



# Closed Captioning

## Not just for the deaf

**White Paper**

The Television Decoder Circuitry Act of 1990 mandated that all television receivers be equipped with Closed Caption decoders (public law 101-431) and the Electronic Industries Association quickly produced the EIA-608 standard to ensure wide interoperability. This was one of the quickest and most successful pieces of Federal legislation in history. Today, most network broadcasts, movies, and even local TV news includes Closed Captions, and the captions can be viewed on virtually any television set purchased in the United States since about 1994.

More recently, the US government mandated that all Federal Agencies make information technology accessible under Section 508 (29 USC 794d). Specifically, "All training and informational video and multimedia productions which support the agency's mission, regardless of format, that contain speech or other audio information necessary for the comprehension of the content, shall be open or closed captioned".

Closed Captioning obviously benefits people with hearing impairments. But people without hearing difficulty use captions when viewing video in noisy environments or to better understand difficult dialog. Beyond this, Closed Captioning is being put to use for security and monitoring and other applications.

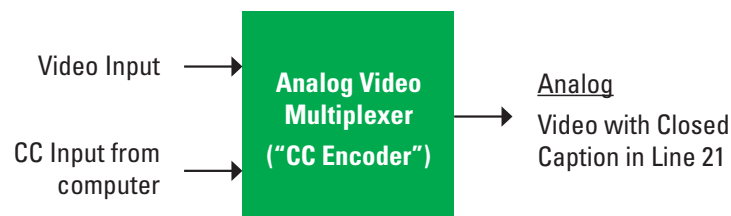
## What Is Closed Captioning?

As the name implies, Closed Captioning is text that is normally hidden (closed), but can be enabled by the viewer. Open Captioning, on the other hand, is text inserted in the video image itself...as if a person in front of a camera held up a sign. Open Captioning cannot be controlled by the viewer, while Closed Captioning can be.

Technically, Closed Captioning inserts specially formatted text into line 21 of the analog video signal. A receiver can detect this data, and then display it.

## Analog Closed Caption Insertion

Software programs running on a computer typically generate the special Closed Caption text. The computer then delivers the text to a special device that inserts the text into the video (line 21).

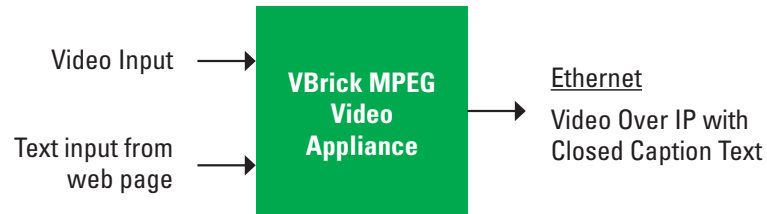


The Analog Closed Caption Multiplexer can cost several thousand dollars, as does the stenographer equipment and necessary software. However, there is little choice when an all-analog video system is used.

If the captioned video output is presented to a digital encoder, such as a VBrick Video over IP appliance, the captioning is passed on an end-to-end basis and may be displayed on both conventional TV monitors and on computer screens.

## Digital Closed Caption Insertion

If digital delivery of video is used, live captioning can be inserted directly by a VBrick MPEG encoder.



Video over IP is the principal vehicle for the delivery of live or stored video within enterprise networks, in educational institutions, and in government departments and institutions. Rather than inserting Closed Caption text into the analog video, it can be directly typed into a web page and inserted into the live video stream by the VBrick appliance itself.

## Viewing Digital Video with Closed Captions

Regardless of how the Closed Captioning text got into the video (existing captioned video from a VHS tape, live insertion via analog multiplexer, live insertion within the VBrick), it can be viewed on conventional TV monitors via a VBrick decoder or Set Top Box.

For desktops, VBrick StreamPlayer displays live DVD-quality MPEG-2 video with Closed Captions. Unlike TVs, StreamPlayer allows the captions to be viewed in "overlay" mode where the display is identical to what you see on a TV, or in "text mode" where the Closed Captions are displayed outside of the video. This "text mode" has significant advantages because the captions never hide the video image.

## New Uses for Closed Captions

### Security & Monitoring

The VBrick appliance can automatically insert the current date, time, and user-defined text as Closed Caption data. While this feature has little use to help the hearing impaired, it has tremendous value for security and monitoring.

Traditionally, remote security cameras insert the date and time in the video image ("Open Captioning"). This allows the viewer to know what camera they are monitoring, as well as the time when any event took place. There are several problems with this, including the potential that the imprint will hide valuable information. Using Closed Captioning, the viewer has the option to turn the imprint on or off. Furthermore, the Closed Caption data is part of the video and remains there even when the video is recorded (e.g. recorded digitally within a VBrick, or recorded using analog video tape).

### Live Presentations

The VBrick appliance can automatically insert live text, entered from anywhere in real time from a computer keyboard and a browser. As a presenter gives a speech, and it is broadcast to TV monitors and desktops in an enterprise network, a stenographer may type the presenter's words. If the presenter is working from a prepared text, that text may be copied and delivered as Closed Caption in real time.



To the extent that video is recorded, the Closed Captioning is preserved and is delivered upon playback, including Video On Demand.

## Messages

Closed Captions are, in fact, merely text messages put to a particular use. Because it is easy to insert live text into a digital video stream in real time, those messages may be used to deliver news and information to employees, students, and everyone in real time.

For example, if you are displaying a live video stream on TVs and desktops all around a campus, the Closed Caption display can be used to deliver local news, schedules, updates, or any other information suitable for public display.

## Desktop Alerts

Desktop MPEG viewers that support Closed Captions are capable of "listening" for certain key words that may be present. For example, a desktop tuned to a news broadcast might continuously monitor "stock price", and alert the viewer to breaking business news. School officials might monitor for "storm", "snow", or other local conditions.

Combined with local Closed Caption insertion capabilities, such a system provides an alert system for private events. For example, a manager might enter any Closed Caption text at will, causing viewers to "alert" on a private code.

VBrick Systems provides industry-standard Closed Caption support for the delivery of video over digital networks, and enables the insertion of live Closed Caption text as well as the desktop display of DVD-quality MPEG video with Closed Captioning.



### About VBrick Systems, Inc.

VBrick is the leader in Enterprise IP Video solutions, with over 6,000 corporate, education and government customers and 60,000 installations worldwide. VBrick solutions work over standard IP networks and the Internet to deliver rich media communications that connect people everywhere – from employees and customers, to partners and shareholders. Our comprehensive product suite and end-to-end solutions are used in a wide range of live and on-demand applications including meeting and event broadcasts, distance learning, digital signage, TV distribution, video surveillance, and Web-based marketing campaigns. Headquartered in Wallingford, CT, VBrick's products and services are available through industry-leading value-added resellers.

For more information, visit [www.vbrick.com](http://www.vbrick.com)