Video Encoding Best Practices SAFARI Montage Creation Station[®] and Managed Home Access

Introduction

This document provides recommended settings and instructions to prepare user-created video for use with SAFARI Montage Creation Station® for playback locally (in-school) or from home via Managed Home Access (MHA). Recommendations are provided for the following media formats:

- QuickTime[®] Media (.mov)
- Windows Media[®] (.wmv)
- H.264 (also known as MPEG-4 / AVC or MPEG-4 Part 10)

Note: The H.264 format is required to support playback via SAFARI Montage Managed Home Access.

The video format you choose will depend entirely on your specific needs and local environment; however, note that video encoded as QuickTime video is playable within both the Mac OS® X and Windows platforms, while Windows Media is only playable within Windows platforms.

Note: The QuickTime Player is required to playback QuickTime media on Windows platforms.

Encoding Software

In order to prepare user-created video for use within SAFARI Montage, an encoding software package is required. While many products are available, two of the most common, entry-level media encoders will be referred to in this guide.

- Apple® QuickTime Pro available for a nominal fee by visiting http://www.apple.com/quicktime/pro
- Microsoft® Windows Media Encoder available for free by visiting http://www.microsoft.com/windows/windowsmedia/ forpros/encoder/default.mspx

Additional encoding products you may wish to consider are discussed briefly under the Alternative Tools section of this document.

SAFARI Montage Creation Station® Encoding Guidelines

To achieve a level of quality and performance similar to that seen in SAFARI Montage videos, the following settings are recommended for Windows Media and QuickTime content intended for local (in-school) playback:

Video Profile:		Quicktime	Windows Media	H.264
	Resolution (size)	320 X 240	320 X 240	320 X 240
	Bit Rate	672 kbits/sec (kbps)	500 kbits/sec (kbps)	300 kbits/sec (kbps)
	Frame Rate	29.97 fps	29.97 fps	24 fps
Audio Profile:				
	Data Rate	128 kbps	96 kbps	32 kbps
	Channels	Stereo	Stereo	Mono
	Output Sample rate	44 kHz	44 kHz	32 kHz
Avg.Net Data Rate:		800 kbps	605 kbps	332 kbps

Note: These settings vary from the standards used for SAFARI Montage packaged content but provide an acceptable baseline for usercreated content intended for local (in-school) and home personal playback. Additional settings are briefly discussed in the Additional Considerations section.

QuickTime Pro - QuickTime Media

QuickTime Pro is an extension of the Apple QuickTime Player that allows a user to encode media to the Apple QuickTime format. Using the step-by-step instructions below will encode media for use with SAFARI Montage for in-school playback.

Notes: QuickTime player must be installed before QuickTime Pro can be used.

QuickTime and its actions may be slightly different across Mac OS X and Windows platforms.

- 1. Launch QuickTime Player.
- 2. Click Edit, select Preferences and select QuickTime Preferences.
- Click the Advanced tab, verify Enable encoding using legacy codecs checkbox is checked and click OK.

-	rowser Update Streaming File Types Advanced
Streaming	Automatic
Transport Setup:	
RTSP Proxy Se	rver:
Address:	Port:
Download Cache -	
Size:	100 MB Empty Cache
Video	
◯ Safe mode (GD	DI only)
 DirectX 	
💌 Enable Dire	ectDraw acceleration
🗹 Enable Dire	ectDraw on secondary monitors
🗹 Enable Dir	ect3D video acceleration
Media Encoding —	
	ng using legacy codecs
Enable encodir	
Tray Icon	ne icon in system tray
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Tray Icon	

- 4. Click **File**, select **Open File** and choose the video file you wish to encode.
- 5. Click File and select Export.

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File Edit View Window He	lp	
<u>N</u> ew Player	Ctrl+N	
New Audio Recording	Ctrl+Shift+N	
Open File	Ctrl+O	
Open <u>U</u> RL	Ctrl+U	
Open Image Sequence	Ctrl+Shift+O	
Open <u>R</u> ecent	•	
<u>C</u> lose Window	Ctrl+W	
Save	Ctrl+S	
Save <u>A</u> s		
Revert to Saved		
Export	Ctrl+E	
KExport for <u>W</u> eb		
Page Setup		
Print	Ctrl+P	
Exit		

- 6. Choose a location and filename for your video.
- 7. Select **QuickTime Movie** from the Export drop-down box.
- 8. Select Broadband High from the Use drop-down box.
- 9. Click **Options**.

