Granicus Encoding Appliance Technical Solutions Guide (Amax)

Granicus Encoding Appliance

The Granicus Encoding Appliance is designed and built to provide government organizations with a complete streaming solution. Each pre-configured Appliance is delivered ready to stream. Full Appliance control is available through a web browser or locally installed client application.

Please note: Hardware specifications are subject to change and may vary according to your setup.

Physical Specifications

The Granicus Encoding Appliance will mount in virtually all 2- or 4-post racks. The Appliance front mounts much like a switch or router. It requires 2U (3.5”) of rack space, is 17.7” deep, and weighs 35 lbs. Rail kit is standard. Tower kit is not currently available. Sound output is less than 65 db.

Ideally installation will be in a secure, climate-controlled environment.

Dimensions	• 17.7”D x 17.2”W x 3.5”H • 2U High
Mounting	• Front Mount • Rail Kit (standard)
Weight	• 35 lbs
Sound Output	• Less than 65 db

Front View:

Rear View (analog):

Rear View (digital):

Power Requirements

Power requires a single 120volt or 240volt NEMA 5-15 plug. The power under load is 120 Watts and 0.965 Amps.

Power Requirements	• 120volt NEMA 5-15 plug • Power under load is 120 Watts and 0.965 Amps

	Idle	Load	Startup
Watts	40	120	96

Amps	0.266	0.965	0.755
kVA	0.04	0.120	0.096
BTU/hr	136	408	326

Ideally, installation will be to an uninterruptable power supply (UPS) supplied by you. A UPS such as the APC Smart-UPS SC 450VA will provide approximately 40 minutes of run time. Appliance functionality requires the device be powered on at all times.

Storage

The Granicus Encoding Appliance can be configured to store up to 1 TB of your most recent archived content. Standard encoding bitrates use approximately 1 GB of disk space for every 2 hours of content. Granicus Cloud Storage is unlimited.

Storage	• 2 TB • Approximately 4000 hours at standard bitrates

Network Bandwidth and Intelligent Routing

With the Granicus H.264 solution we use push streaming. Streaming at standard bitrates requires 650 Kbps upstream.

In addition to a single stream to Granicus for unlimited public viewing, the Appliance is capable of providing local live and on-demand Unicast streaming for up to 50 internal viewers. All initial viewing requests are made on a Granicus-hosted webpage, which examines the public IP address of the request. Viewers who are determined to be public, or outside the local network, are served the stream directly by Granicus, and internal viewers are transparently redirected to the Appliance on the local network.

Granicus is also able to provide 24/7 streaming if local bandwidth requirements are met and QOS settings are in place. Talk to your Sales Engineer for more details.

For organizations that use Granicus VoteCast or need to support more than 50 concurrent streams, Granicus offers the Performance Accelerator, which moves the local distribution components onto a dedicated internal streaming device.

Intelligent Routing	• Granicus uses client public-facing IP addresses to determine if viewer is public or internal • Internal viewers are redirected to the Granicus Encoding Appliance for live and on-demand streaming • Only available on the Encoding Appliance when not using VoteCast to capture real-time voting data. • Limited to 50 concurrent live and on-demand streams
Internal Viewership	• Internal viewers will view streams from either the Granicus Encoding Appliance, the Performance Accelerator, or directly from the Granicus DataCenter.
Voting System	• The Granicus Encoding Appliance can be used for real-time voting capture when combined with a purchase of VoteCast.

Standard Resolutions and Bitrates

Resolution	Bitrate	
Low 320x240	350kBps	
Low Widescreen 480x288	420kBps	
Medium 480x360	600kBps	
Medium Widescreen 640x360	720kBps	
High 640x480	1000kBps	
480p 720x480	1000kBps	SDI only
720p 1280x720*	1500kBps	SDI only

*HD upgrade required for this resolution

Operating System Requirements

The Granicus Encoding Appliance runs Microsoft Windows 7 operating system. It is designed to run as a stand-alone machine, not joined to your domain. We have found that joining the Encoder to a domain can produce unintended results (Group Policy restrictions, security restrictions, Windows Firewall blocking traffic, restricted logon hours, etc.).

