EEG Application Note

Streaming HTTP Uplink to Wowza Streaming Engine

Applies to Products: HD49X, DE285, Falcon

Last Revised: October 2019

The HD490-series Closed Caption Encoders, and the DE285 Ancillary Data Monitor include a Streaming HTTP Uplink module that posts decoded real-time caption data to an external web service for delivering high-quality web-based closed captioning. This functionality is also available in the cloud with Falcon™, a pay-per-use software encoder that sends iCap™ caption data to live streaming products and sites.

One of the most popular server products for enterprise live video streaming is Wowza Streaming Engine. EEG provides a free plugin module that that enables any site running Wowza to recieve real-time caption uplink over HTTP from Falcon, EEG hardware encoders and decoders, and other products. The caption text binds to your live video stream internally on the Wowza server, and can then be displayed on a variety of compatible players, including JWPlayer, FlowPlayer, and Apple iOS mobile devices.

Installation of the EEG Wowza Streaming Engine Module

For the initial installation of the captioning module, you will need configuration access to your Wowza server, and basic knowledge of your live application settings. If the terms in this section do not seem familiar, or you do not know how to access the configuration files on your server, please consult your system administrator and/or the detailed support pages at www.wowza.com.

The following directions have been specifically tested with Wowza Streaming Engine version 4.0.5 and 4.2.0 though they should also work with other recent versions.

The EEG "JAR" file assumes that it will be used with the default Wowza live application, named "live". We recommend keeping this application name. If you must use a different application name, you can install the plugin using the same methods described here, but the final URLs for posting captions to your plugin will have an added query parameter – add "&app=yourappname", where "yourappname" is the name of your Wowza application.

If possible, we recommend stopping your Wowza Streaming Engine instance before beginning this configuration. *You MUST also restart Wowza Streaming Engine at the end of the configuration in order for the changes to fully apply.*

Consistent with the Wowza documentation, this section will refer to the base directory of your Wowza installation as **[installdir].** This directory may vary on your server, but on many Linux-based systems it will be **/usr/local/WowzaStreamingEngine**.

1. Install the EEG-provided caption module on to your server. Copy the file "eegwowzamodules.jar" to the server, and move it into the directory **[installdir]/lib/.** Ensure that the eegwowzamodules.jar file has proper 'execute' permissions set for your environment.

2. Enable HTTP access to the Caption Uplink module. Edit the file **[installdir]/conf/VHost.xml**, making a copy of your old settings for safe keeping first. Find the section of the file that contains **<HTTPProvider>** XML tags in the "Default Streaming" section. Add a new HTTPProvider section, above the final "HTTPServerVersion" provider, like:

```
<HTTPProvider>

        <BaseClass>com.eeg.wms.module.CaptionUplinkHTTPProvider</BaseClass>

        <RequestFilters>captionuplink*</RequestFilters>

        <AuthenticationMethod>none</AuthenticationMethod>

</HTTPProvider>
```

If you wish to require HTTP authentication to upload captions, you also set the **<HTTPProvider>** tag to "admin-basic" or "admin-digest". You will then need to configure your uplink device or software with an "Admin"-level username and password registered with Wowza in the "Users" tab of the Wowza Streaming Engine Manager, or added manually in the **[installdir]/conf/admin.password** file.

Note that the HTTP Provider "RequestFilters" will be checked by Wowza in order from top to bottom in the list in your file. For this reason, it is important to make sure the "captionuplink*" filter is listed above other more general filters, for example the "*" providing the Wowza server version.

Save the VHost.xml file when you are finished editing.

3. The Caption Uplink provider injects AMF "OnTextData" captioning events into your Wowza stream. To ensure that captions are also visible on players such as Apple devices that support CEA-608 style captions, go to your live streaming "application" in Wowza (the default application is simple called "live"), and edit the file at **[installdir]/conf/live/Application.xml**, making a copy of your old settings for safe keeping first. Find the section of the file that contains **<Module>** XML tags. Add a new Module section like:

```
<Module>

        <Name>ModuleOnTextDataToCEA608</Name>

        <Description>ModuleOnTextDataToCEA608</Description>

        <Class>com.wowza.wms.timedtext.live.module.ModuleOnTextDataToCEA608</Class>

</Module>
```

Save the Application.xml file when you are finished editing.

4. Restart the Wowza Streaming Engine application. You are now ready to uplink real-time captions to your Wowza live streaming application.

