Repurposing TV Closed Caption Files For Internet Video Distribution

Closed captioning laws have changed

Changes occurred April 2014

Compliance is mandatory

Telestream can help – find out how

Contents

Introduction

April 2014 brought new changes to the United States FCC regulations regarding closed captioning requirements for broadcast TV and for Internet videos. One of these changes is the start of enforcement of an existing rule, and another is a brand new set of requirements for captioning quality and accuracy, something which most TV broadcasters have not been required to do in the past. Just as audio and video quality is imperative for creating effective content, quality closed captioning must also be a first-class component of any video content.

TV broadcasters, content providers and distributors, and Internet streaming providers all have new responsibilities under the new mandates.

Having access to software that can identify and fix captioning issues is critical to broadcasters and internet video providers who fall under the new FCC mandates. Without captioning software, they will have to rely on an out-of-house captioning service company and their bandwidth to resolve problems.

Telestream captioning products help bring the "dark art" of closed captioning within reach of TV broadcast engineers who need to manage archives of TV content that have already been captioned. Together, Telestream's Vantage and CaptionMaker/MacCaption products provide a solution to transcode, convert, author, edit, troubleshoot, modify, and deploy caption data alongside video – regardless of the delivery platform.

FCC Requirements for Closed Captioning

On January 13, 2012, the FCC released a Report and Order adopting rules for closed captioning of video programming delivered using Internet protocol (the "IP closed captioning rules"). These closed captioning rules were published in the Federal Register on March 30, 2012, and became effective on April 30, 2012.

The IP closed captioning rules apply to non-exempt full-length programming and are being implemented according to the following schedule:

- Pre-recorded programming that is not edited for internet distribution must be captioned if it is shown on television with captions on or after September 30, 2012.
- Pre-recorded programming that is edited for internet distribution must be captioned if it is shown on television with captions on or after September 30, 2013.
- Live and near-live programming must be captioned if it is shown on television with captions on or after March 30, 2013. Near-live programming is video programming that is performed and recorded less than 24 hours prior to the time it was first shown on television.
- Programming that is already in the video programming distributor's or provider's library before it is shown on television with captions must be captioned:

  Within 45 days after it is shown on television with captions on or after March 30, 2014 and before March 30, 2015

  Within 30 days after it is shown on television with captions on or after March 30, 2015 and before March 30, 2016

  Within 15 days after it is shown on television with captions on or after March 30, 2016

To clarify what this may mean to you, consider the example of a content provider or distributor with an archive of older TV content which was not previously closed captioned for broadcast and did not require captions when distributed on the Internet. If that content is shown on broadcast TV after March 30, 2014 with closed captions (which are now almost always required), then the Internet version must have captions added within 45 days of the TV broadcast date. In 2015 the time window changes to 30 days, and in 2016 it changes to 15 days. To satisfy these requirements, Internet video providers need an automated way to convert the new TV broadcast closed captions into Internet closed captions.

A second set of requirements, which were announced by the FCC in April 2014 and will take effect no sooner than January 2015, apply to all TV broadcast and Internet programming which requires captions. The new rules address caption quality in several areas including accuracy of the text, synchronicity (timing), program completeness, and visual placement of closed captions to avoid covering important on-screen information. The commission also adopted measures to ensure greater access to news programming in local communities, which may result in the need to caption some news programming that previously aired uncaptioned.

Understanding Closed Caption Files

To fully understand some of the challenges that content providers face when converting TV caption files for the Internet, we need to better understand what a TV caption file is and how it is created.

Closed captioning files for TV can be very complex file formats that include control codes, frame rates, positioning, and additional metadata that TV closed captioning systems can read. TV caption files are often archived in old legacy file formats that cannot be used with newer Internet video players. It is essential for broadcasters to implement software systems that can automatically convert these files to newer formats.

Closed caption files for the Internet can include a variety of different file formats, but the video player developer usually dictates which file format is used. For example, many developers use Timed Text Markup Language, or TTML (also known as DFXP), for Flash video players.

However, Flash video players potentially can support a variety of caption file formats.