Save exporte	d file as:		? 🔀
Save in: 隘) Test1	▼ ← €	r 🗐 🕆
achristmas achristmas achristmas	carol-fte1_h480p1.mov carol-fte1_h480p2.mp4 carol-fte1_h480p.mov carol-ftr1_h.320.mov carol-tlr1_h.480.mov		
File name:	achristmascarol-fte1_h480p1.mov		Save
Save as type:	All Files (*.*)	-	Cancel
Export: Use:	Movie to QuickTime Movie Broadband - High	•	Options

 Uncheck Prepare for Internet Streaming checkbox and click Settings under Video and configure using the settings on the following page.

Movie Settings	
Video	
Settings	Compression: Sorenson Video 3 Quality: High
Filter	Frame rate: 29.97 Bitrate: 672 kbits/sec
Size	Dimensions: 320x240
Allow Transcot	ding
Sound	
Settings	Format: AAC Sample rate: 44,100 kHz (Recommended) Channels: Stereo (L R) Bit rate: 128 kbps
Prepare for Intern	et Streaming
Fast Start	▼ Settings
	OK Cancel

Standard Video Com	pression Settings			
	Compression Type: S	iorenson Video 3	•	
Motion Frame Rate:			Data Rate Data Rate: C Automatic C Restrict to 672 kbits/sec	
	Automatic Every All	frames	Optimized for: Download	
Compressor	Frame Reordering		Preview	
Least Low	v Medium High	Best		
	Options		d.	
?			OK Cance	el

Compression Type:	Sorenson Video 3
Frame rate:	29.97 fps
Key Frame:	Automatic
Data Rate:	Restricted : 672 kbps
Compressor Quality:	High

11. Click **OK** to return to the *Movie Settings* window.

- Click Size under Video, select Dimensions: 320 x 240 QVGA and click OK to return to the Movie Settings window.
- Click Settings under Audio and configure using the following settings:

Sound Sett	ngs			
Format:	AAC			-
Channels:	Stereo (L R)			-
Rate:	Recommended		•	kHz
🗔 Sho	Advanced Setting	gs		
Render Se	tings:			
	Quality: Best		•	
MPEG 4 AA	C LC Encoder Sett	ings:		
Target	Bit Rate: 128		-	kbps
	Preview	Play Source		ancel

Dimensions:	320 x 240 QVGA		
	Preserve aspect ratio using:	Letterbox (if required)	V
	Deinterlace Source Video		
			OK Canc

Format:	AAC
Channels:	Stereo (L,R)
Rate:	Recommended
Render Settings:	Quality : Best
MPEG 4 AAC LC Encoder Settings:	Target Bit Rate : 128 kbps

Export Size Settings

- 14. Click **OK** to return to the Movie Settings window.
- 15. Click **OK** to return to the Save exported file as: window.
- 16. Click **Save** to encode the video using these settings.
- Note: Quicktime Player does not allow the user to save these settings as a profile. The user will have to complete these steps each time a video is encoded for use with SAFARI Montage.

Windows Media Encoder - Windows Media

Windows Media Encoder is a Windows-based application for encoding video to the Windows Media format. Using the steps below will guide you through encoding your first video as well as saving a Windows Media encoding **profile**, which may be reused for encoding additional videos.

- 1. Launch Windows Media Encoder.
- 2. Select **Convert a file** and click **OK** from the New Session window.
 - Note: If the New Session window does not appear, click **New Session** from the toolbar.

ards Quic	k Starts			
Custom session Capture screen	Broadcast a ikve event	Capture audio or video	Convert a file	Description
	-			OK Ca

- 3. Click **Browse** to select the source video file to be converted.
- 4. Click **Browse** to select a location and name for the output video file.



