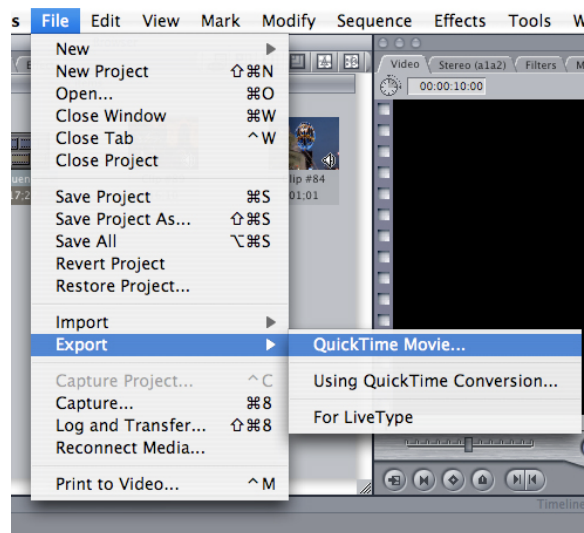


OUTPUTTING TO BLU-RAY

You can also transfer your movie to a Blu-ray disc. There are no presets inside Final Cut Express for Blu-ray burning. You will have to use some other application like Final Cut Pro 7, Roxio Toast 9 or 10 Adobe Encore (part of Adobe CS3, CS4 and CS5) for Blu-ray burning. **Note:** you must have a Blu-ray burner to create a Blu-ray disc.

STEP #1 -CLICK ON FILE > EXPORT > QUICK TIME MOVIE

Then import that movie into Final Cut Pro 7, Roxio Toast 9 or 10 Adobe Encore (part of Adobe CS3, CS4 and CS5) for Blu-ray burning.



OUTPUTTING TO AVCHD DISC

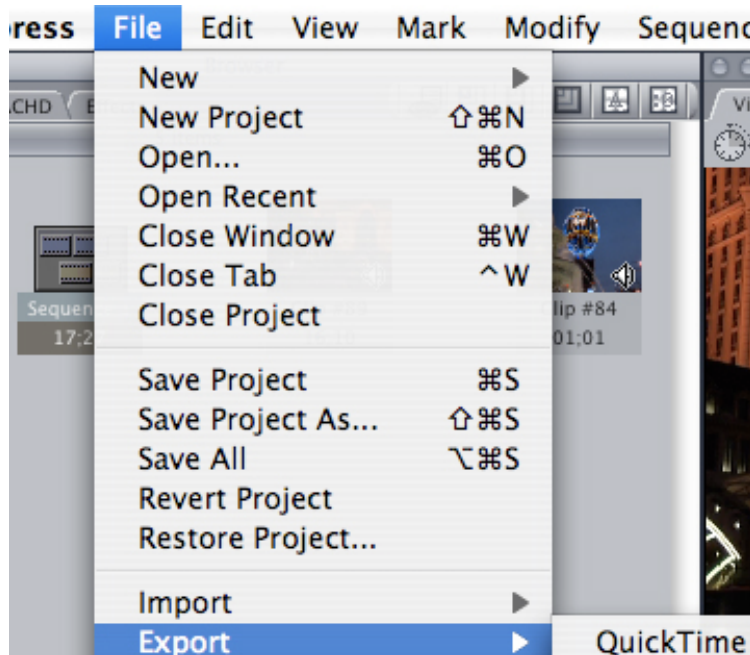
You can burn an AVCHD disc (which is a Duration limited Blu-ray image on standard DVD media, using the Mac's internal DVD / Super Drive). You are limited to 20 minutes of AVCHD footage on a DVD-5 disc and 40 minutes on a DVD-9 disc. The AVCHD disc will play High Definition in a Blu-ray player.

Software such as Roxio Toast 9 or 10 will allow you to drag your exported movie and even add a menu. See www.roxio.com for more detail.

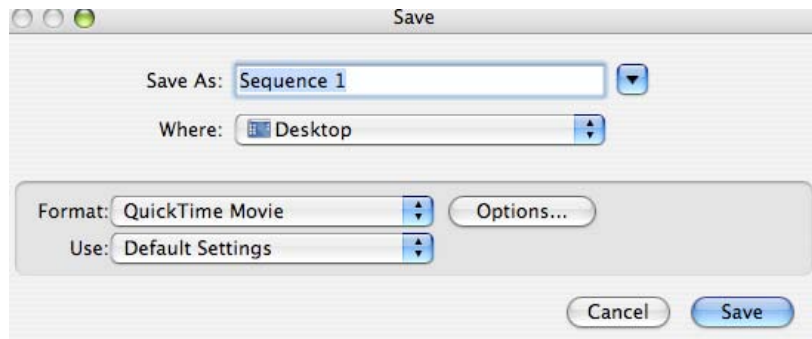
OUTPUTTING TO IPOD, OR IPHONE

If your goal is to display your movie on an iPod or iPhone, you should try to match the size and aspect ratio of the iPod display as best that you can. In landscape mode, the iPod touch and iPhone display is 480 x 320 pixels, so to preserve your movie in a 4:3 aspect ratio 480 x 360 pixels would be a good choice.

