Complete Manual for the

AV Bridge Nano
Audio Video Encoder

Contents

Overview

This guide provides information about the AV Bridge Nano audio video encoder, 999-82600-000 (worldwide)

About this guide

This guide covers:
- Physical features and user interfaces
- Administration, configuration, and maintenance tasks
- Command reference
- Troubleshooting
- Glossary

For your convenience, information on installing this product is also available in the smaller, stand-alone **Installation Guide for the AV Bridge Nano Audio Video Encoder**, which covers physical features, installation, and initial power-up.

Features

- Bridge any HDMI video and audio source into soft conferencing applications
- Reliable streaming and video capture scenarios over USB or RTSP/RTMP
- Select USB 3.0 or IP streaming (configurable as RTSP or RTMP)
- IP streaming resolution up to 1080p/30 and USB streaming resolution up to 1080p/60
- HDMI pass-through for ease of integration with Cisco codecs
- Stereo unbalanced line in and line out
- Audio mixer
- Kensington lock

A quick look at the AV Bridge Nano

Physical features of the device – controls, status lights, and connectors.

Front panel

HDMI In connector– Up to 1080p/60 from the connected camera

Line In and **Line Out** jacks – Line-level stereo input and output (unbalanced)

Stream button – Toggles the IP stream on or off. Illuminated when the IP stream is active. Has no effect when USB streaming is selected.

Power light – Illuminated when power is on.

Back panel

12 V 1.0 Amp connector – Power connection; use only the power supply shipped with this product.

Ethernet connector – Control and IP streaming.

HDMI Loop Out connector – Pass-through for HDMI input video; audio from audio inputs as configured in the audio matrix (may include HDMI, USB playback, audio line-in).

USB 3.0 connector – uncompressed video up to 1080p/60, compressed video up to 1080p/30. Stereo audio from USB, HDMI, and analog audio inputs

IP button – Press to display the device's IP address in the stream and video output, or to clear the information display.

Installation

This section covers how to install and connect the product. It also provides safety information and other guidance related to installing the product.

Don't void your warranty!

Caution

This product is for indoor use. Do not install it outdoors or in a humid environment without the appropriate protective enclosure. Do not allow it to come into contact with any liquid.

Do not install or operate this product if it has been dropped, damaged, or exposed to liquids. If any of these things happen, return it to Vaddio for safety and functional testing.

Cabling notes

Best practices for making cables:
- Use Cat-5e or better cable. We recommend shielded cabling if the cables will be coiled, run tightly with other cables, or placed close to sources of electromagnetic interference such as power lines or fluorescent light fixtures.
- Use high-quality standard RJ-45 connectors; 568B termination recommended.
- Use a high-quality crimping tool.

Caution

When building cables for Vaddio products, do not use pass-through RJ-45 connectors. If they are crimped incorrectly, they can cause intermittent connections and degrade signal quality. Incorrectly crimped pass-through connectors can also damage the connectors on the product, which will void your warranty.

Intact – will make reliable contact with the cable connector
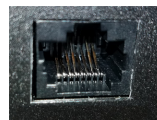
Damaged – Bent contact fingers will NOT make reliable contact with the cable connector

Caution

Check your cables. Connecting a cable to the wrong port or using the wrong pin-out can result in equipment damage and will void the warranty.

Pro tip
To prevent tragic mishaps, label both ends of every cable.

Basic connections

This diagram shows a basic installation. The device bridges an existing room AV system into a streaming or conferencing application.
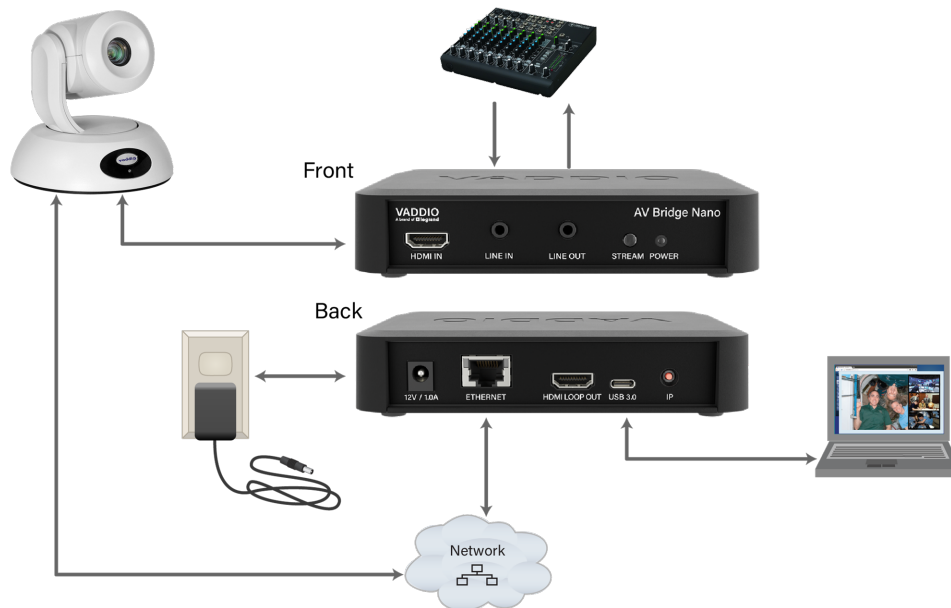
Powering up