- 5. Click **Next** to continue.
- 6. Select Windows Media hardware profiles from the

New Session Wizard	2
Content Distribution Select a distribution method. The method you select determines the encoding settin that are available in this session.	gs
How do you want to distribute your content?	
File download (computer playback) Hardware devices (CD, DVD, portable) Windows Media server (streaming) Web server (progressive download) <mark>Windows Media hardware profiles</mark> Pocket PC File archive	
Tip Using a distribution method that is different from what you specify on this page may negatively affect playback quality.	
< Back Next > Finish Cano	el

provided list and click **Next**.

Video:	Main Video Profile - low (CBR)
Audio:	Audio Profile L1 (CBR)
Bite rate:	605 kbps, 29.97 fps, 320 x240

- 7. Configure Encoding Options as follows:
- 8. Click **Next** to continue.
- Optionally, enter additional information pertaining to the Windows Media being created and click Next.
- Review the settings and uncheck **Begin converting** when I click Finish. Note: Additional setting must be applied prior to encoding.

Action:	Convert file
Input file: Output file:	C:\Documents and Settings\kbeasley\My Documents\Bulk\KE C:\Documents and Settings\kbeasley\My Documents\Bulk\KE
Profile:	Audio profile L1 (CBR) / Main video profile - low (CBR)
Title: Author: Copyright: Rating: Description:	Test
<	

11. Click Finish.

- 12. Click **Properties** from the toolbar.
- 13. Click the **Compression** tab and verify the settings made earlier.
- 14. Check Two-pass encoding and click Edit.

🧿 Untitled - Wi	ndows Media Encoder		_	. 🗆 🗙
File View Control	Tools Help			
S New Session 💡	🌮 📙 📝 Properties 📀 Start Encoding 💿 Stop 🕕 Pause			
Session Propertie	s	🗵 Video		<u>^</u>
Sources Output	Compression Video Size Attributes Processing Plug-ins Security	Advanced Zoom	n: 100% 💌 Display: Both 💌 Preview: 605 Kbps (320	x 2 🕶
Select the distrib select determine	ution method and encoding settings for your content. The distribution meth s the settings that are available.	iod you		
Select the distrib select determine Destination: Video: Audio: Bit rates:	Windows Media hardware profiles	Edit		
Desunduon.		Edit		
Video:	Main video profile - low (CBR)			
Audio:	Audio profile L1 (CBR)			
Bit rates:	Bit Rate Frame Rate Output Size			
Dir Idicis.	605 Kbps 29.97 fps 320 x 240			
				=
🗹 Two-pass e	ncoding Time compression Properties		Input	
	Apply	Undo		
Monitor				×
General	Statistics Server Connections Event Log	EDL		
	Input		Output	
Video		v File: v Broadcast port:	C:\Documents and Settings\kbeasley\My Doc\KBtest\/MV01-2.v	vm∨
Scrip		Server URL:		
0	Encoding	E 1 11	Progress	
Setting: DRM protection		Elapsed time: Time remaining:		
Video optimization		Percent complete:	•	
Total bit rate Expected fp:		Disk space left:	System 103.69 GB	
Average fp:		Disk space left:		~
Encoder ready				.:

15. Verify the following custom encoding settings:

ame: Audio profile L1 (CBR) / Main video profile - Iow (CBR) Import escription:						
		Export				
.anguage:	Eng	English (United States) [en-us] 🔹 New				
Media types	Mo	de	Code			
🗹 Audio	CBR	~	Windows Media Audio 9.2	~		
Video 🗸	CBR	~	Windows Media Video V7	~		
Script						
Target bit rate						
605.04 Kbps	605040 bps)			Add Edit Delete		
		1700 (00.07.10	D fos) O Pál (25 fos)	Custom		
Video format:	-	NTSC (29.97/3)				
Video format:	-		Allow nonsquare pixe	el output		

Name:	Audio pr	ofile L1 (CBR) / Main video profile - low (CBR)				
Description:	Descripti	Description provided by creator				
Media Types	Mode	Mode Codec				
Audio:	CBR	CBR Windows Media Audio 9.2				
Video:	CBR	Windows Media V7				

16. Click **Export** to save the encoding profile.

Note: This profile for will be used each time you want to encode Windows Media video for use with SAFARI Montage.