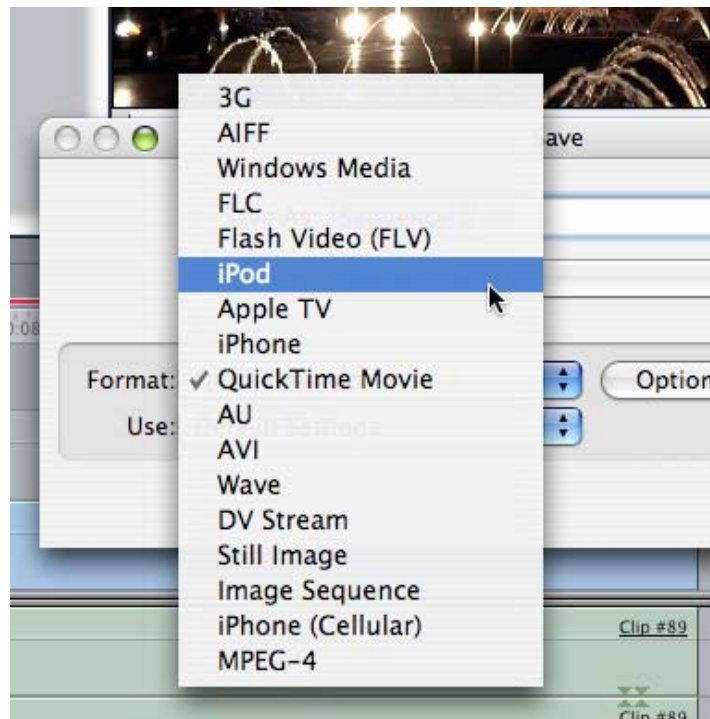
STEP #1 - CHOOSE FILE > EXPORT> USING QUICK TIME CONVERSION



STEP #2 - NAME YOUR MOVIE AND CHOSE A FILE LOCATION



STEP #3 - CHOOSE IPOD OR IPHONE FROM THE FORMAT MENU THEN CLICK SAVE

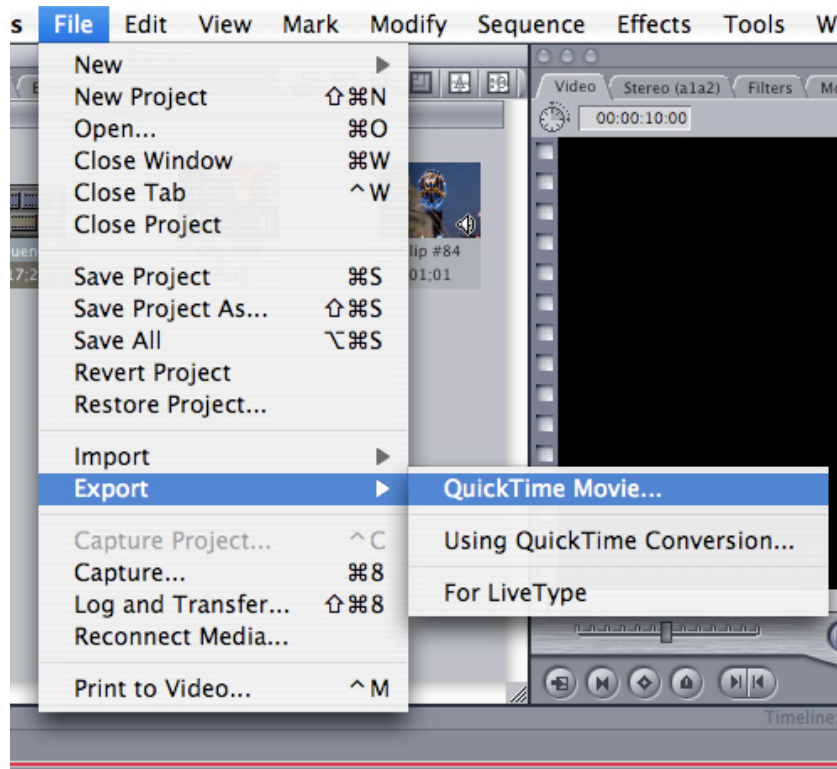


Your movie will be saved as a .m4v file ready for adding to your iTunes library to be synced to your iPod or iPhone.