Power up the AV Bridge Nano and the connected equipment at the same time, or power up the connected equipment before you power up the AV Bridge Nano.

When you power up the device for the first time, you will need to access the web interface to configure it for operation.

Initial device set-up and system administration tasks

Vaddio devices have a web interface for initial device set-up, administrative control, and operation.

When any Vaddio product is shipped from the factory, there is no admin password and the administrative controls are not available. You will need to access the web interface and set the admin password. You will then have access to the system administration tasks to define how the device behaves as an element of your network.

Initial device set-up using the Vaddio Device Controller

The Vaddio Device Controller is a stand-alone tablet for working with Vaddio products' web interfaces.

To complete the initial device set-up with the Vaddio Device Controller:

1. Connect the touch-panel to the network on the same subnet as the products you need to work with – for example, connect both to the same PoE+ switch.
2. Go to the touch-panel's Configuration page (gear icon) and select Scan.
3. Locate the device you need to work with, and select Use.
4. Select Exit to leave the Configuration page and open the device's web interface.
   Note
   The first time you access a device at a specific IP address, the Vaddio Device Controller's screen may remain blank for 20 seconds or more.
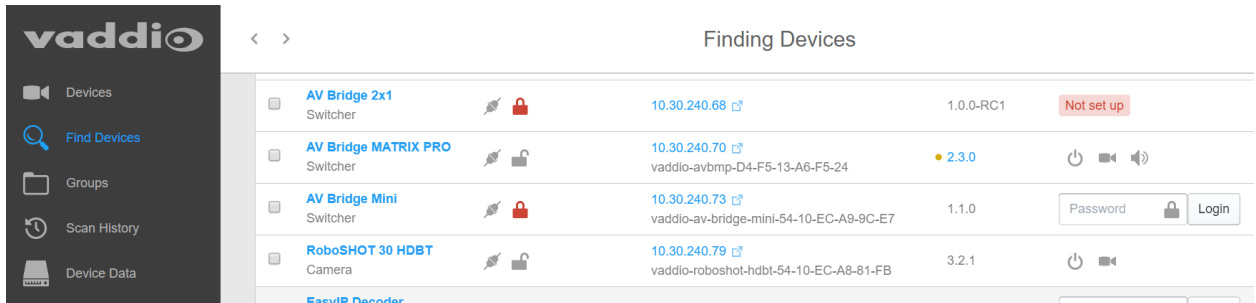5. Set the admin password.

If the Vaddio Device Controller does not find the device, verify that the Vaddio Device Controller and the device are connected to the same subnet.

Initial device set-up using the Vaddio Deployment Tool

Be sure you have the current version of the Vaddio Deployment Tool. If you have a copy of the tool already, compare its version information to the version shown on the release notes. This tool is available as a free download at https://info.legrandav.com/VaddioDeploymentTool.

To complete the initial device set-up with the Vaddio Deployment Tool:

1. Download and install the Vaddio Deployment Tool if you have not done so already, then open it.

2. Power up the device if you have not done so already.

3. On the Find Devices page, click Scan. If the scan does not locate the device, your computer may be on a different subnet. Click Advanced and specify the appropriate portion of the network to scan.