- 17. Click **OK** to exit Custom Encoding Settings.
- 18. Click **Apply** to use these settings
- 19. Click Start Encoding on the toolbar to begin encoding the video.

To reuse the profile created in the preceding steps, do the following:

- 1. Launch Windows Media Encoder.
- 2. Select **Custom Session** and click **OK** from the New Session window.

New Session	? 🛛
Wizards Quick Starts	
Dutton issuer Rice event Capture audio Convett a file Capture screen	Description
Show this dialog box at startup	OK Cancel

- 3. Click the **Sources** tab.
- 4. Select File from Source selections.
- 5. Click **Browse** and choose your video.

Sources Output Co	mpression Video	Size Attributes Processing Plug-ins Security Advanced
Select the sources to	encode in this ses	ssion.
Source Source 1	Name:	Source 1 Remove
	Source from:	O Devices O File O Both device and file
	File name:	y Documents\Bulk\KBtestWMV01-1.wmv Browse
	Video: In	File 🗸 Audio: In File 🗌 Script: [blank]
	Type:	Windows Media Audio/Video file
	Size:	14.93 MB (15656907 bytes)
	At end:	Stop Mark In/Out
	Archiving:	(only available with multiple sources)
Add 🔻 🔺		

- 6. Click the **Output** tab.
- 7. Uncheck **Push to sever** and **Pull from encoder** checkboxes.
- 8. Check Encode to file checkbox.
- 9. Click **Browse** and select a location to save the encoded video.

Select how you want to distribute your encoded content. You can broadcast it, store it in a file, or both Push to server (the connection is initiated by the encoder) Server name: [Server name:Port] - Port is optional Publishing point: [Publishing point name] Copy settings from: [Use default publishing point settings] Pull from encoder (the connection is initiated by the server or players) Port number: 8080 Find Free Port ✓ Encode to file File name: beasley/My Documents\Bulk\KBtest\WMY01-2.wmy Limit by size: 1024 KB Limit by duration: 00:30:00 ♀ Warn on low disk space: 1024 KB	ources Output Compress	ion Video Size	Attributes	Processing	Plug-ins	Security	Advanced
Server name: [Server name:Port] - Port is optional Publishing point: [Publishing point name] Copy settings from: [Use default publishing point settings] Pull from encoder (the connection is initiated by the server or players) Port number: Port number: 8080 Find Free Port Presence File name: beasley/My Documents\Bulk\KBtest\/MY01-2.wmv Limit by size: 1024 KB Limit by duration: 00:30:00	Select how you want to dist	lect how you want to distribute your encoded content. You can broadcast it, store it in a file, or both					
Server name: [Server name:Port] - Port is optional Publishing point: [Publishing point name] Copy settings from: [Use default publishing point settings] Pull from encoder (the connection is initiated by the server or players) Port number: Port number: 8080 Find Free Port Presence File name: beasley/My Documents\Bulk\KBtest\/MY01-2.wmv Limit by size: 1024 KB Limit by duration: 00:30:00	-						
Publishing point (Publishing point name) Auto remove Copy settings from: (Use default publishing point settings) Auto remove Pull from encoder (the connection is initiated by the server or players) Point number: 8080 Find Free Port V Encode to file File name: beasley/My Documents\Bulk\KBtest\MV01-2.wmv Browse Limit by size: 1024 KB Limit by duration: 00:30:00 (Ihv:mm:ss) V Index file	Push to server (the con	nection is initiate	d by the enco	oder)			
Copy settings from: (Use default publishing point settings) Pull from encoder (the connection is initiated by the server or players) Port number: 8080 Find Free Port Encode to file File name: beasley/My Documents\Bulk\KBtest\WMVD1-2.vmv Limit by size: 1024 K8 Limit by duration: 00:30.00 c (thrumx:s) V Index file	Server name:	(Server name:	Port) - Port i	s optional			
Pull from encoder (the connection is initiated by the server or players) Port number: Port number:	Publishing point:	(Publishing point name)					
Port number: 8080 Find Free Port Image: Sease Sea	Copy settings from:	Copy settings from: (Use default publishing point settings)					
Port number: 8080 Find Free Port Image: Sease Sea	- Pull from encoder (the c	connection is initia	ated by the o	erver or plaus			
File name: beasley/My Documents\Bulk\KBtest\MV01-2.wmv Limit by size: 1024 KB Limit by duration: 00.30.00 c (hh:mm:ss) V Index file					лој		
File name: beasley/My Documents/Bulk/KBtest/VMV01-2.wmv Limit by size: 1024 KB Limit by duration: 00 30.00 © (hhr.mm:ss) ✓ Index file							
Limit by size: 1024 K8 Limit by duration: 00.30.00 ♀ (hhr.mm:ss) ✓ Index file							
Limit by duration: 00.30.00 ¢ (hh:mm:ss) V Index file	File name:	beasley\My D	ocuments\B	ulk\KBtestW	MVU1-2.wr		owse
	Limit by size:	1024 KB					
Warn on low disk space: 1024 KB	Limit by duration:	00:30:00 ᅌ	(hh:mm:ss)			🗹 İn	dex file
	Warn on low disk space:	1024 KB					
Apply Undo							

