# Captioning in Episode

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### Overview

Television captioning in North America is provided in these formats:

- EIA-608—The caption format for analog standard definition (SD) NTSC television, in which the captions are inserted into video line 21 in the Vertical Blanking Interval (VBI).
- EIA-708—The caption format for standard (SD) and high definition (HD) digital television in which captions are inserted into the digital video data stream. EIA-708 captions include more font formatting options than 608, but they must also include an embedded 608 data stream for backward compatibility. This combined 708+608 caption is generally placed in the ancillary caption track of MXF media files or the user data stream of MPEG-2 files.
- SCTE-20—The caption format that embeds 608 captions into the MPEG-2 user data stream. This format is less common, used mainly by cable systems.

Episode workflows can process captions in these ways (Figure 1):

- Pass embedded CEA-608 or CEA-708 closed captions in the source media VBI or User Data to the transcoded MXF, MPEG-2, or H.264 output.
- Import CEA-608 or CEA-708 closed caption data from .scc or .mcc caption files and embed CEA-608 or CEA-708 captions in a transcoded MXF, MPEG-2, or H.264 output.

#### Figure 1. Captioning Processing in Episode



Closed captioning works with ordinary workflows as well as Split and Stitch.

The following topics explain how to use the Episode closed captioning features:

- Importing Captions from a File
- Passing Through Embedded Captions



### **Importing Captions from a File**

Episode can import .scc or .mcc caption files and embed their closed captioning data in the transcoded output. Caption files of the .scc type will add EIA-608 SD captions. MacCaption or CaptionMaker files of the .mcc type will add both EIA-608 SD and EIA-708 HD captions.

The following output formats and codecs can include captions from an SCC or MCC file:

- MXF (AS-11, Op1a, XDCAM) container—captions inserted into Vertical Ancillary Data (VANC) cc track (SMPTE 436M)
- MPEG-2 codec—captions inserted into User Data cc track (ATSC A/53)
- H.264 (MainConcept) and H.264 (x264) codecs—captions inserted into User Data cc track

Any source media file that can be transcoded into one of the above outputs can be used with a .scc or .mcc caption file to produce a captioned output. However, the timecode in the source media file and the caption file must exactly match.

If a MOV source media file is used, both the .MOV file and the .scc or .mcc caption file must have timecode starting at 00:00:00:00. (To add timecode starting at zero to the source, you can preprocess it in an Episode workflow using the Timecode selection in the Format menu. Then use another workflow to import captions into the modified source.)

The caption data from the .scc or .mcc file is inserted into the Vertical Ancillary data cc track for MXF files, or into the User Data cc track for MPEG-2 and H.264 files.

#### To import a caption file:

These elements must all be set correctly to produce a captioned output from a file:

- Use the Caption Importer Filter *File Browse* menu to select and import a .scc or .mcc caption file. The source file must include QuickTime timecode.
- Enable the Container Add Ancillary Closed Caption Track selection.
- Set Video Encoder Closed Captioning to Same as Source or EIA-608 + EIA-708.

Follow these steps:

- 1. Create a workflow to encode a media file into one of the formats supporting captions: MXF Container (AS-11, Op1a, XDCAM), MPEG-2 Video Encoder, or H.264 Video Encoder.
- 2. Select Video Filters in the Inspector, and select the Caption Importer Filter.

	Video	Video Filters	#8
	Color Space Converter	2 Color Space Converter	?
	VBI Importer	2 VBI Importer	?
~	 Caption Importer	2 Caption Importer	?
File	Chore Prove	File:	
		Choose	0

**3.** Use the *File* menu in the Caption Importer to browse, select, and import a .scc or .mcc caption file. Captions from the file will be embedded during encoding.

**Note:** Because you must explicitly specify a file (and not a file variable), you must select the file in the filter each time you run the caption import workflow.

- **4.** Enable captions in the encoded output by making one or both of these selections:
  - To add the captions to an MXF container file, select the container, and check Add Ancillary Closed Caption Track.

<ul> <li>Format</li> </ul>						Format		1	<b>%</b> 7
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video circodei.		H264 (x264)	•	3		Audio Codec	AES	0	?
Audio Encoder:		AES	$\mathbf{v}$	?	C	In/Out Points			?
In/Out Points				?	C	Timecode			?
Timecode				?	C	Intro & Outro			?
Intro & Outro				?	-				
Prepare for Streaming						Split audio char	nnels to separate tracks		
File Extension	mxf					File Extension:			
						mxf			
Split audio channels to separate tracks	~					Add Ancillary C	losed Caption track		
Add Ancillary Closed Caption track	~								

 To add the captions to an MPEG-2 or H.264 video bitstream, select the Video Codec and ensure Closed Captioning is set to *Same As Source*. (Since this is the default setting, you won't actually have to change anything.)

<ul> <li>Format</li> </ul>				
Container:	MP4		Container	MXF Op1a
			Video Codec	H264 (x264
Video Encoder:	H264 (x264)	⊻ ?	Audio Codec	AES
			In/Out Points	
Closed Captioning			Timecode	
Closed Captioning	Same as Source		Intro & Outro	
Closed Captioning Fields	Field 1		Canaral	Brofile & Quality
			General	Profile & Quality
			Closed Captioning	9
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			Closed Captioni Same as Source Closed Captioni	ng: ce ng Fields:



### **Passing Through Embedded Captions**

Episode allows EIA-608, EIA-708, or SCTE-20 captions already embedded in the source media vertical blanking interval (VBI) or user data to be passed-through to the transcoded output.

