DISA DESKTOP STREAMING

The purpose of this live streaming solution is to provide Commanders with the ability to stream video from their desktop to a global audience on NIPRNet or SIPRNet.

The video content from these events is not intended to be permanently available and is not guaranteed to be archived on the GCDS platform for more than 24 hours. During this 24-hour window, the video could be available to viewers by leveraging the GCDS player's DVR capability.

PREREQUISITES

In order to successfully stream a live event, the following requirements must be met:

For the video producer (the entity that is streaming/recording the live video), a Flash video encoder must be installed and connected to the desktop or laptop that will be running the camera. The encoder must be able to push Flash H.264 video over RTMPT (the full list of requirements can be found in section 3.1 of the GCDS HD Streaming guide). A 2-3 Mbps connection is strongly recommended for the encoder machine to use. If you have less bandwidth available, please contact the GCDS team in advance of your event.

For end users that will be viewing video, the following system requirements must be met:

> Processor: 1Ghz
> RAM: 1GB
> Screen resolution: 1024x768 (normal screen layout), 1280x720 (widescreen layout)
> Video RAM: 512 MB
> Flash plugin: 10.1+
> Browser: Microsoft Internet Explorer 7+, Firefox 3.6+, Chrome 3+
> Operating system: Microsoft Windows XP SP3+/Vista/7, Mac OS X

STEP 1 – INFRASTRUCTURE SETUP

Download and install encoder software to the desktop or laptop that will be running the camera. The encoder must be able to push Flash H.264 video over RTMPT (the full list of requirements can be found in section 3.1 of the GCDS HD Streaming guide).

> **DISCLAIMER: DISA ESD does not support one encoder (hardware or software) over the other. You are free to obtain and install whatever encoder you desire, however, the selected encoder must conform to the technical specifications identified in this guide. The encoder used as an example in this document does not endorse its usage, capabilities, or protective mechanisms.**

This document uses Adobe's Flash Media Live Encoder as an example:

http://www.adobe.com/products/flash-media-encoder.html

ENCODER TO GCDS ENTRY POINT BANDWIDTH CONSIDERATIONS

The bandwidth capacity from the encoder to the GCDS entry point will determine the quality of the live streaming video event. To take advantage of GCDS multi-bit rate streams, there must be enough bandwidth for each stream being pushed simultaneously. GCDS DISA Desktop Streaming pushes 3 bit rates at 550 Kbps, 250 Kbps and 128 Kbps along with their associated audio channels at 64 Kbps. The total bandwidth consumed will be 1.1 Mbps (1,120 Kbps). Best practices dictate that the total bandwidth should be 2 to 3 times of the total available bandwidth. Therefore, a 2.2 Mbps – 3.3 Mbps connection would be ideal. Keep in mind that the bandwidth should be used exclusively for encoder to entry point traffic only, if at all possible.

The machine that is encoding video should connect to the network using a wired connection. Using a wireless network connection to capture live video is not recommended.

The GCDS Flash Player will automatically detect the quality of an end user's connection and continually adjust the bit-rate of the stream to accommodate users with a wide variation of bandwidth and device capabilities. This will give the end users the highest quality video that they are capable of receiving while virtually eliminating buffering.

STEP 2 –ENCODER SETTINGS

An example configuration using Flash Media Live Encoder is provided in this document. If a different encoder is being used, please make sure the corresponding configuration settings are made.

Any changes to the following settings must be coordinated with the GCDS team before the event.

NOTE: For the following encoder settings, a screenshot on page 3 provides a visual overview of where to access each set of encoder settings.

STREAM NAME

In order to support multiple streams, choose a name for the stream. The recommended convention is to use the event name followed by the date of the event. For example: trainingbrief01Nov2012.

The stream name should not include any spaces, underscores or special characters and is case sensitive.

VIDEO SETTINGS

Preset: Select the drop-down box, scroll down and select the "Custom" option.

Format: H.264
Click the small wrench next to the format setting to open the "Advanced Encoder Settings" screen and set the "Keyframe Frequency" to 2 seconds.

Frame Rate: 29.97

Input Size: 480x360 (make sure "Maintain Aspect Ratio" is checked)

Bit Rate: The following multi-bit rate settings were used for a 1.5 Mbps connection that was dedicated to only outgoing encoder traffic. (Note that you can manually enter bit rates instead of using the dropdown) Changes to the bit rates must be coordinated with the GCDS team.

1. 128 Kbps, Output Size: 480x360
2. 250 Kbps, Output Size: 480x360

3. 550 Kbps, Output Size: 480x360

AUDIO SETTINGS

Format: Mp3

Channels: Mono

Sample Rate: 44100 Hz

Bit Rate: 64 Kbps

FLASH MEDIA SERVER SETTINGS

Stream to Flash Media Server: Checked

FMS URL:
rtmpt://p.ep1239.hd.akamai.csd.disa.mil/EntryPoint

Stream: <streamName>_1_%v@1239 (e.g. "trainingbrief01nov2012_1_%v@1239")

Save to File: Uncheck

Select the "Connect" button that is located on the right-hand side underneath the "Stream: gcds7nov12_1_%v@1239" box.

After selecting the "Connect" button to the Flash Media Server (aka the GCDS entry point), there will be a prompt for a username which is "**1239**" (without the quotes) and password, which will be provided by the DISA Web team.