- 10. Click the Compression tab.
- 11. Click **Edit** next to the Destination drop-down box.

Destination:	Windows Media se	rver (streaming)		<u> </u>	Edit
Video:	Multiple bit rates via	deo (CBR)		~	
Audio:	Multiple bit rates au	idio (CBR)		~	
Bit rates:	Bit Rate	Frame Rate	Output Size		
	📃 1128 Kbps	29.97 fps	320 x 240		
	764 Kbps	29.97 fps	320 x 240	=	
	📃 548 Kbps	29.97 fps	320 x 240		
	🔲 340 Kbps	29.97 fps	320 x 240		
	🗹 282 Kbps	29.97 fps	320 x 240		
	148 Kbps	15 fps	320 x 240	\sim	
				~	

- 12. Click **Import** and select the saved encoding profile created earlier.
- 13. Click **OK** to use the profile.

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New
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- 14. Check Two-pass encoding.
- 15. Click **Apply** to use the custom settings.

ources Outpu		
	bution method and encoding settings for your content. The dist es the settings that are available.	ribution method you
Destination:	(Custom)	Edit
Video:	(Custom)	~
Audio:	(Custom)	~
Details:	Audio encoding mode: CBR Video encoding mode: CBR Audience: 605.04 Kbps Audio code: Windows Media Audio 9.2 Audio format 96 kbps, 44 kHz, stereo CBR Video code: Windows Media Video V7 Video bit rate: 500 Kbps Video sole: 320 x 240 Frame rate: 29.97 fps	
V Two-pass	encoding Time compression Properties	

16. Click **Start Encoding** on the toolbar to begin encoding the video.

Note: If the New Session window does not appear, click New Session from the toolbar.

SAFARI Montage® Managed Home Access Encoding Guide

SAFARI Montage Managed Home Access (MHA) provides seamless home access to the same content you access in your classroom. Content is optimized for streaming over the Internet using techniques that ensure the best balance between bandwidth usage and media quality.

To extend the reach of your own original digital video files uploaded via SAFARI Montage Creation Station[®], they must be prepared for streaming, which requires that:

- Videos be packaged as MPEG-4 files with a .MP4 file extension
- Videos be encoded with the H.264 Codec (also referred to as MPEG-4 Part 10)
- Videos have hint tracks

These instructions expand upon the information provided in the SAFARI Montage Creation Station[®] Encoding Best Practices portion of this guide and assumes that you are generally familiar with SAFARI Montage and standard use of SAFARI Montage Creation Station.

Recommended Settings for SAFARI Montage MHA Video

For the experienced user, a summary of the recommended settings is provided below:

Video Profile:		
	Format	H.264
	Resolution (size)	320 X 240
	Bit Rate	300 kbits/sec (kbps)
	Frame Rate	24 fps
Audio Profile:		
	Format	ACC-LC Music
	Data Rate	32 kbps
	Channels	Mono
	Output Sample rate	32 kHz
Net Data Rate:	Approximately 332	kbps

You are free to use any encoding software that supports these standards; however, it has been our experience that Apple's QuickTime Pro is an effective entry-level tool for encoding streaming videos.