**Note:** Episode cannot pass through embedded closed captions from MOV sources.

These output formats and codecs are supported:

- MXF (AS-11, Op1a, XDCAM)
- MPEG-2
- H.264 (MainConcept) and H.264 (x264)

The following topics provide steps to pass through embedded captions in Episode:

- To pass captions embedded in an MXF or MPEG-2 source:
- To pass captions embedded in a source other than MXF or MPEG-2:

#### To pass captions embedded in an MXF or MPEG-2 source:

- 1. Create a workflow to encode the MXF or MPEG-2 source file containing captions into a format supporting captions: MXF Container, MPEG-2 Video Encoder, or H.264 Video Encoder.
- **2.** No input Video Filter settings are required. Captions will automatically pass to the output.
- 3. Enable captions in the encoded output by making one or both of these selections:
  - To add the captions to an MXF container file, select the container, and check Add Ancillary Closed Caption Track.

▲ Format				▼ Format		*
Container:		MXF Opla	<b>v</b> ?	Container	MXF Op1a	\$
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		H204 (X204)		Audio Codec	AES	0
Audio Encoder:		AES	▼ ?	In/Out Points		
In/Out Points			?	Timecode		
Timecode			?	Intro & Outro		
Intro & Outro			?	-		
Prepare for Streaming	3			Split audio chann	nels to separate tracks	
File Extension	mxf			File Extension:		
				mxf		
Split audio channels to separate tracks	⊻			Add Ancillary Clo	sed Caption track	
Add Ancillary Closed Caption track	~					

 To add the captions to an MPEG-2 or H.264 video bitstream, select the Video Codec and ensure Closed Captioning is set to *Same As Source*. (Since this is the default setting, you won't actually have to change anything.)

<ul> <li>Format</li> </ul>			▼ Format		90
Container:	MP4	▼ ?	Container	MXF Op1a	0
Video Encoder:	H264 (v264)	V 2	Video Codec	H264 (x264)	0
	(1607 (ACOT)		Audio Codec	AES	0
Clased Captioning			In/Out Points		(
Closed Capuoning			Timecode		
Closed Captioning	Same as Source	$\checkmark$	Intro & Outro		(
Closed Captioning Fields	Field 1		General	Profile & Quality Advanc	ed
			Closed Captioning	1	
			Closed Captionir	ng:	
			Same as Sourc	e	0
			Closed Captionin	ng Fields:	
			Field 1		0



### To pass captions embedded in a source other than MXF or MPEG-2:

- **1.** Create a workflow to encode the source file containing captions into a format supporting captions: MXF Container, MPEG-2 Video Encoder, or H.264 Video Encoder.
- 2. Select the VBI Importer Video Filter, and check *Decode Captions*. When set to *Automatic* (the default), this will detect and extract the caption data on the input for embedding in the output. You can select *Automatic*, or you have the option of setting decoding to *Manual* and selecting the vertical blanking line number that contains the caption data.

▲ Video		Video Filters	368
	-	Color Space Converter	?
LEVBI Importer		VBI Importer	?
Vertical Blanking Interval (	VBI) Size		
Automatic Vertical Blanking Interval (VBI) Size	Automatically Detect Ve 🗸	Vertical Blanking Interval (VBI) Size	
Manual Vertical Planking		Automatic Vertical Blanking Interval (VBI) Size:	
Interval (VBI) Size (Lines)	0 64	Automatically Detect Vertical Blanking Interval ( 🗘	
Caption Decoding		Manual Vertical Blanking Interval (VBI) Size:	
Decode Captions	<b>v</b>	0 64 32 Lines	i i
Closed Captioning Location Mode	Automatic 🗸	Caption Decoding	
Closed Captioning Line	23 <u>0 64</u>	Decode Captions	
		Closed Captioning Location Mode:	
		Automatic	
		Closed Captioning Line:	
		0 64 20	

- 3. Enable captions in the encoded output by making one or both of these selections:
  - To add the extracted captions to an MXF container file, select the container, and check *Add Ancillary Closed Caption Track.*

▲ Format			1	Format			967	
Container:		MXF Opla	V ?		Container	MXF Op1a	\$	0
Video Encoder:		H264 (v264)			Video Codec	H264 (x264)	0	?
		11204 (1204)			Audio Codec	AES	0	?
Audio Encoder:		AES	<b>v</b> ?		In/Out Points			?
In/Out Points			?		Timecode			?
Timecode			?		Intro & Outro			?
Intro & Outro								
Prepare for Streaming				(	Split audio char	nels to separate tracks		
File Extension	mxf			F	ile Extension:			
					mxf			
Split audio channels to separate tracks	~				Add Ancillary Cl	osed Caption track		
Add Ancillary Closed Caption track	~							



 To add the captions to an MPEG-2 or H.264 video bitstream, select the Video Codec and ensure Closed Captioning is set to *Same As Source*. (Since this is the default setting, you won't actually have to change anything.)





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