YouTube's Flash video player, for example, supports TTML, but also supports SRT, SCC, and WebVTT.

Some Internet caption files are very simple and support only basic features such as timing and line breaks. These files may not conform to all of the FCC legal requirements for Internet captions to match the look and feel of the TV broadcast captions. Newer, more advanced Internet caption files, such as SMPTE Timed Text 2052 and WebVTT, have the advanced characteristics of TV closed captioning and can meet the latest requirements.

Benefits of Closed Captioning Internet Videos

There are two compelling benefits of providing closed captions with Internet videos. The first, which is reason enough for conversion, is the FCC's new laws requiring such conversion.

The second benefit of deploying closed captions on Internet videos is the ability to reach a wider audience. People who are deaf or hard-of-hearing rely on closed captioning to receive information presented through video. Increasingly, that information is distributed via videos on the Internet. Also, people whose native language is not English rely on closed captioning for improved comprehension and fluency. Restaurants, bars, airports, and other public facilities rely on closed captions to help convey vital information when the audio content cannot be heard. Including closed captions on all Internet videos ensures that these important audiences are reached.

Challenges of Converting TV Closed Caption Files for the Internet

While the benefits of converting closed caption files for Internet use are clear, conversion can be a complicated process. Any changes to the TV audio or video content prior to posting on the Internet may require attention. Converting closed caption files presents a unique set of challenges, as outlined below.

Commercial breaks and other edits

TV broadcast masters usually include segment breaks of 5 or 10 seconds of black to accommodate commercials. These breaks are unnecessary for Internet video, so the content creator must edit them out. This simple change to the video could result in the TV captioning data going out of sync or being deleted.

Telestream's closed captioning solutions can automatically repair the captions to conform to the edited video.

For broadcasters that need to deliver multiple versions of similar content (e.g. for promos that change daily), Telestream's Post Producer software can automatically assemble content and generate all the necessary versions, and of course includes closed captioning support.

Time Code and Frame Rate Conversions

By convention, broadcast masters often start with a time code offset of around 58 minutes to 1 hour. Internet videos, on the other hand, typically start at time zero and count elapsed time of the programming only. When converting broadcast TV caption files for Internet use, this requires a time code offset correction which can be automated by Telestream's closed captioning software.

Many internet distribution outlets require that 23.98 fps content be provided when available. Often, the NTSC 29.97 fps closed caption file that was used for TV broadcast will not match the timing and frame rate of the 23.98 fps video. This is a frequent source of trouble for many engineers on both the TV broadcast and the Internet side. Closed captioning solutions therefore need to be able to convert the frame rate of the captions and keep the synchronization - saving time and money.

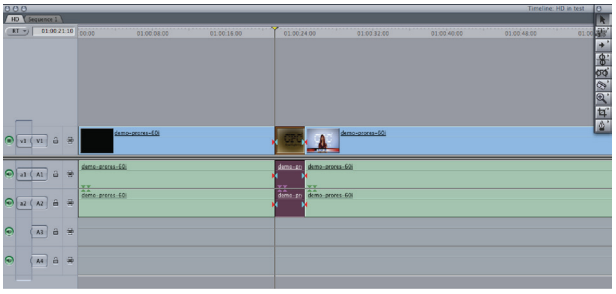
Copyright issues

There are rights management considerations that cannot be ignored before uploading a TV show to the Internet. In some cases, copyright laws may prohibit certain music and sound effects from being distributed over the Internet. The captions for these elements will have to be replaced or simply deleted, which requires software that can extract the original captions, edit them, and re-embed the edited captions or export to an Internet captioning file.

The factors discussed above create hurdles for broadcasters who want to repurpose TV closed caption files for Internet distribution. However, with the proper technology and expertise, these hurdles may be overcome.

Automation and Editing Captions

Although most video editing workflows now include automation, closed caption data editing is usually a manual process. When a portion of the video is edited out, a new video must be generated, and a closed captioning system must edit out the unnecessary captions. Basically, the editing process has to be done twice - the video must be edited, and then the captions must be edited in the same way on a separate system.



