

instructional support

Enhancing Teaching and Learning through Technology

Getting Started with Camtasia Studio Reference Material

Recording Fundamentals

When creating videos, it is helpful to take several things into consideration. Understanding these concepts will shorten the learning curve of video production, aid in creating better videos, and decrease the chance of having to redo your work.

Screen Resolution

The screen resolution of your target audience is an important consideration. For example, if you create a video that is 1024x768, for people who have a lower screen resolution such as 800x600, the video would have to be scaled to fit on the screen.

Even small amounts of scaling cause noticeable image quality degradation. The more a video is scaled, the more the image quality degrades.

If the video is the same size as the desktop, for example a 1024x768 video played on 1024x768 desktop, in order to play the video without scaling the player would have to be configured to play in full screen mode. Why? Because the player's window frame, title bar and tool bar etc. consume some screen real estate. Unless the video is distributed in some way such as Pack and Show using the Camtasia Player, where you have control over the player's configuration, the user would have to understand this issue and configure the player manually for full screen playback. Additionally, in full screen mode, the player will not have any visible controls to start, stop and pause the video.

So generally it's best to record less than full screen areas and to take into account the resolution of the screen that the video is to be played on.

It's a fairly safe assumption that most people are now running at 800x600 or better. Just remember that the video should be small enough to be completely displayed on the screen, without scaling, and still have room for the player window frame and controls.

As a general rule, never record a larger area of the screen than necessary. If you are recording an application, record just the application window and not the entire desktop. Recording unnecessary screen area, aside from the aforementioned considerations, also creates larger file sizes, reduced capture frame rates, and in some cases, can cause playback problems on slower systems.

If you need to record the entire screen, try setting your monitor resolution to a lower resolution than the target audience screen. If your audience is using 800x600, set your screen to 640x480 for the recording.

If you are recording a 640x480 area, it does not make any difference what the monitor resolution is set to. A 640x480 recording area will create a video that is 640x480, whether it was recorded on a screen set to 640x480 or one set to 1280x1024. If a 640x480 video were played on a monitor set to 640x480, it would have to be played in full screen mode. If it was played on a 1024x768 or higher monitor resolution the video could be played in a player window without scaling.

Video Codecs

Codec stands for Compressor/Decompressor. A **codec** is simply an algorithm to compress data to reduce file size. There are two types of codecs, *lossy* and *lossless*.

Lossy codecs degrade video quality due to compression. When a lossy **codec** is used to compress a video, the image quality of the video will not be as good as the original.

Lossless codecs do not degrade image quality. Like Zip compression, if a video is compressed with a lossless **codec**, when it is uncompressed when it is played, the uncompressed video is 100% identical to the video before it was compressed.

This is an important concept to understand for video editing. Every time a video is edited, it must be uncompressed for editing, and then recompressed when it is rendered.

If a lossy **codec** is used during the editing process, each time the video is rendered, the image quality degrades. This is like making a copy of a video tape, and then making a copy of the copy. Each successive copy degrades the image quality further.

When a file is compressed with any particular **codec**, that **codec** must be installed on any machine that is going to view the video. In much the same way that if a file is zipped, you must have some Zip program to uncompress the file before you can use it.

Audio Codecs

As with video data, the audio portion of a movie can be compressed to reduce file size. Like video codecs, most audio codecs are lossy, and degrade audio quality for the sake of compression. It is advisable to use PCM uncompressed audio for the original recording, and only compress the audio when editing is complete.

The audio data in an AVI file can contribute more to the total file size of the AVI than the video portion. In fact, depending on the audio **codec** used and its configuration, the audio data may be 10 times larger than the video. Even well compressed audio can equal the size of the video data.

The choice of audio **codec** will not only be a major determining factor in the size of the video, but also affect the audio quality.

For voice recording, stereo is generally not needed, and will double the size of the audio portion of the file.

Consider the following example AVI. The only difference is the audio compression used. Note how the file size wildly varies when the file is compressed with various audio codecs.

No audio:
300 KB

With PCM uncompressed audio:
PCM 22.050 kHz, 16 bit, Mono (Camtasia Recorder's default) = 2.7 MB

With compressed audio:
CCITT u-Law, 11.25 kHz, 8 bit, Mono = 911 KB
MPEG Layer-3, 24.00 kHz, Mono = 471 KB

MPEG Layer 3 is an excellent audio **codec**. It produces small file sizes and maintains good audio quality. One drawback is that it may not be installed on all computers.

CCITT u-Law is another good choice. It is distributed with Windows and should be on most machines. It maintains good audio quality, but does not compress as well as MPEG Layer 3 so the file sizes are larger.

Some audio codecs produce horrible sounding audio, from scratchy static noise to sounding like the Tin Man talking into a drain pipe.

Some of the audio **codec** listed in Camtasia cannot be used due to licensing restrictions by the owners/authors of the **codec**. If you try to use one of those, Camtasia will display a dialog saying that you must choose a different **codec**.

Experiment by making a short video using PCM at the Camtasia Recorder's default configuration. Then try various audio codecs at different sample rates.

Lossless TechSmith Screen Capture Codec (TSCC)

Unlike most other codecs, TSCC is lossless, meaning that its compression technology does not degrade image quality due to compression. When played, videos compressed with TSCC will look exactly like the screen that was recorded with 100% perfect quality.

To avoid image quality degradation, the TSCC video **codec** should be used for the original recording and during the editing process. When editing is complete, copies can be made from the original perfect master into other video configurations or video file formats.

By default, Camtasia Recorder uses the TechSmith Screen Capture **Codec** (TSCC). Therefore, unless you select a different **codec** or video file format, your videos will be compressed using TSCC.

