

Apple raises Macintosh video to prime time

Digital Video Editing
Apple Final Cut Pro 4

by Bob Connolly

Rumors have been circulating lately that Adobe has decided to abandon certain applications in the Macintosh format because of Apple's low market share. Some computer industry journalists (especially those dedicated to the Windows platform) have made light of this situation by painting PC "switchers" with descriptions of "Mad Mac" disease, a la the mad cow hysteria that recently swept Canada.

Unfortunately, these journalists don't see the big picture. They don't understand what Apple has in store and the real reasons why Adobe has abandoned certain video-specific Mac applications. To fully appreciate the situation, one must realize that Apple has evolved from a hardware-only vendor into a leading digital video software developer. Apple has been aggressively purchasing Macintosh, Windows and Unix video software companies in order to acquire their engineering skills and product offerings. Once these products are absorbed into the Apple fold, they are being "QuickTime-ized" to enable interapplication workflows.

THE SIGNS OF SUCCESS

You know an application has achieved success when third party developers start to build companion products around it.

Apple's Final Cut Pro, now in version 4, hasn't really grown by leaps and bounds over version 3, but it does come bundled with a whole slew of complimentary applications. All have been engineered to be tightly integrated with digital video cards, which has allowed the Final Cut "suite" to be transformed into a full-fledged professional video editing solution suitable for film, high definition TV and regular broadcast television.

Competitors such as Avid have always offered software/PCI board solutions to produce real-time effects, uncompressed video, and proprietary video storage solutions. In professional video production circles, Final Cut Pro was considered a good DV FireWire solution, but it lacked prime time TV broadcast quality features.

Now several hardware companies, responding to the wide adoption of Final Cut Pro on the Mac, have released hardware PCI cards and rack mount devices that make Final Cut 4 an alternative to Avid, the current industry standard, at a tenth of the cost.

HARDWARE CHOICES

Pinnacle Systems was one of the first companies to bring out a PCI card for Final Cut Pro. Pinnacle's CineWave card has software and hardware options that let you capture and edit standard definition and high definition video from a variety of sources such as composite, S-Video, component and SDI.

I own a CineWave system and I have patiently struggled with the upgrade paths from version 1.0. Pinnacle has been there since the initial release of Final Cut Pro, so it has a lot of experience with the Mac OS X operating system and QuickTime upgrades along the way.

The problem with Pinnacle is that it is a big company with priorities in the PC world. The CineWave card is a clone of its Targa 3000 PC card, and its Mac products seem to suffer from late upgrade releases, too many of which show up well after Apple has released an OS upgrade.

For Final Cut Pro 4, Pinnacle finally got it right and released drivers around the same time Apple released its latest upgrade. Unfortunately, Pinnacle is charging CDN\$400 for the CineWave driver upgrade that allows the card to work with the new version.

There's no option—I had to pay for the driver upgrade or I couldn't use the latest

version of Final Cut. I have no qualms about paying for driver upgrades, but CDN\$400 seems a bit steep. If I was getting a whole new set of features that were of use to me, that would be different.

And to truly make use of the upgrade, I also have to buy Cinewave RT PRO for an extra CDN\$3,000 (RT stands for real-time). This is a software key that unlocks extra functions for real-time effects. But I'm content to sit for a few seconds and let my dual processor Mac render the effects when needed. For a post-production company charging clients by the hour, real-time effects are a must, but most of that business has gone to the Avid camp.

AJA TO THE RESCUE

However, there are finally affordable alternatives to the Pinnacle CineWave card, and they come from a company that specializes in producing interface devices for the video industry.

AJA Video Systems makes inexpensive PCI cards and rack mount systems specially for Final Cut Pro 4. AJA's Blackmagic DeckLink and Kona standard definition and high definition cards not only fly with Final Cut Pro 4, they also provide superb video output for video compositing applications such as Adobe After Effects.

AJA's latest offering is called Io (I think Io stands for In-Out because that's what's so cool about this box). It comes in a desktop or rack mount configuration and connects to a Mac via FireWire—no PCI card!

At first you might think that this is a DV converter, but it actually contains a full 10-bit uncompressed capture card. It has RS-422 video deck control for frame-accurate uncompressed capture of composite, S-Video, component and SDI Video. For audio it has eight inputs and outputs for analog and digital audio. The most amazing feature is that the only connection is a single FireWire cable!

FIREWIRE AND QUICKTIME

Many of you probably wonder how uncompressed video, digital audio and deck control travel through a single FireWire



AJA's Kona HD PCI capture card is a less expensive alternative to Pinnacle's CineWave.