4. In the list of equipment that the scan discovers, locate the devices marked Not Set Up.

5. For each device that you need to work with, click the Not Set Up button and set the admin password on the device detail page that opens.
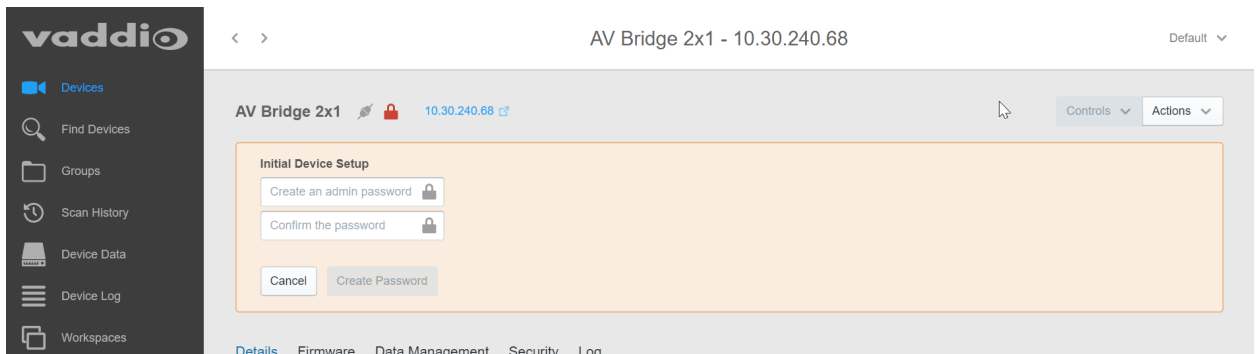
The device shows up as unlocked after you set the admin password.

After the password is set, you will be able to log in to the administrative web interface to complete system administration and other configuration tasks.

Manual access and initial device set-up

If you do not use a Vaddio Device Controller or the Vaddio Deployment Tool, you will need to complete the initial device set-up manually, which requires you to discover the device's IP address and browse to the device's web interface.

Getting the device's IP address

To discover the device's IP address, press the IP button near the USB connector. The IP and MAC addresses are displayed in the stream and video output from the device. Press the button again to dismiss the information.

Dismissing the data display

To clear the display, press the IP button, or use the Data Screen On/Off control on the System page.
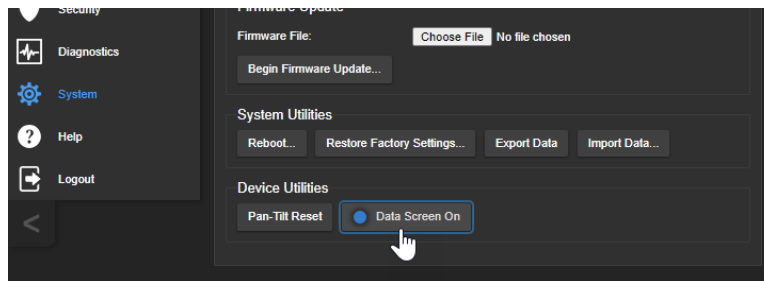
If the device is at 169.254.1.1

This is the device's default IP address. This means one of these things:
- The device is not connected to the network – check the cable connected to the Ethernet port.
- The network does not automatically assign IP addresses, and you need to configure the device for the network.

To communicate directly with the device, connect a cable from your computer's network port to the device's Ethernet port. You do not need to disconnect other devices.

After completing the initial device set-up, you will need to configure the device with a static IP address. Work with your network administrator.

Initial access to the web interface

Enter `https://` followed by the device's IP address in your browser's address bar.

Before the product is configured, HTTP access is disabled. **This is also true after restoring factory defaults.** If you access the web interface using HTTP, you may encounter this message:
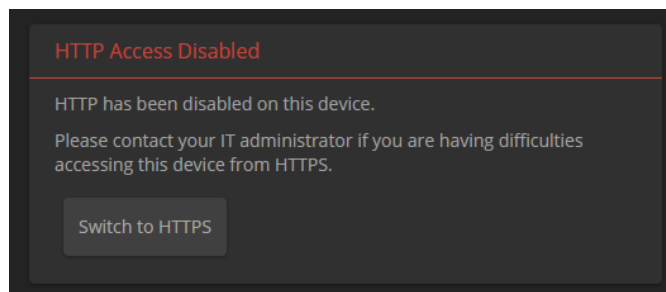
Switch to HTTPS if you see this message.

Expect a security warning from your browser the first time you access the device's web interface.

Different browsers will respond with different messages and options. Your browser will probably present a message indicating one of these things:

- The connection is not private
- The site is not secure
- The site is not trusted
- The site poses a security threat

This is because the certificate (the product's website security credential) is self-signed rather than being issued by an external certificate authority. *The HTTPS connection is secure and traffic is encrypted.*

You will need to make the selections that your browser's security message discourages.
Depending on the browser, the warning presents an option to learn more, view details, or go to the "Advanced" page. When you select this, your browser provides an explanation and a button or link to continue to the IP address you entered, with a reminder that it may be unsafe. Select the option to continue. *Your HTTPS connection is safe.*

After you have accessed the product's web interface once, your browser may remember its IP address and not present the security message again.