Network Location, Firewall, and Security

The Granicus Video Player and other parts of the solution require the viewer or user to connect to other domains and URLs. These connections are required for the service to operate as expected. Client computers will require unrestricted outbound access. If outbound connections over 80 and 443 are restricted, you will be responsible for making exceptions. These domains and URLs are subject to change

at any time, including during planned upgrades, and if access is restricted and Granicus makes a change, your service could be affected.

The Appliance is generally installed on an internal network. If that will not work, it can also be installed on a DMZ, separate network, or VLAN. To support local distribution, internal viewers need to have access to the Appliance. If placing on a separate network, access can be restricted so that internal viewers have one way access to the Appliance.

The Granicus Encoding Appliance needs to be allowed to bypass all content filtering and proxy servers. The firewall needs to allow unrestricted outbound TCP connections from the Granicus Encoding Appliance to any destination ports within the Granicus IP ranges (207.7.154.0/24 & 209.237.241.0/24). If the network includes an authenticating proxy server, the Appliance must be allowed to bypass authentication.

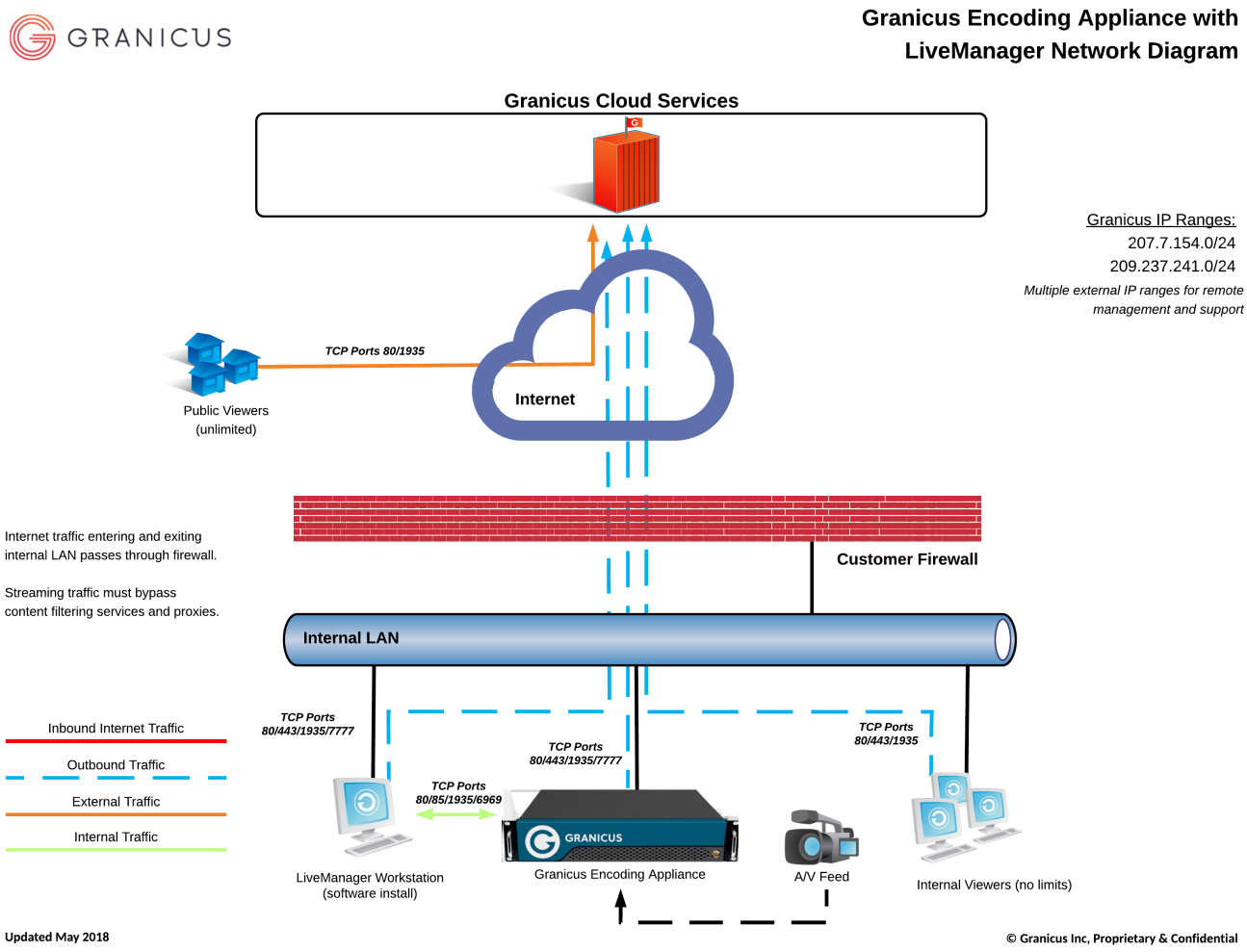
Network Location	• Internal Network • DMZ • Separate Network or VLAN
IP Filtering	• 207.7.154.0/24 • 209.237.241.0/24