Step-by-Step Instructions to Prepare Video for SAFARI Montage MHA

For the beginner, the step-by-step instructions below prepare your video for delivery via SAFARI Montage MHA using Apple's QuickTime Pro. QuickTime Pro can be purchased by visiting Apple's web site at http://www.apple.com/quicktime/pro/.

You will need to start with a video file that can be played back using QuickTime. For a complete list of supported video formats, visit Apple's web site at http://www.apple.com/quicktime/player/specs.html.

- 1. Launch QuickTime Player
- 2. Click **File**, select **Open** and choose your video file to encode.
- 3. Click File and select Export.
- 4. Choose a **Save in** location and **File name** for the file being exported.
- 5. Select Movie to MPEG-4 from the Export drop-down.
- 6. Click **Options**.

Save exporte	d file as:		? 🔀
Save in: 📔) Test1	▼ ← €	-111 *
achristma achristma achristma	scarol-fte1_h480p1.mov scarol-fte1_h480p2.mp4 scarol-fte1_h480p.mov scarol-ftr1_h.320.mov scarol-ftr1_h.480.mov		
File name:	achristmascarol-fte1_h480p1.mp4		Save
Save as type:	All Files (*.*)	•	Cancel
Export	Movie to MPEG-4	•	Options
	,		
Use:	Most Recent Settings	•	

- 7. Choose MP4 from the File Format drop-down of the MPEG-4 Export Settings window.
- 8. Choose **Video** from the next drop-down. Configure the video settings as follows:
 - Note: If the Optimized for drop-down is disabled:
 - Click Video Options
 - Verify **Baseline** and **Best Quality (Multi-pass)** are selected.
 - Click OK
 - Choose Streaming from the Optimized for drop-down as instructed above.

MPEG-4 Export Settings			
File Format: MP4	-		
Video	•		
Video Format: H.264	-		
Data Rate: 300 kbits/sec Optimized for:	Streamin	ng	•
Image Size: 320 x 240 QVGA			
Preserve aspect ratio using:	Letterbo	×	Ŧ
Frame Rate: 24			
Key Frame: C Automatic 🔗 Every	8	frames	
Video Options			
			?
Video: H.264 Video, 320 x 240, 300 kbps, 24.00 (ps Audio: AAC-LC Music, Stereo, 128 kbps, 24.00 (ps Streaming: Enabled, max size 1450 bytes, max duration 100 msec File Size: Approx. 8239 kB Data Rate: Total data rate 428 kbps, will stream over 512 kbps DSL Conformance: The file conforms to MP4 file format specification Compatibility:	/Cable		
3		OK	Cancel

Video Format:	H.264
Data Rate:	300 kbps
Optimized for:	Streaming
Image Size:	320 x 240 QVGA
Frame Rate:	24
Key Frame:	Every 8 frames

9. Choose Audio from the same drop-down as Video. Configure the Audio settings as follows:

MPEG-4 Export Settings		
File Format:	MP4	
	Audio	
<u> </u>	-4000	
Audio Format:	AAC-LC (Music)	
Data Rate:	32 kbps	
Channels:	Mono	
Output Sample Rate:	32.000 kHz	
Encoding Quality:	Best	
		?
Audio: AAC-I Streaming: Enabl File Size: Appro Data Rate: Total	Video, 320 x 240, 300 kbps, 24.00 fps C. Music, Mono, 32 kbps, 32.000 kH2 ed, max size 1450 bytes, max duration 100 msec x 6391 K8 data rate 332 kbps, will stream over 384 kbps DSL/Cable e conforms to MP4 file format specification	
?		OK Cancel

Audio Format:	AAC-LC (Music)
Data Rate:	32 kbps
Channels:	Mono
Output Sample Rate:	32.000 kHz
Encoding Quality:	Best

- Choose Streaming from the same drop-down as Video. Configure the Streaming settings as follows:
- 11. Click **OK** to apply these settings.