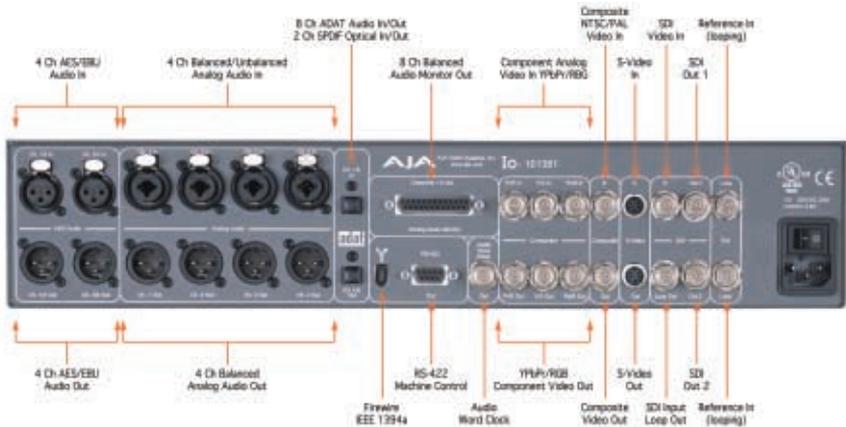
connection. Apple, winner of an Academy Award for FireWire, put its developers together with AJA's engineers to produce the ultimate capture device, specifically designed for Final Cut Pro 4 and utilizing the Mac's built-in FireWire port. The FireWire team felt the format was being underutilized, so they decided to help the process along.

Although the Io will capture and convert almost any video signal to uncompressed or compressed DV format, it's astonishing to see uncompressed video travelling along a FireWire connection to be saved on fast striped array drives. And that same FireWire cable is also handling deck control, 8-channel audio and video playback monitoring! FireWire is not just for DV, it's also a great method for transferring data, especially to drives that are not FireWire-enabled, such as striped arrays. Best of all, the cost of the Io is US\$2,290 (~CDN\$3,200)—if you can find one.

ADOBE GIVES UP—SORT OF...

So, getting back to the rumours that Adobe will no longer be supporting the Mac for certain video products—I don't blame them. How could Adobe possibly compete with Apple's software developers who have the inside track? If you own a Mac and you're going to create video with it, you would be far more likely to use products that work together seamlessly at an affordable cost.

However, one Mac video application that Adobe is not abandoning is After Effects. The latest upgrade is version 6, and I



There is no shortage of options for video and audio connections on AJA's Io capture device. Most notable is the fast FireWire data transfer.

am thoroughly pleased that Adobe has decided to continue its Mac development on this product. Final Cut has some cool effects for scene transitions, but if you're going to composite video for special effects work in TV commercials, motion menus for DVDs, or corporate openings, Adobe After Effects is the way to go.

One of the most important assets that Adobe owns is its type library. Applications like InDesign and Photoshop are terrific for manipulating those crisp PostScript fonts, but the biggest flaw in the world of type—until now—has been how After Effects utilized them.

In previous versions, creating text layers was almost prehistoric. Forget typesetting in After Effects—there was none. But now in version 6, the good old type pallet that we're all familiar with in Photoshop is here inside After Effects.

After Effects was never considered to be an application for setting type; it was for flying type in and out of a video. Compositing and manipulating layers of video was what it did best. Third party developers loved to create plug-ins for it, and Adobe sat back and let those partners reap the rewards. It was not uncommon for plug-ins to cost twice as much as After Effects itself.

One of the most popular After Effects plug-ins was from Ultimatte. This was an add-on which allowed for that ever-popu-

lar special effect, blue screen keying. Actors standing in front of a blue or green wall could be placed seamlessly into a live action video using the Ultimatte plug-in.

Well, Adobe has now decided to incorporate its own keying capabilities into After Effects 6—and it's about time. It works great, even with DV video that's almost impossible to key with.

ANIMATE TITLES WITH LIVETYPE

One area where Final Cut used to really fall short was in its handling of animated type. Most pros would go to After Effects to create animated titles and then import the final product into Final Cut for compositing via alpha channels. Recognizing that drawback, Apple created a program called LiveType, a separate application bundled with version 4 which works flawlessly with Final Cut, especially with OS X's multitasking capabilities.

LiveType is like After Effects with text behaviors. Just type a line of text and it appears in a timeline resembling Final Cut's timeline. Text can be animated manually using keyframes—but, given the variety of predefined motions and visual effects that can be applied so simply using dropdown menus, who would want to? Text can be composited over a variety of backgrounds which are supplied with the application or exported with alpha channels to be composited into a Final Cut timeline.