The following table and diagram describe the network ports, connection direction, and communication protocols used by the Granicus Encoding Appliance. If the direction of the connection is outbound, the port indicates the port number of the application's remote host connection. If the direction of the connection is inbound, port indicates the port number of the application's local host listening for incoming connections.

Port/Direction/Protocol	Description	Default
80/Outbound/TCP	To Granicus, for file transfers and MediaManager access	Mandatory
80/Inbound/TCP	From the web browser on the local network; used to start and stop the Encoder through MediaManager	Mandatory
443/Outbound/TCP	To Granicus, for uploading files through MediaManager	Mandatory

80/443/Outbound/TCP	For remote support: remotesupport.granicusops.com	Mandatory*
1935/Outbound/TCP	To Granicus (Reserved Functionality) To Performance Accelerator (optional component)	Mandatory
6969/Inbound/TCP	From all client machines: LiveManager, VoteCast, VoteCast Display	Mandatory
7777/Outbound/TCP	To Granicus, for application installation and updating	Mandatory
7777/Inbound/TCP	From LiveManager workstations to allow configuration of LiveManager and encoder preferences	Mandatory
80/443/1935 Inbound/TCP & 1935 Inbound UDP	From users within your internal network, to view live and archive video streams and to download video	Mandatory, Internal network only.

Network Diagram



Streaming Formats

Live streaming is in H.264 format using Flash and HTML5. Platforms supported include PC, Mac, iOS (iPhone, iPad), and Android devices with the Adobe Flash plugin. On-demand streaming is supported for most Android devices regardless of whether the Flash plugin is installed.

Encoding Formats	• H.264 Adobe® Flash® • H.264 HTML5
Bandwidth	• 650 Kbps Live and On-Demand Streams

Audio/Video Source Requirements

Granicus recommends that there be at least one method of redundancy in your AV setup. We have seen best practices of a third party DVR in the instance that there is ever an issue with the encoder.

The Granicus Encoding Appliance must be installed in a location that allows for connection to an analog or digital audio/video source, depending on encoder. The following connections are supported:

	Analog	Digital
Video Inputs – Single Channel	Analog Supported Video Modes: • NTSC/PAL • 720x480 29.97, 30/i (NTSC) • 852x480, 29.97, 30/i (NTSC Wide Screen) • 720x576 25/i (PAL) • Wide Screen Signaling (WSS)	HD/ SD - SDI Supported Video Modes: • 1080i 50, 59.94, 60 • 1080p 23.98, 24, 25, 29.97, 30 • 720p 23.98, 24, 25, 29.97, 50, 59.94, 60 • 720 x 480 29.97, 30/i (NTSC) • 720 x 576 25/i (PAL) • 720 x 576 25, 50/p • 3G SDI: 1080p 50, 59.94, 60
Audio Inputs	• Balanced stereo (XLR x 2) • Unbalanced stereo (RCA x 2) • Stereo & mono supported	• HD/SD - SDI-embedded audio (channel 1), via a BNC connector
Maximum Resolution	• 480i	• 1080p

Digital Encoder A/V Notes

If your video setup does not generate an embedded audio source, converters are available to combine the audio into a single embedded source.

