

QuickTime Movies

With Apple's release of the QuickTime (QT) System extension, digital video has finally found its way to the desktop. The QT extension allows video to be cut and pasted into any document that supports Pict files. That includes almost all word processing programs, E-Mail systems, or databases. In fact almost any document can have a QuickTime movie (QTM) imbedded in it. These imbedded videos can be played simply by double-clicking on them as long as the QT extension is installed. All future versions of the Mac OS will include QT as an integral part rather than as a extension.

I have been working with QT for some time now and have uploaded several short movies to AOL. For the past few weeks I have received a fair amount of mail with questions about various aspects of QT. I enjoy answering these letters and try to help where I can. I am writing this as a response to all of the questions that I have received. The most common question that I get is; "How do you make QuickTime movies and can I do it too?" That is the question that I will try to answer here.

This is not meant to be a tutorial, but rather a description on the process that I go through when I make a movie. I will also describe the equipment and programs that I use. If you have any further questions or comments after you have read this paper feel free to send them to me. I can be reached on America Online at Tim69 or you can send a letter to me at the following address:

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My hardware consists of a Mac IIx with 17 megs of RAM, a total of 220 megs of fixed hard drive storage, and an 88 meg removable hard disk. I use SuperMac's VideoSpigot Pro II to get the raw video and sound clips into memory, and a color flatbed scanner for still pictures. The VS Pro is a combination real time video window/recorder and a 24 bit graphics card. It is currently the only way to get both video capture and 24 bit graphics on the IIx. My non-computer hardware consists of a laser disk player and VHS recorder. This hardware represents a fairly large investment and while most of it is needed to make QuickTime movies, none of it is needed to view the movies.

The following software is all that is needed to view QTMs. Any Macintosh (even a black & white Plus) that is capable of running System 6.0.7 or System 7,

the 32 bit QuickDraw init (for system 6.0.7 only), the QuickTime system extension,

and any QTM player. Apple is distributing its SimplePlayer as part of the QT package. More sophisticated players include the shareware app Popcorn (available on AOL) and SuperMac's VideoSpigot software. If you want to cut and paste QTMs between documents you will need the freeware extension Wild Magic. Programmers are now starting to produce all sorts of programs to take advantage of QT. One init that serves no purpose beyond simply being fun is StartUpMOOV. It plays a QTM when you start your Mac, sort of like an animated startup screen.

While I am not affiliated with SuperMac in any way (except as a customer) I recommend that you download their software package even if you don't own the Spigot. It is available in the Industry connection area of AOL (keyword SuperMac). It includes a player that lets you crop the lengths of the clips, save the clips in various compression schemes, resize the viewing window, and save individual frames as Picts. The second piece of the package is a system extension that allows any QT player and any document that has an imbedded QTM to read QTMs that have been compressed using SuperMac's in house algorithm. At the San Francisco MacWorld Expo they were demoing a compression init that achieved a ratio of 20 to 1 while retaining good quality and smooth animation.

If you intend to make complex QTMs, as opposed to just live captured clips, you will need a program such as Adobe Premiere and maybe a color paint program. I use Adobe's Premiere, Photoshop, Illustrator, and Aldus' Gallery effects because they all work together seamlessly.

I made my first QTMs by capturing video directly from a laser disc player or a VCR to my hard drive. The three QTMs that I have uploaded so far (QT: Cheesecake, QT: Futurescape, and QT: Snowboard). Are of this type. Although the QT allows you to capture sound along with the video signal I did not use this feature in order to reduce the size of the movie. After capturing the raw footage with the Spigot, I cropped the clip to just the frames that I wanted and then saved it using one of Apple's compression techniques. Apple's QT extension ships with four compression techniques. There are pros and cons associated with each one.

Animation: In many ways this is the most versatile module in that it allows you to pick the screen depth of the final movie. The choices range from millions of colors to two colors, and from 256 greys to black and white. The size of the movie is smaller if you save it with 8 bit rather than 24 bit color but the quality suffers. On the other hand most of the Macs in circulation run under 8 bit color only. One way to save the quality and reduce the size is to save it in greyscale rather than color. QT also allows you to pick how much compression to apply to your

movie. It is a trade off with higher compression yielding a

smaller file but lower quality. SuperMac's software allows you to preview the final picture quality before you apply the compression. The animation quality is rather good with this module though not the best.

Graphics: This allows you to save the footage in either full color or greyscale but nothing in between. It also allows you to pick your level of compression. It does not yield as smooth a movie as does Animation. I do not use it.

None: As you might guess this does not compress the footage at all, but it does allow you to pick the bit depth of what you save. You end up with the original quality but a smaller due to a fewer number of colors. The quality/size feature is turned off in this module.

Photo – JPEG: This module produces the smallest files with the best quality vs. size. The movie can be saved in either color or greyscale and you can choose the level; of compression. Unfortunately it also produces the worst animation. Your movie becomes a series of still pictures. There is a noticeable time lag between frames. My movie QT: Cheesecake is compressed using this method. Anyone who has downloaded it knows what I mean. On the plus side it can be resaved using one of the other modules. This restores the original smooth animation. However, the file ends up being about 10 times larger.

Video: This module only allows you to save the movie in color, but you do get to choose the level of compression. For the time being, this is my module of choice. It produces good animation and picture quality with acceptable levels of compression.

Here are some observations that I have made about capturing live video.

One of the things that you must decide is how many frames/second you should capture. In part this is decided by which Mac you have. The si can record a maximum of 15 fps while the ci can capture around 25. I have no numbers on the fx or Quadras but I would assume that they could capture at least 30 fps. All TVs, camcorders, VCRs, laser discs, and the like transmit at 30 fps. This is the international standard. Just remember that if you double the numbers of frames you also double the size of the file. Another consideration is that every Mac will play your QTM as fast as it can. Therefore, if you capture Opra at 30 fps on your

Quadra, it will play back at half speed on my si and be twice as boring as usual. However, because QuickTime incorporates a timing “device” the footage that I record at 15 fps will also play on you Quadra at 15 fps. All Macs are capable of displaying 10 fps. This is a little to jerky for me. I use the my maximum of 15 fps. Lastly SuperMac recommends that your number of fps that you capture be evenly divisible into 30 (1,2,3,4,5,6,10,15,30). This prevents you from capturing partial frames.

Ideally you would want to save you raw footage onto a ram disk. However, unless you have memory in the range of 50 to 100 megs or you are making very short movies

you will not be able to capture your video into memory (remember you are capturing the video and sound uncompressed). Choose your fastest hard drive as the destination volume. With a slow drive you will be able to see breaks in the footage where the card stopped capture long enough to save its stored footage. I use a PLI removable 88 with 20 ms access time.

QTMs are not just about video clips. With programs such as Premiere you can make sophisticated QTMs by combining video, recorded sound, animations, scanned photographs, paintings, and text. The programs allow you to combine several clips, apply filters or Photoshop plug-ins, superimpose clips, and create transitions using special effects. By importing only Pict files, such as those generated in painting programs, traditional animation techniques can be used to make QTMs. Also animation sequences generated by not QT applications can be imported and converted to QT. Because the clips can be layered these movies can become quite large very quickly. Hopefully new compression techniques will cut down the size of these files to where they can be uploaded in a reasonable amount of time.