For further background on live captions with Wowza, and testing instructions for JWPlayer, iOS, and a variety of other player applications, see http://www.wowza.com/forums/content.php?447

Operation of the Streaming Uplink Module on EEG Devices or Software

Once the Wowza server is ready to accept live closed captioning, you can setup your EEG device or software to send captions to a particular live stream on that server. You will need to know the Wowza server IP address or DNS name, and the live stream name that the caption text is targeting. For an EEG hardware device, you will also need a path to the server through the Internet or a local network, including a valid IP address, subnet mask, and gateway router setting on the device front panel.

This document will primarily show configuration examples from the HD490 encoder software, but the interfaces for the HD480, DE285, and Falcon™ Software Encoders use similar terminology and formats.

First ensure that your device has a compatible version of the "Streaming" software module update installed. To determine if you have the correct software installed, check your HD490 web configuration page for the module labelled "Streaming" (Figure 1). If the Streaming module is not installed or is unlicensed, contact EEG Support to receive your update. Wowza Streaming Engine is support in version 2.0 and up of the module.
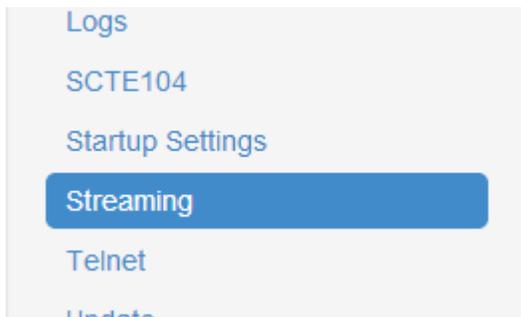

Figure 1 – "Streaming" Menu Item in HD490 SideTab

In the DE285, the HTTP Streaming configuration is located in the "Settings" tab, and may be labelled "UVault Settings" in older models. Devices with the old labelling need to be updated to add Wowza support.

Select "Wowza" for the stream format on the "Streaming" page, and configure the URL, Stream ID/username, and password into the input boxes as shown in Figure 2, then check "Streaming enabled" and hit Save.

If you set "None" or "admin-digest" for authentication in the EEG plugin entry in the VHost.xml file, the URL for Wowza will look like:

[http://[server-address]:1935/captionuplink?stream-name=[livestreamname]](http://[server-address]:1935/captionuplink?stream-name=[livestreamname])

Substitute your server's dotted-quad IP or DNS name where you see "**[server-address]**", and substitute the stream name/ID that you use in your streaming video encoder where you see "**[livestreamname]".** Enter the rest of the URL exactly as you see it above.

Alternatively, if you configured "admin-basic" authentication in the VHost.xml file, then the URL needs to include your Wowza admin username and password, like:

[http://[username:password]@[server-address]:1935/captionuplink?stream-name=[livestreamname]](http://[username:password]@[server-address]:1935/captionuplink?stream-name=[livestreamname])

If you selected "admin-digest" authentication, enter your Wowza username and password in the "Stream ID" (probably called "username" in your video streaming software) and "Stream Password" fields. If you selected "admin-basic" or "none", then all the information is in the URL and these two fields can be left blank.

Finally**, if you are using a Wowza application with a name other than "live"** (the default pre-configured live application), add "&app=yourappname" to the end of either URL, like:

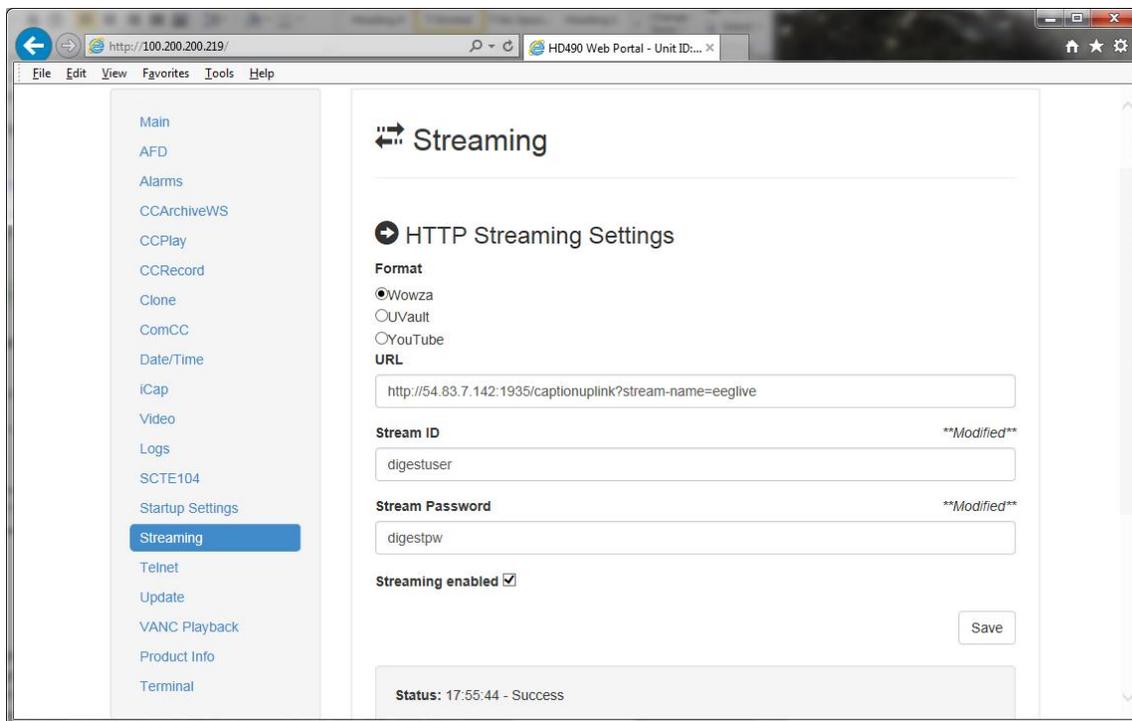**http://[server-address]:1935/captionuplink?stream-name=[livestreamname]&app=[appname]**