- The device accepts SD-SDI or HD-SDI with resolutions up to 1080p

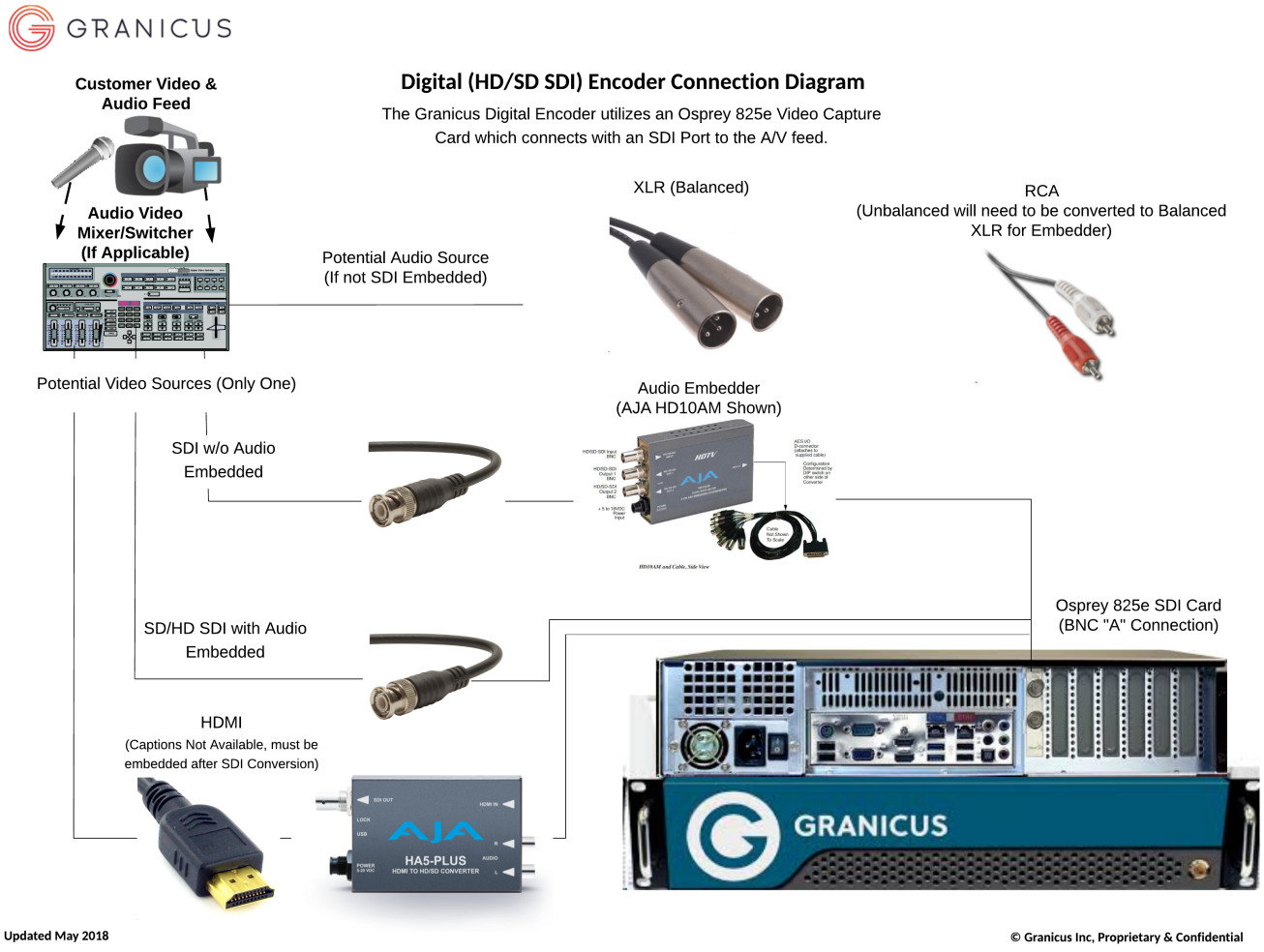
Currently Granicus supports the recording and streaming of video up to 720p. We will take the SD or HD content you provide and stream it at the highest quality settings up to 720p.