Setting access to the web interface

Set the admin password. If there are other tasks on the page (such as reading and accepting policies and agreements), complete them also.

Note
This page may include a link to the company's standard privacy policy. This product does not record or save audio or video files, and it does not store any identifying information other than what you may choose to enter on the Room Labels page of the web interface. However, the device's IP address is considered "personally identifiable information" for the purposes of the privacy policy.

Note
Be sure you have a way to remember the admin password. We cannot reset it for you. If the password is lost, you will need to restore factory defaults.

The full administrative interface opens when you finish.

System administration

Administrative tasks are on these pages of the web interface:
- **Networking** – Network configuration, time zone and NTP server
- **Security** – Passwords, guest access, other IT security-related settings
- **Room Labels** – Helpful information to display in the web interface

The screen shots in this chapter may look different from your device's web interface. Some may be from other products within the same product family, and may lack features that your device offers or show features that are not available on your device.

Configuring access and other security settings

SECURITY PAGE

The Account Passwords and Web Server areas of the Security page provide basic security for the web interface:
- **Admin Password** – Required for access to the admin pages of the web interface and for CLISH access to the device.
- **User Password** – Allows password-protected access to the non-administrative operator's web interface.
- **Automatically Expire Idle Sessions** – Logs you out after 30 minutes of inactivity.
- **Allow Guest Access** – Allows access to the non-administrative operator's web interface without a password. This also allows people to control the device using the Vaddio Device Controller.
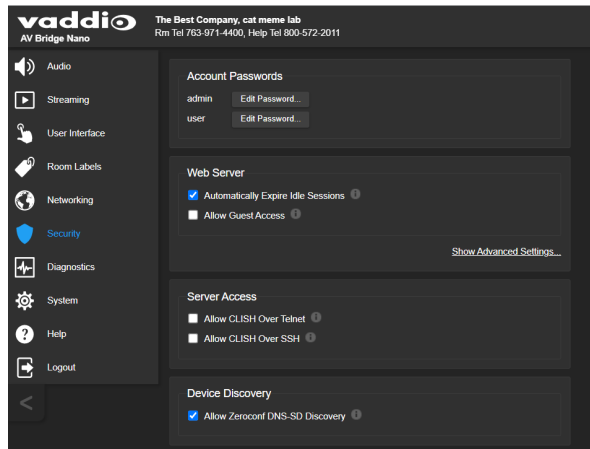
Other security settings include:
- **Allow CLISH over Telnet** and **Allow CLISH over SSH** – For security reasons, access to the Command Line Interface SHell is disabled by default.
- **Allow Zeroconf DNS-SD Discovery** – Allows other Vaddio devices and tools to detect the device. Enabled by default
- Advanced Settings – **Enable HTTP Access** (disabled by default) and **Manage SSL Certificate**.

Note
Consult your network security specialist before changing any of these settings. Seek explicit guidance concerning the SSL certificate.

Configuring a static IP address for a device currently at 169.254.1.1

If the device is currently at an IP address other than 169.254.1.1, skip this section.

By default, the device is set to DHCP, and will receive an IP address automatically if your network assigns IP addresses. However, if no DHCP server is available to automatically assign an address, the device uses its default IP address of 169.254.1.1. Other devices may default to the same IP address. If you install more than device on this network, you must follow this procedure to prevent IP address conflicts.

Caution

Consult your IT department before editing network settings. Errors in network configuration can make the device inaccessible from the network. Do not change DHCP/Static addressing, IP address, subnet mask, or gateway unless you are very familiar with the characteristics and configuration of the network where you install the device.

To access the device's Networking page after initial device setup:

1. Leave the device connected as for initial device setup.
2. Log in to the web interface as admin, if you have not done so already.
3. On the Networking page, set IP Address to Static; then enter the IP address, subnet mask, and gateway as directed by the network specialist. You will need to log in again after saving your changes.