To solve this redundancy, advanced closed captioning software has been developed to use edit decision lists (EDL) from video editing systems such as Avid, Adobe Premiere, and Final Cut Pro. The EDL document contains all the necessary data to determine how to edit the closed caption data, as specified by the video editing system. This technique is very effective and is currently used in several high-end digital video delivery workflows.

Video Editing

Auto Edit of Captions from Edit Decision List

The video editor simply makes the necessary edits for delivery to video distribution outlets and exports the EDL for the captioning system. Afterwards, a script can automatically call the captioning software to edit the caption data file and export the corresponding Internet caption file for online distribution.

Converting closed caption files to Internet files in batches can efficiently prepare large quantities of videos for Internet distribution. Batch conversion can be accomplished within the GUI of the software or scripted with a command line interface. The ability to convert large amounts of TV caption files to Internet captions instantly is a necessary workflow in today's fast-paced digital video environment. As of 2014, only a handful of digital delivery production departments were taking advantage of this essential level of automation.

What if your caption data only exists on tape masters or archived videos?

Occasionally, the TV closed caption file will not be available for repurposing to Internet captions. In other situations, the closed captioning provider may not be able to provide the caption file to the content creator. When these challenges arise, there is still a way to obtain a closed caption data file if the caption is present on a tape master, DVD, or digital video file on a server. For file-based masters, Telestream's Vantage transcoding solution can transcode virtually any video format while keeping the closed captions intact. Telestream's Pipeline hardware can capture baseband video into many different formats with closed captioning data intact. This data can then be transcoded to any other format using Vantage. If any changes to the captions are required, the original captions can be extracted by CaptionMaker or MacCaption and then edited.

Examples of media that contain TV closed caption data

Special Considerations

Live TV closed captioning and Internet video

Live TV closed captioning is typically done on the fly by a fast court reporter typist or a voice writer with speech recognition software. The result is a TV feed with live captions that are about 3 to 4 seconds delayed and contain some mistakes in the transcription. Although there is a way to stream the captions live to the Internet with video while simulcasting the captioned TV signal, most Internet video content is uploaded to web servers after the live video is aired on TV. Examples of live TV shows that are posted on the Internet after they aired are news reports, sporting events, and awards ceremonies.

Repurposing live captions for the Internet requires capturing, extracting and modifying it very quickly to avoid having to start the captioning process from scratch. At a minimum, the delay of live TV captioning can be offset to better synchronize the captions to the Internet video, and mistakes in the transcription can be corrected.

Mobile devices and closed captioning

With the advent of video playback on mobile phones and music players, closed captioning video has become possible on handheld mobile devices. Some of the most popular mobile devices, such as the iPad, iPod and iPhone, can stream video directly from the Internet to their built-in video players. These iOS devices also have the ability to decode advanced closed caption tracks that have the same look and feel as TV closed captioning. Other mobile devices have added the ability to turn captions on and off during video playback. There is no standard unified caption file format or player application that will work on all mobile devices, so each mobile developer uses a different video playback software mechanism. This requires your multiscreen transcoding solution to have proper closed captioning support for multiple industry formats.

Mobile Device Captions

Conclusion

Repurposing TV closed caption data files for Internet distribution is more challenging than simply converting one file format to another. Content creators must take special considerations into account to be sure the captioning matches the video that is delivered to Internet viewers. Just as audio and video quality is imperative for creating effective content, quality closed captioning must also be a priority for Internet delivery, both for complying with government requirements and for providing an excellent user experience for viewers who rely on accessible technology.

About Telestream

Telestream products make it possible for consumers through high-end professionals to deliver video content to any audience regardless of how it is created, distributed or viewed. Many of the world's most demanding media companies, as well as a broad range of businesses rely on Telestream products to streamline operations, expand their markets, and generate more value from their media, while simultaneously reducing operating costs.

These companies choose to work with Telestream as they know they will get a trusted and highly-skilled technical partner. Telestream prides itself on taking a true consultancy approach to customer relationships and is known for providing unparalleled customer service and support.

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