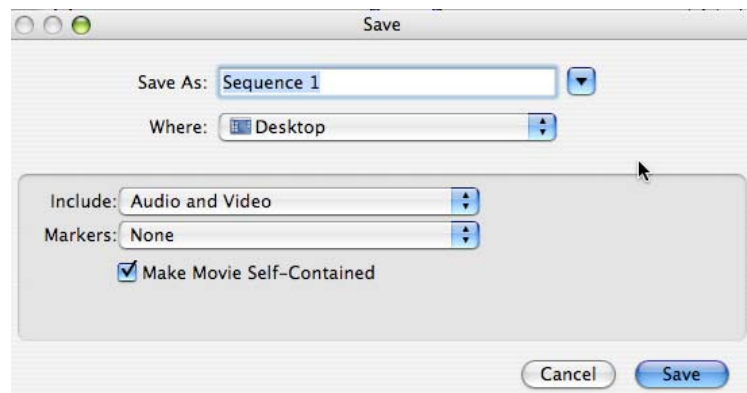
OUTPUTTING TO YOUTUBE

You might want to share your movie with the world on YouTube. This is easy to do. **Note:** You must of course have a YouTube account, in order to upload your movie. To prepare your movie for YouTube uploading follow these simple steps.

STEP #1 -CLICK ON FILE > EXPORT > QUICK TIME MOVIE



STEP #2 – NAME YOUR MOVIE, CLICK MAKE MOVIE SELF CONTAINED AND THEN SAVE



Your movie is now ready to upload to your YouTube account.

THE AVCHD WORKFLOW – ARCHIVING

Once your project is finished, you will want to archive your High Definition AVCHD footage (not just your transcoded Apple Intermediate Codec footage). There are a number of options available at this time depending on your budget and how long you want to keep the footage. How long you want to keep your footage is a very important question when dealing with Archiving. The answer to “How Long You Want To Keep It?” will determine what media you store it on today. If you want to keep your data for 1-10 years, you have many options, but if you must keep your material for 20 years or longer, then your options decrease. And regardless of the media you choose today, be prepared to move your data as new improved storage becomes available.

KEY POINT #4. THE SECRET TO SUCCESSFUL ARCHIVING OF ANY FILE BASED MEDIA IS REDUNDANCY AND MIGRATION. Make multiple copies and move your data as technology advances.

ARCHIVING TO HARD DRIVE (SHORT TERM STORAGE)

The quickest and least expensive way to archive your AVCHD footage is to copy your files to a hard drive. **Note: This is Short Term Storage.** This is accomplished in the same way as copying any other data to a hard drive. Copy the Private Folder of your AVCHD to your drive. There are a number of manufacturers who make inexpensive USB hard drives. I suggest copying to two different hard drives, be redundant. Also these hard drives should not be considered permanent long-term storage. Create a regular schedule to move your data to newer hard drives. Migrate your data.

ARCHIVING TO BLU-RAY DISC (MID-TERM STORAGE)

To archive to a Blu-ray, you will basically be making a Blu-ray Rom data disc. To do this you will need a Blu-ray burner, Blu-ray media, and specific Blu-ray burning software, such as Roxio Toast 10 or Adobe Encore (part of CS4/CS5 suite). Remember in order to retrieve your data from this archive in the future, you will need a Blu-ray drive. Keep your eye on how technology advances and migrate your data to new storage technology as needed.

ARCHIVING TO STANDARD DVD DISCS (MID-TERM STORAGE)

Although DVD-R media is technically not specified as archival media, you can archive your data onto standard DVD discs. Since these discs do not hold high amounts of data, this is very time consuming and requires a lot of discs. Remember, in order to retrieve your data from this archive in the future, you will need a DVD drive.

ARCHIVING TO DLT OR LTO TAPE (LONGEST TERM STORAGE)

If you have to store your footage for a very long time and want absolute confidence in your archival media, do what financial and medical institutions have been doing for years, back up your data on either DLT (Digital Linear Tape) or the newer LTO (Linear Tape Open). These are more expensive options than those listed above, but they are time tested. A number of companies, such as Quantum

(www.quantum.com), Cache-A, (<http://cache-a.com/products.php>) and others make DLT and LTO tape drives and media. (See WWW.LTO.org for more info)

SIMPLE, QUICK, FLEXIBLE AND INEXPENSIVE! THAT IS THE AVCHD PRO EDITING WORKFLOW.

Please see the AVCHD WORKFLOW ACQUISITION White Paper. You will find that shooting and transferring AVCHD material is again simple, quick, flexible and inexpensive.

About the Author:

Bernie Mitchell is President of Silver Platter Productions, Inc. an Emmy nominated Producer/ Director, a Multimedia Person of the Year and member of the DVD Association Hall of Fame. Bernie is the Panasonic AVCHD Evangelist and a paid consultant to Panasonic. Panasonic provided AVCCAM cameras for this white paper. Apple Hardware and Software are provided by Silver Platter Productions, Inc.