In order for TSCC videos to be played on another computer, the TSCC **codec** will have to be installed on that computer, or viewed using the Camtasia player that has internal support for playing TSCC compressed files. The file TSCC.EXE, that is located in the directory that Camtasia is installed in, is the installation program for the TSCC **codec**. TSCC.EXE may be freely distributed with your Camtasia content.

Additionally, when recording "office" type of content such as making a training video of Microsoft Word, TSCC produces very small file sizes compared to other Windows codecs. TSCC is optimized for recording this type of content. It does not produce small file sizes on videos containing real world photography, dithered or gradient filled surfaces.

For videos containing real world photography, the Microsoft Video 1 **codec** or MPEG 4 V2 **codec** may be a good choice. Video 1 does well for text, but on colored surfaces color banding can occur. For videos of applications, Video 1 will produce videos of greater file size than TSCC. The WMV file format is an excellent choice for videos with real world content.

On Windows NT, W2K and XP, administrator rights are required to install codecs. This can be a problem if you are going to distribute your videos to users that have restricted rights on their machines. The solution in this case is to use a different **codec** such as Microsoft Video 1 that is included with Windows, use the Camtasia Player, or a different video file format altogether such as WMV that is played using Media Player which is included with Windows.

The RLE **codec**, like TSCC, is lossless. Its drawback is that it is limited to 256 colors and does not compress very well. RLE in most cases produces larger file sizes than does TSCC.

The Video Creation Process

The Camtasia Recorder only outputs AVI files. Conversion to other video file configurations or formats is performed after recording.

By default, the Camtasia Recorder is configured to use the TechSmith Screen Capture **Codec**, TSCC, for lossless video compression, and PCM uncompressed mono audio. The default audio setting is PCM, 22.050 kHz, 16 bit mono. The default settings provide perfect quality video and high quality audio.

For voice, stereo is generally not necessary and will double the size of the audio portion of the file. If you need higher quality audio, you can increase the sample rate, but keep in mind that it will increase the file size.

Unless you have a compelling reason not to, always record using the TSCC **codec** and uncompressed (PCM) audio. Because TSCC is lossless and PCM is uncompressed, you, can edit the video and reproduce indefinitely without image or audio quality degradation.

So, use TSCC and PCM audio for original recording, and continue using these through the entire production and editing process. Then, when the editing process is complete and the video is finished, make copies of your perfect original master video into other file formats or configurations.

The Camtasia Player

The TechSmith Camtasia Player (CAMPLAY.EXE) is a simple, reliable AVI only player that is included with Camtasia, and is available for download from the TechSmith web site. You may freely distribute it with your Camtasia created content.

Camtasia Player has internal support for playing TSCC compressed AVI files, so no **codec** installation is necessary when viewing TSCC compressed AVI files using the Player.

By distributing the Camtasia Player with your AVI files, you can be sure that your users will have a lightweight player that displays AVI files properly with no scaling. Additionally, the Camtasia Player UI is configurable and can display controls or not, title bar or not etc. It is configured via command line arguments. The command line syntax for the Player is detailed in the file CAMPLAY.TXT that is included with the Player.

Hardware Acceleration

Disabling hardware acceleration can dramatically increase frame capture rates on Microsoft® Windows 2000 and Windows XP and / or seriously reduce CPU utilization. It is recommended that acceleration be disabled during recording.

There are two places where you can turn off the hardware acceleration:

One is in Camtasia Recorder, **Tools > Options > Capture > Disable Display Acceleration During Capture**. Hardware acceleration will be disabled only during recording. As soon as you stop recording, acceleration will be turned on again. Disabling acceleration shortly causes a black screen, which can be annoying during a multi-take recording.

The second way to disable acceleration is right click on the desktop and select **Properties>Settings>Advanced>Troubleshooting**. Set the acceleration slider to **None**. This will disable acceleration until it is manually turned back on.

Note: Some applications require hardware acceleration to run properly, For example, many DVD-Players, 3-dimensional CAD programs and video games. In this case, you would want to try other methods to reduce CPU load such as reducing the capture area, lowering the frame rate, or using a decreased color resolution.

Note: Disabling hardware acceleration may be necessary for recording Media Player, RealPlayer or QuickTime, or the recording may be blank.

Frame Rate

For most software demos and/or training videos, 5-10 fps is perfectly adequate. Faster frame rates will only result in larger video file size, increased bandwidth requirements and can cause slower computers to have playback problems.

If the Recorder has **Auto Configure** enabled, it will attempt to record at the fastest frame rate possible up to 15fps or 90% CPU utilization.

To manually configure the frame rate in Camtasia Recorder select, **Tools > Options > AVI**. In the *Video Options* section, uncheck **Auto Configure** and set the frame rate.

Note: This document source is from Techsmith.com and we used it as a reference material only.

Date Created: 12/16/2004, **Last Updated:** 07/18/2007

Source: http://techsmith.custhelp.com/cgi-bin/techsmith.cfm/php/enduser/std_adp.php?p_faqid=129&p_created=1103223285&p_sid=894RTRVi&p_accessibility=0&p_redirect=&p_lva=&p_sp=cF9zcmNoPTEmcF9zb3J0X2J5PSZwX2dyaWRzb3J0PSZwX3Jvd19jbnQ9NTcmcF9wcm9kc0wJnBfY2F0cz0mcF9wdj0mcF9jdj0mcF9zZWZyY2hfdHlwZT1hbnN3ZXJzLnNIYXJjaF9ubCZwX3BhZ2U9MSZwX3NIYXJjaF90ZXh0PWVvZGVj&p_li=&p_topview=1