The device is now ready to be connected to the network.
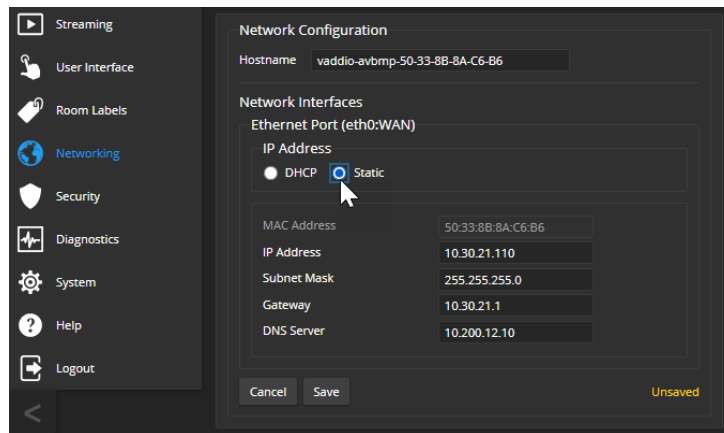
Changing from an automatically assigned address to a static IP address

In a network that assigns IP addresses automatically, the device's IP address may change from time to time. Setting a static IP address will keep this from happening,

You may wish to change the IP addresses of other connected equipment to static addresses as well. The process is the same for all Vaddio products with web interfaces.

1. Consult your network specialist to determine what the IP address should be.
2. Set the IP address to Static. If this is the only change you make, you will not be logged out.
3. If necessary, enter the IP address, subnet mask, and gateway that your network specialist instructs you to use. You will need to browse to the new IP address and log in again.
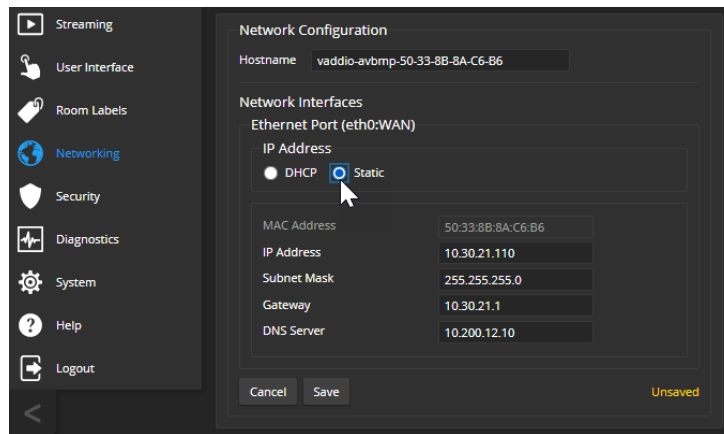
Changing the device's hostname

If your network supports hostname resolution, you may find it convenient to change the device's hostname to something easy to remember. This allows you to access the device by its hostname instead of its IP address – for example, by entering `https://ginger` to open the web interface of the device named `ginger`.

Work with your IT department to ensure that the new hostname conforms to the organization's naming conventions.

Specifying time zone and NTP server

NETWORKING PAGE

Using automatic NTP updating ensures that the timestamps in the device's diagnostic log are accurate. Specifying your time zone may make it easier to match logged events with other actions and external events.

1. To make the time zone and NTP server editable, enable Automatic NTP Updating.
2. Select the desired time zone from the list.
3. Optional: Specify the NTP server to use. If you are not sure about this, use the default.
4. Save your changes.
5. To update the system time immediately, select Refresh. Otherwise, the time will update the next time the device contacts the NTP server.
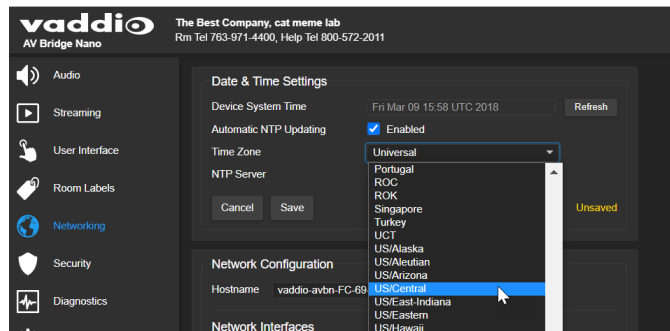
Adding room information