AUDIO—WE'LL FIX IT IN THE MIX

When producing video on a tight budget, good audio often gets overlooked. Most people get out that overused royalty-free library of stock music and try to stick it in the timeline, hoping that it will fit the length of the composition. If the song is too long, they just fade it out and hope that it doesn't end on a bridge or chorus. Or they backtime the song to finish at the end of the video and fade it up somewhere in the middle. This just screams, "Stock"!

A hired composer will emphasize portions of the video to bring excitement to the scene. For example, where there's narration, the composer will usually lay back with soft instruments to allow the voice to come through clearly. During fast scenes which feature loud sound effects, the composer might add a loud lead guitar or wailing saxophones. The soundtrack moves with the scene and adds dramatic effect.

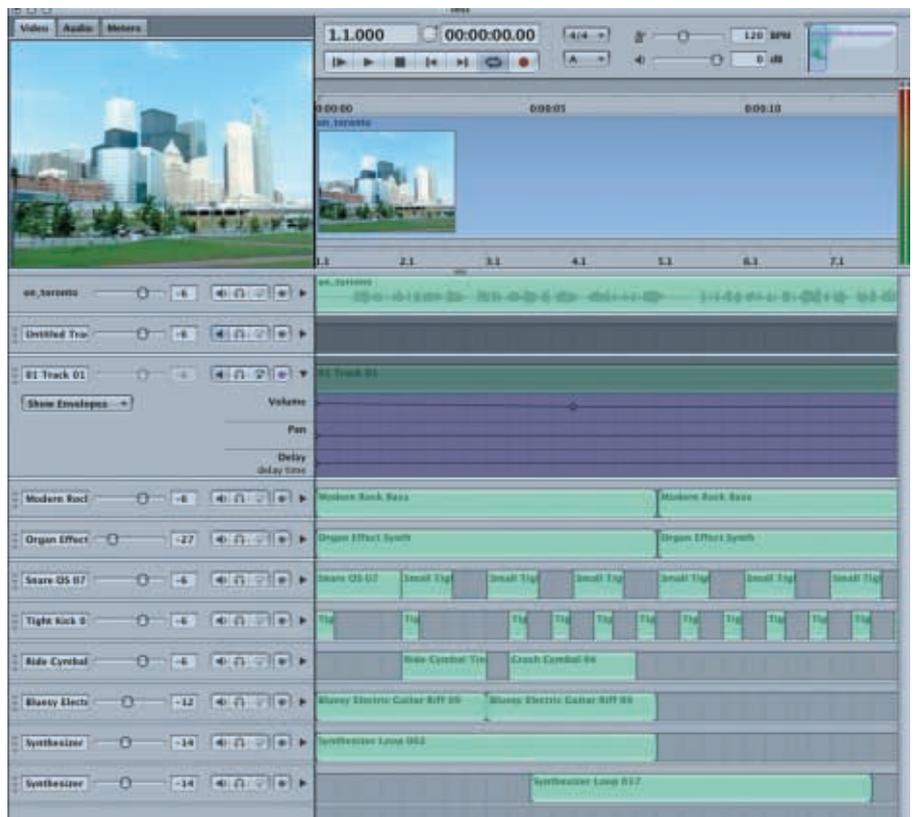
However, Apple has come up with a very nifty application called Soundtrack that's now bundled with Final Cut Pro 4 (and may also be purchased on its own for CDN\$399). Soundtrack comes with a DVD full of music tracks (over 4,000 in total), but instead of songs, you get bits of riffs and instruments that make up the song. Each kick drum, high hat, bass note, and keyboard chord has been separated into a file that can be dragged into a timeline. Using seamless loops, layers of instruments can be built for your soundtrack while locked to picture, and the music can start and end at the same time as the picture.

If there's a narration for a few seconds, you can drop out the guitar and solo the kick drum. Picture dissolves can have smooth keyboard glides. Basically, a song is composed just by dragging the short riff loops into the timeline. Each audio file snaps into a beat that can be adjusted for tempo and time signature.

Soundtrack's music files are well-produced—and I wouldn't be surprised if this application catches on generally with anyone who wants to be a music writer or producer without having to learn to play an instrument. A drag-and-drop song!



Livetype, a brand new addition to Final Cut Pro 4, features hundreds of presets for animating text, textures, effects such as smoke and animated backgrounds.



Using the new Soundtrack audio library in Final Cut, digital audio samples and loops can be added to the timeline to create music.