Figure 2 – Stream Configuration Page in HD490

Uplink will begin once the "Streaming enabled" box is checked, and CC1/Service-1 captions begin flowing through the encoder. At this time, you should see a "Success" message and timestamp in the "Status" field if the uplink is successful. Otherwise, you may see a message warning that the URL is unreachable, the Stream ID is unknown, the password is incorrect, or any other issue identified with your caption uplink.

HTTP Streaming Uplink will remain on, including returning after a hardware power-cycle, until the "Streaming enabled" box is unchecked.

Newer versions of the Streaming module, and Falcon™, also include a style option for the display of roll-up style live captions over your streaming system. For video players that always show only the newest line of captions (like JWPlayer), you can make live captions more readable by selecting the 2 or 3 row options. Other video players (for example FlowPlayer) have their own client-side scrolling behavior and work best with the 1 row option – setting the 2 or 3 option will cause each line of text to appear to be repeating in these types of players.

Troubleshooting your Installation

This section provides two troubleshooting options if you find that your plugin installation does not appear to be outputting captions end-to-end to the player.

First, check your hardware device, your iCap PC screen, and/or the status window in Falcon™ to make sure that no errors are being reported, and that live caption text appears to be rolling. These steps ensure that you are correctly sending live captions to the Wowza server.

A common error when the Wowza plugin is not installed correctly is that your hardware device or Falcon is reporting the Wowza version in an error message, instead of reporting that captions are being uplinked successfully. The reason this happens is because Wowza reports its version by default when you send messages to a URL that it doesn't recognize. To check for this condition manually, try the following steps:

1. Open up a web browser and type in your Wowza server's URL with port 1935, like: **http://wowza-example.com:1935** . (Substitute your server's name for "wowza-example.com") If the server is reachable at all, you should see a message reporting your Wowza license status and version, like "Wowza Streaming Engine 4 Monthly Edition 4.0.5 build12045". If this isn't working, you may have the wrong IP address, port number, or network/firewall access to talk to the Wowza server, and these same problems will probably prevent your captioning software from talking to Wowza.

2. If the first step worked correctly, try **http://wowza-example.com:1935/captionuplink** . If you see the same Wowza version message, this is a sure sign that the Wowza plugin is not installed correctly, and you should go back and check that each step in this document was performed correctly for you. If the plugin is installed correctly, you should see a Java error message in text or XML (depending on your browser) that includes the line "Broadcast video before beginning CC". This message is normal and shows that you are successfully accessing the EEG plugin but not providing a valid configuration.

3. Now, try putting the full URL entered into your captioning device or Falcon™ into the browser. If everything is correct **AND** your video stream is currently running with the same stream name, you should now see a text or XML message saying "Invalid HTTP request type". This is still an error, but it means that everything is OK with the URL and installation, and the plugin just recognizes that your browser is not sending valid caption data. If you have gotten to this step, you should be able to try captioning again with confidence that your server installation is correct.

What if you have taken all the steps above and still don't see captions in your player? There is a chance that is an issue with that particular player and setup – each player has different instructions about enabling or detecting closed captions that may need to be consulted. However there is one much thing you can try to make sure captions are getting to the server: checking the Wowza access logs.

The access log location on your Wowza server will typically be **[installdir]/logs.** From this directory check the most recent access log. If you have been sending captions that are reaching the server, and the plugin is correctly installed, you should see messages like "INFO 200 CaptionUplink: ROLL THAT THING!", with the text of your caption data. If you see these messages, you can be confident that captions are reaching the server and can begin looking for the issue in the link between your server and the player.