ROOM LABELS PAGE

Enter information about the location of the equipment and the local IT or A/V help line. This information will be displayed on all pages of the web interface and in the Location column of the Vaddio Deployment Tool.
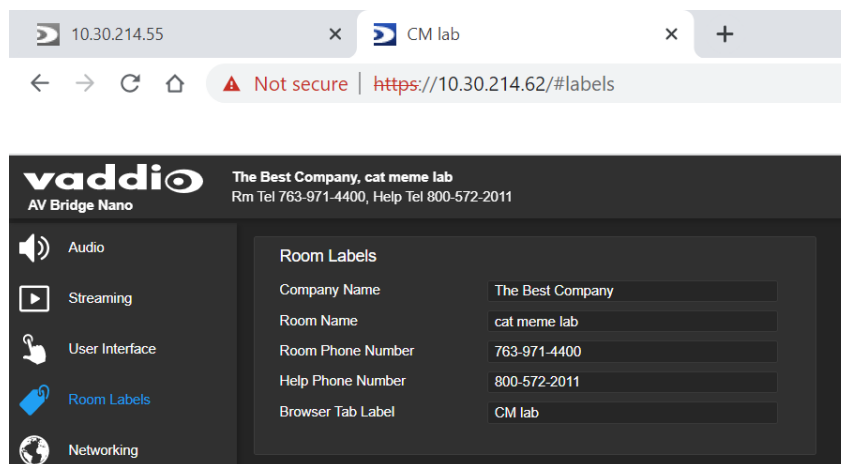
Performance and behavior settings

Performance and behavior settings are on these pages of the web interface, shown in the upper portion of the left navigation panel:

- Streaming
- Audio
- User Interface

The screen shots in this chapter may look different from your device's web interface. Some may be from other products within the same product family, and may lack features that your device offers or show features that are not available on your device.

Configuring streaming behavior

After initial device set-up is complete, the device's USB stream is the default. Either USB or IP streaming can be selected, but not both. IP streaming is disabled by default, and must be both enabled and selected as the streaming mode for the IP stream to be available.

Conferencing applications use USB streaming.

Viewing streams

The simplest way to view streams from Vaddio devices is to use the Vaddio Deployment Tool. You can also use it to access devices' web interfaces and make sure the desired stream is available. This tool is available as a free download at https://info.legrandav.com/VaddioDeploymentTool.

Other ways to view the USB stream:

Be sure that USB Streaming is selected as the streaming mode, and do one of these things:

- Start or join a conference.
- Open a stream viewer, locate the option to open a capture device, and select your device from the list. The media player will correctly identify your device by model.

Other ways to view the IP stream (RTSP)

1. Be sure that IP streaming is enabled and selected as the streaming mode.
2. Open a stream viewer such as VLC Media Player.
3. Select "Network stream" or your viewer's equivalent option.
4. Copy the streaming URL from your device's Streaming page and paste it into the viewer as the URL for the network stream.

Configuring USB streaming

These settings affect how the device works with soft conferencing applications.

Device Name – Specifes how the device shows up in your soft client's USB device selection list.

USB Terminal Type – Selectable; default is Non-Echo-Cancelling Speakerphone. Change to Echo-Cancelling Speakerphone if the connected audio input provides echo cancellation.

USB Audio Enumeration – Enabled by default; allows the connected computer to recognize the AV Bridge Nano as an audio device.

HID Audio Controls – Enable to allow conferencing applications to control the audio.
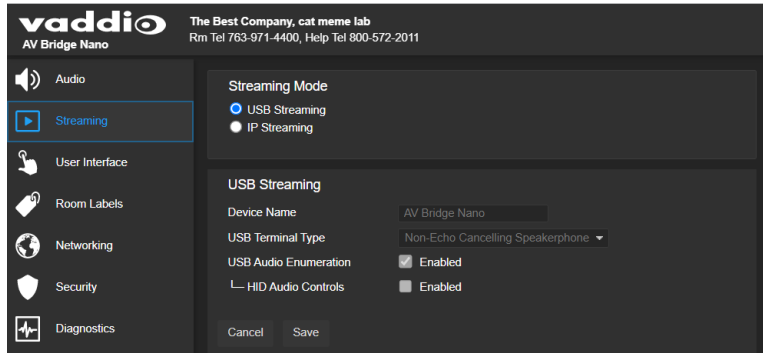
Note
USB streaming resolution and other settings are automatically negotiated between the hardware and the conferencing application. These cannot be set manually.

Enabling or disabling IP streaming

IP streaming is disabled by default. It must be both enabled and selected as the streaming mode for the IP stream to be available. Two IP streaming protocols are available:

- *RTSP streaming* delivers an IP stream that people can access from your network using a media player.
- *RTMP streaming* sends a stream to a content service provider such as YouTube. To use RTMP streaming, you must have an account with a streaming service.

RTSP streaming protocol and URL

When IP streaming is enabled and RTSP is selected, the RTSP stream is automatically available.

RTSP port: Vaddio strongly recommends using the default RTSP port number.

Path: The portion of the streaming URL that appears after the IP address. You may wish to change this to help identify the stream source – for example, `demo-studio-3`.

URL: The location where the stream can be viewed. This will change if you edit the path.