After inputting the username and password, select the green "Start" button that is located on the bottom of the encoder software.
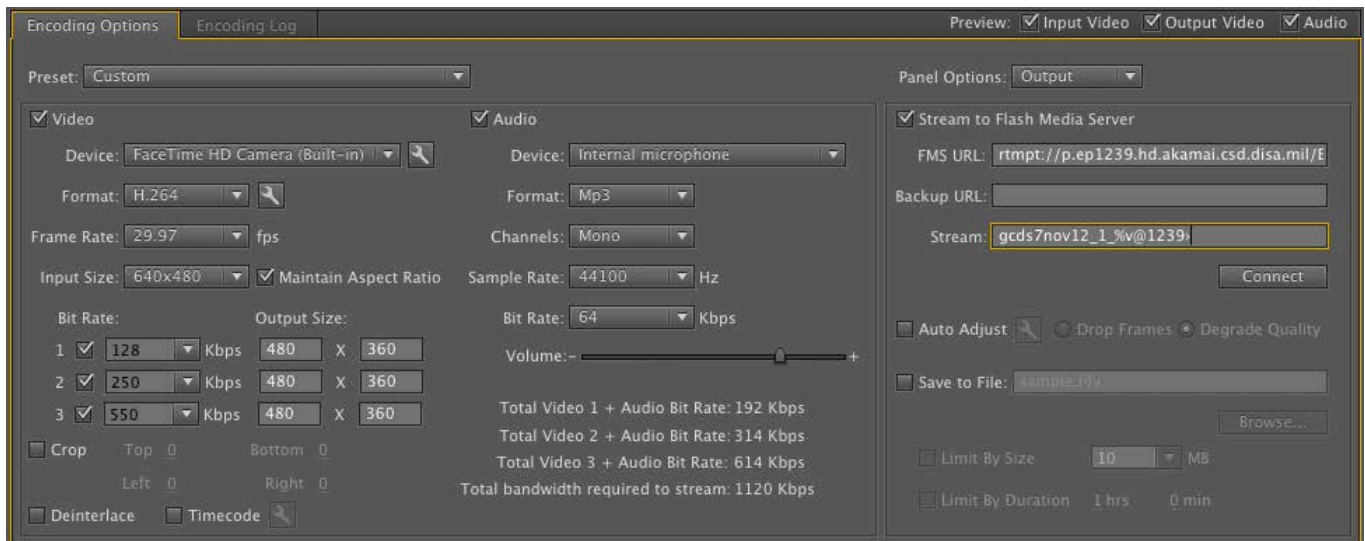

Figure 1- Example Flash Media Live Encoder Configuration

STEP 3 – HOW TO GET STARTED

Contact the GISMC to open a ticket for GCDS live streaming support with the information below. The GISMC can be contacted via telephone (800-447-2457; Option 3, DSN 850-3136 or via email (disa.columbus.esd.mbx.gcds-columbus@mail.mil).

Subject: GCDS Live Streaming Support

Event Name:

Date of Event:

Time of Event (including time zone):

Estimated Duration of Event:

Platform: <NIPRNet | SIPRNet>

Event Manager/Primary POC:

Technical POC for Encoder:

Local Network/Firewall POC:

Geographic Location of Encoder:

Expected Geographic Locations of Viewers:

DVR Functionality Requested: <Yes | No> (This option gives viewers the ability to "rewind" a live stream.)

STEP 4 – ENCODER CONNECTIVITY TESTING

From the machine that is running the encoder software, run the following command from the command line:

> **NIPR:**
> telnet p.ep1239.hd.akamai.csd.disa.mil 80

If you receive a message similar to the following, then the connection was successful:

> Trying <IP Address>...
> Connected to p.ep1239.hd.akamai.csd.disa.mil
> Escape character is '^]'.

If the connection was not successful, verify that the local firewall is not blocking traffic. If traffic is being blocked by the local firewall, please have the local administrators make the following changes (Note: the following example is for NIPR only, SIPR details will be sent via appropriate channels):

> **Source:**
> <IP address of the system running the encoding software>
>
> **Destination:**
> 214.24.252.203
> 214.24.252.204

214.24.253.203
214.24.253.204

Destination DNS Entry:
p.ep1239.hd.akamai.csd.disa.mil

Ports:
TCP 80

Protocol:
RTMPT over HTTP

STEP 5 – VIEWING THE VIDEO STREAM

Once the encoding software has successfully connected to the entry point and is sending video, end users can view the stream at the following URLs (replace <streamName> with one specified in the encoder, for example, if the encoder has "trainingbrief01Nov2012_1_%v@1239" then the URL below should end with "video.html?id= trainingbrief01Nov2012"):

NIPRNet - http://www.disa.mil/video-streaming/live-gcds/video.html?id=<streamName>
SIPRNet - http://gcds.gcdn.disa.smil.mil/live-streaming/video.html?id=<streamName>

Note that this stream is available to all users on NIPRNet or SIPRNet (depending on the URL being used). In addition, the DVR content will be available for a minimum of 24 hours after the start of the presentation, unless prior arrangements have been made with the GCDS team.

A full end-to-end test with the GCDS team will need to be performed at least 24 hours prior to the scheduled start time of the event.

STEP 6 – EVENT CLOSURE

If DVR content needs to be removed, please coordinate with the GCDS team prior to the event being started. DVR content will remain available for a minimum of 24 hours from the start of the presentation unless prior arrangements have been made with the GCDS team.

In the encoder software, please make sure to select the "Disconnect" button that is located on the right-hand side underneath the "Stream: trainingbrief01Nov2012_1_%v@1239" box and then select the red "Stop" button that is located at the bottom.