Enable streaming:	Checked
Maximum packet size:	1450 bytes
Maximum packet duration:	100 ms
Optimize for server:	Unchecked

12. Click **Save** to start encoding the video.

Managed Home Access Playback Requirements

The SAFARI Montage Media Player and QuickTime must be installed on home users' computer in order to playback streaming video through MHA.

EG-4 Export Settings	
File Format: MP4	
Streaming	
 Enable streaming Maximum packet size: 1450 bytes Maximum packet duration: 100 ms Dptimize for server 	
	?
Video: H.264 Video, 320 x 240, 300 kbps, 24.00 (ps Audio: AACLC Music, Mono, 32 kbps, 32.000 kHz Streaming: Enabled, max size 1450 bytes, max duration 100 msec File Size: Approx 6301 KB Data Rate: Total data rate 332 kbps, will stream over 394 kbps DSL/Cable Conformance: The file conforms to MP4 file format specification Compatibility:	
? ОК	Cance

Additional Considerations

The settings provided are recommended to support the best performance with the widest range of input video. If you wish to experiment with these settings, you may want to consider:

• Increasing the image resolution (size) of your video to improve full-screen playback quality. We recommend that you stay between the following image resolutions:

Source Video with 4:3 Aspect Ratio	320 x 240 and 480 x 360
Source Video with 16:9 Aspect Ratio	480 x 270, 640 x 360 or 720 x 405

- Increasing the bitrate of your video to improve full-screen playback quality and reduce pixelation (appearance of blocks during high motion scenes). For Managed Home Access video we recommend you consider home users' bandwidth and stay below 500 kbps.
- Increasing the audio bitrate and/or using Stereo instead of Mono. We recommend audio bitrates of 32 to 128 kbps.
- Note: Each user viewing a video will use the total bitrate based on your selected settings. Example: ten users viewing a 350 kbps video stream will consume 3.5 Mbps of bandwidth.

Uploading to SAFARI Montage via SAFARI Montage Creation Station

Once you have encoded a video, it can be uploaded to SAFARI Montage via SAFARI Montage Creation Station.

Multiple Videos Formats, One Title

SAFARI Montage Creation Station supports multiple playback formats for a single video title, which allows metatdata to be shared and for the video to appear as a single entry in search results. SAFARI Montage will display available video formats and determine the correct format to deliver to the user based on client platform, system settings, and whether the user is logged in from home.

Once a video is uploaded, additional playback formats may be added by accessing the Format menu while editing a SAFARI Montage Creation Station title.

For example, a single video title in SAFARI Montage may support all or any of the following playback formats:	Click Add Format to select a file to upload.	Add Format
• QuickTime (.mov)		Formats for 'legislators_320_
Windows Media Video (.wmv)	🍂 (Uploaded File: KBtestWMV01.wmv)	
 H.264 or MPEG-4, Part 10 (.mp4) H.264 or MPEG-4, Part 10 - Streaming (.mp4) 	MPEG-1 (Uploaded File: legislators_320_240.mpg)	

Notes:

- Video prepared for streaming may be played back locally (in school) as well as at home (via MHA).
- SAFARI Montage Creation Station will automatically recognize streaming and will make this format available through MHA.
- Although you can upload multiple **H.264 Streaming** videos at various bitrates under a single title, MHA uses the highest quality streaming video available. Remember to consider this and home users' bandwidth when preparing streaming videos.

Alternative Tools

If you have a large number of videos to prepare, you may want to consider alternative tools with extended encoding options and batch conversion capabilities. Many of these tools also allow you convert videos from a wider variety of formats than those supported by Windows Media Encoder or QuickTime.

- Discreet® cleaner™ for PC: http://usa.autodesk.com/adsk/servlet/index?id=5562182&siteID=123112
- Discreet[®] cleaner[™] for Mac http://usa.autodesk.com/adsk/servlet/index?id=5562025&siteID=123112
- Canopus® ProCoder® http://www.canopus.com/products/ProCoderSW/index.php)