Note
Consult your network specialist before changing any of these settings.
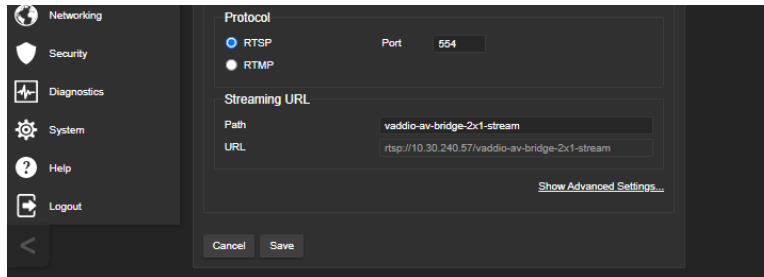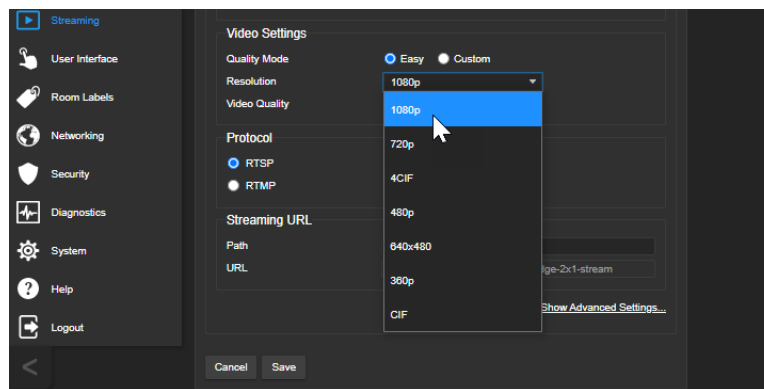

Setting up IP streaming in Easy mode

Note
Consult your network specialist when setting up IP streaming, to be sure that you select settings that are appropriate for the network.

If you are not sure about these settings, start with the defaults.

1. Select Easy Quality Mode.
2. Select the desired IP streaming resolution. This determines the size of the window in which the stream is displayed.

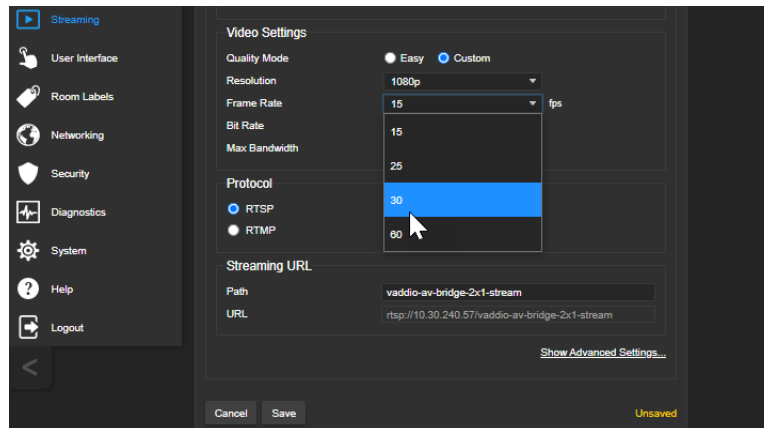3. Select Video Quality. Then save your changes.

Setting up IP streaming in Custom mode

Note

Consult your network specialist when setting up IP streaming, to be sure that you select settings that are appropriate for the network.

1. Select Custom quality mode.
2. Select the desired resolution.
3. Select the desired frame rate.

Note

Some combinations of resolution and frame rate may not be valid for your device; these will generate notifications.