When Granicus supports recording and streaming up to 1080p your Granicus SDI Encoding Appliance will be compatible with these streaming settings.

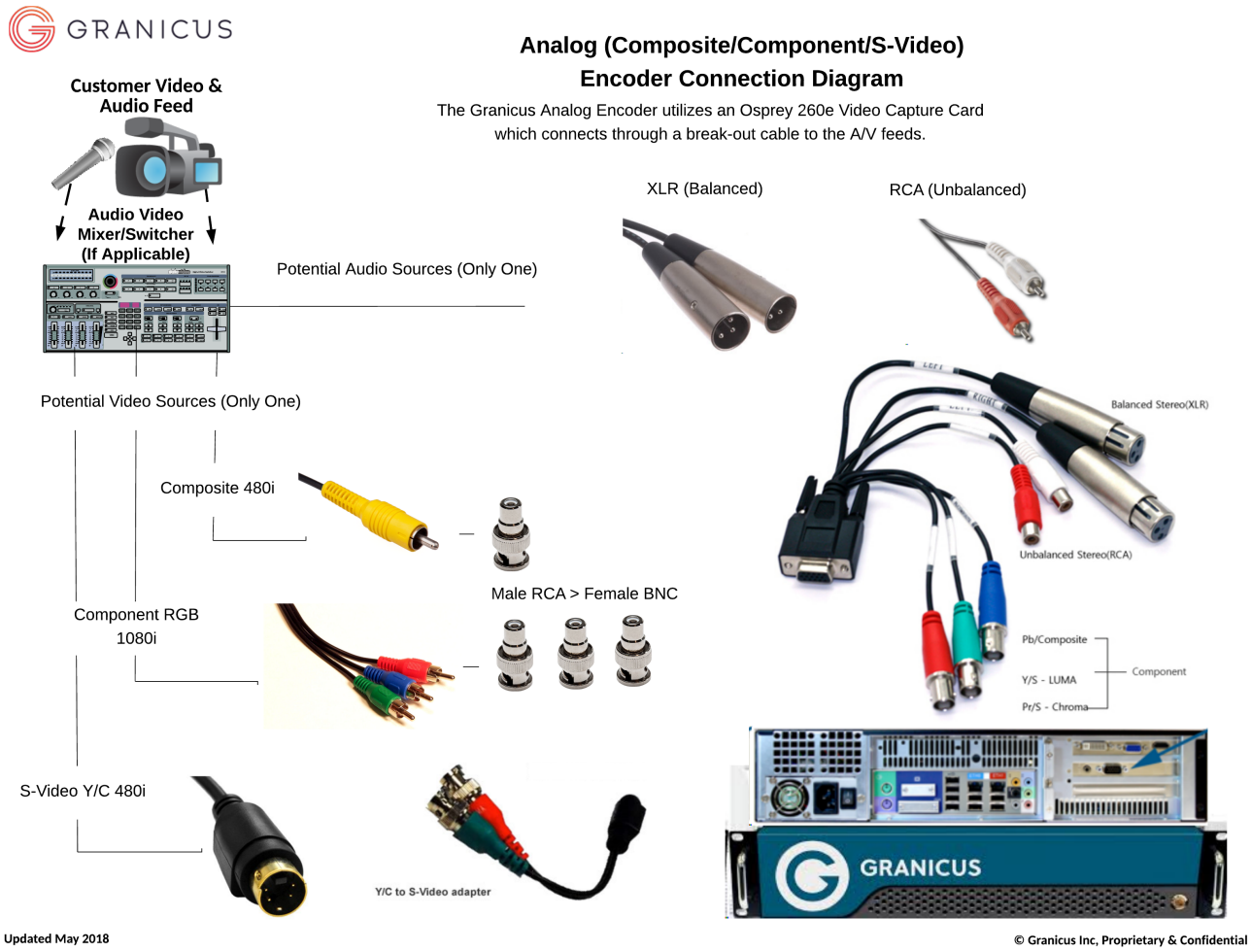
- The maximum recommended distance to run video cabling is 250 feet.