MIXING IT ALL TOGETHER

So you have a good solid narration or voiceover locked to a picture. Sound effects from the camera's footage are clean, and you add an ambience sound effect track to smooth out the edits so the cuts aren't jarring. The music track starts and ends with the picture.

Now the audio has to be mixed so that you can hear everything in its right space. To mix the tracks, most professionals will export them into an application like Digidesign's ProTools, where on-screen faders can be moved to automate the mix and get it just right.

In Final Cut Pro 3, you had to adjust the sound of each individual clip separate-

ly. But in v4, on-screen faders allow automated computer mixing, which in some cases is almost as good as using a professional sound mixing application. You don't get the effects offered by a full sound mixing application, but often that's just not needed as long as the tracks are clean.

WHERE ARE WE HEADED?

Another application bundled with Final Cut Pro 4 is called Compressor. Once you've mixed your audio to the locked picture, it's time to transfer it to some sort of media for distribution. If it's for TV, Beta-cam SP is a safe bet. But DVD has become so popular that most people will ask for a DVD disc instead of a VHS tape.

DVD requires careful MPEG-2 compression to get more than an hour of video on a one-off DVD-R. QuickTime Pro with the MPEG export option from DVD Studio Pro allowed you to produce constant bit rate MPEG-2 digital video, but if there was more than an hour's worth of video, the quality of the video had to be reduced to get it all on one disc.

However, Apple's Compressor allows video to be taken from a Final Cut Pro timeline and be compressed, using dual pass variable bit rate compression.

It works something like this. Each frame of video is analyzed and compared to the next frame. If there's only a little motion in the frame, similar portions of the next image are held or frozen, which requires less data to create the frame. Talking heads can be compressed more because there is less motion than, for example, a car chase, which requires less compression to keep the picture quality high. For a 90-minute movie, the video will require variable amounts of compression to keep a good overall artifact-free look.

Compressor looks at each frame of video during the first pass and records the motion in the image. During the second pass, the "image" information is fed into memory and compression is then increased or decreased to suit each frame, depending on the amount of motion. This is definitely the best way to compress

video, and Apple gives you this utility free with Final Cut Pro 4—which on its own is worth the price of the upgrade.

THE FUTURE OF VIDEO ON THE MAC

Taking a close look at AJA's Io video capture device, we can see that there are several features which are not being utilized at the moment. The device has an 8-channel balanced audio monitor output. Apple's new G5 has a Dolby digital 5.1 fibre optic output. Apple purchased a music software company called eMagic, renowned for its Logic Audio software, and now DVD Studio Pro 2 has just been released.

Apple has one gaping hole to fix—surround sound audio software. For those who have heard a good home theatre equipped with a surround sound system, DVD just doesn't cut it unless it includes this quality of audio. Apple has closed the loop on creating great video and delivering it on DVD, but mixing the audio for the surround sound format has been left out.

Dolby Digital Surround outputs are there on the back of the G5. The 8-track audio monitoring is built into the AJA capture device, but nowhere is there mixing software that can talk to the ports. That's the last part of the total Mac video solution that Apple will have to address. What does Steve Jobs have up his sleeve?

The rumour about Adobe not supporting certain Mac applications is actually good news. Apple not only makes great computers, it now makes great software, too. And at a fraction of the price of tried-and-true systems like Avid's, many video producers are choosing a Mac with Final Cut Pro. Adobe and Apple have a great relationship. Adobe has just decided to put its energies into Macintosh products where Apple has chosen not to venture.



APPLE FINAL CUT PRO 4

System Requirements

- Macintosh computer with PowerPC G4 processor and AGP graphics card
- RT Extreme and Soundtrack require a 500MHz or faster single processor Power Mac G4 or PowerBook G4, or any dual processor Power Mac G4 (667MHz PowerBook G4 required for RT Extreme in DV format)
- QuickTime 6.1
- 384MB RAM (512MB recommended for RT Extreme and Soundtrack)
- 1GB disk space required for application installation
- 5GB disk space required for Soundtrack content
- 9GB disk space required for LiveType content
- DVD drive required for installation

Pricing

CDNS\$1,499 (US\$999)

Apple Computer
Web www.apple.com

Many thanks to Chris Chahley of Extrabytes (www.extrabytes.com) for help with the preparation of this article. Bob Connolly is a principal in BC Pictures, a new media production company creating content for TV, CD-ROM, DVD and Internet websites. He can be reached at 416-521-7462 or by e-mail at bob@bcpictures.com.