If you need to run video cables beyond 250 feet, an HD-SDI digital amplifier is recommended.

Digital Connection Diagram

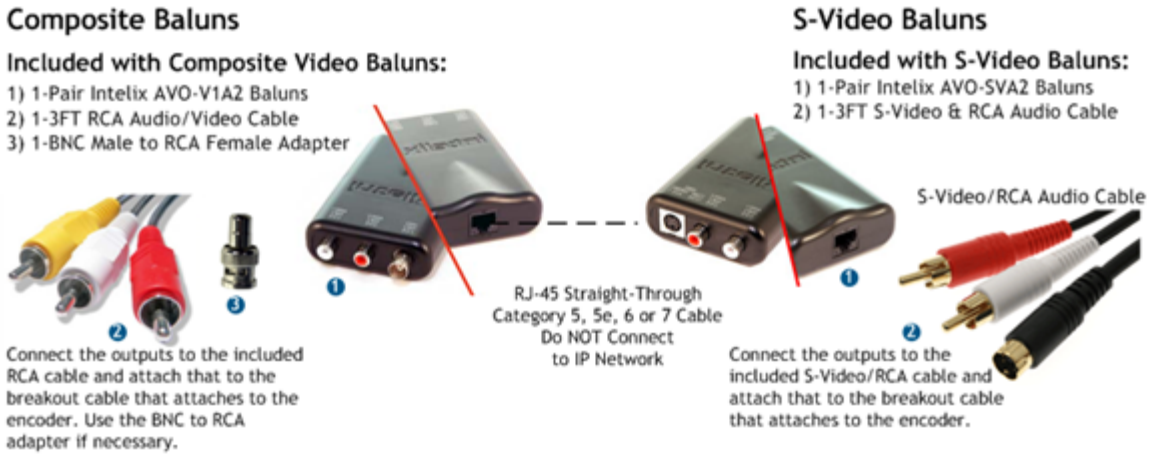


Analog Connection Diagram



Baluns

The ability to run A/V cabling over long distances depends on the quality of the cable, length, connections and other electrical noise that might possibly interfere with the signal. For distances over 50 feet, Granicus recommends using a product such as a balun which will transmit the signal over standard unshielded twisted pair cabling (Cat 5, 6 or 7) with a rated distance of up to 2200 feet. This is a point-to-point solution and not IP based. It requires a standard RJ-45 at each end of the cable. If desired, Granicus can provide standard baluns as part of the solution. Other options for extending A/V are to use fiber and a media converter or a distribution amplifier. When other methods are used besides standard baluns, Granicus recommends consulting with a reliable A/V vendor for appropriate recommendations.



Closed Captioning Support

The Granicus Encoding Appliance supports video with closed captions. Captions are extracted by Granicus and displayed below the video. Post-event, captions are uploaded and become fully searchable.

	Analog	Digital
Closed Captioning	• Separate customer-supplied closed captioning encoder required • Video must have captions embedded on line 21 • Granicus Encoding Appliance extracts captions that are embedded • Video player displays captions below video	• Separate customer-supplied closed captioning encoder required • Works with VANC stored captions as part of the HD-SDI stream or with captions embedded on line 21 for SD-SDI • Granicus SDI Encoding Appliance extracts captions that are embedded • Video player displays captions below video

Remote Management

Granicus will monitor, support, and maintain our software on your Encoding Appliance. Granicus will provide updates to our software components when maintenance releases become necessary. Other server maintenance, such as performing Windows updates and maintenance of software that is not provided by Granicus will remain your responsibility. Installation of third-party software that is not specifically approved by Granicus may detrimentally impact the server's performance. In extreme cases,

the server may need to be reimaged to restore normal operations; in this case, a reimaging fee may be charged.

Hardware/Software Maintenance

When you purchase the Granicus Encoding Appliance, Granicus offers a three-year maintenance plan that covers hardware failures. If a hardware defect is encountered, Granicus will replace the server at no cost to you. The replacement will arrive within 3 days of the return materials authorization by Granicus.