4. Select Constant or Variable Bit Rate.
5. Constant Bit Rate only: Set Max Bandwidth.
6. Variable bit rate only: Set the Quality (Quantization) slider. Then save your changes.
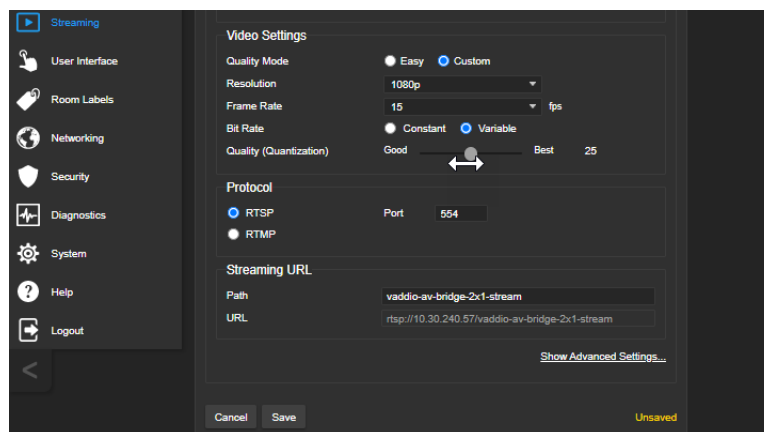
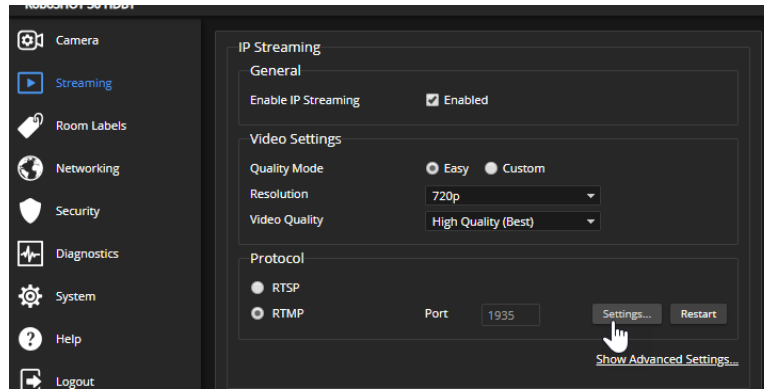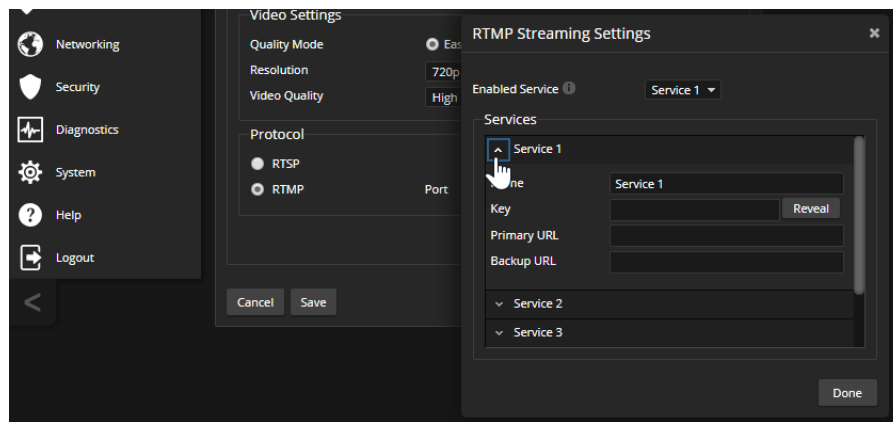# Configuring RTMP streaming

To use RTMP streaming, you must have an account with a streaming service.

To configure an RTMP streaming service:

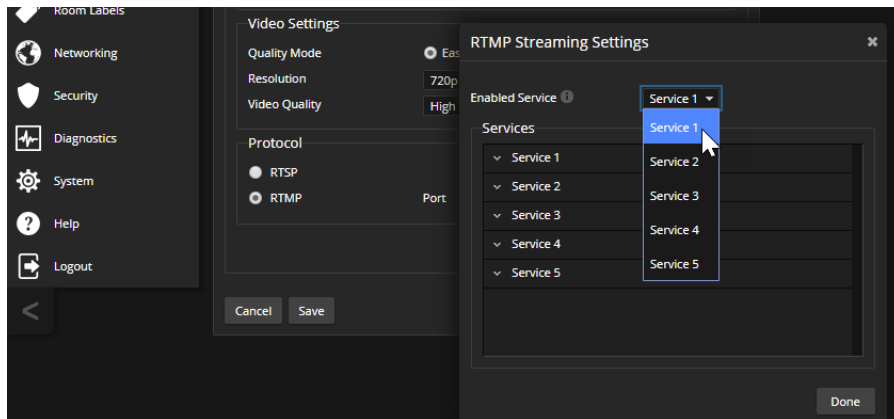1. Select RTMP streaming, then select Settings.

2. Expand the information box for the service.

3. Enter the name of the service.
4. Paste in the key and URL(s) provided by the service.

To select the enabled RTMP streaming service:

Expand the list of available streaming services, and select the one to use.

Note

When IP streaming is enabled, RTMP streaming is selected, and a service is configured, the device streams to that service until you stop the stream. The light in the Stream button is on when RTMP streaming is active.

Stopping the IP stream

STREAMING PAGE

Options:
- **To stop IP streaming entirely:** Clear the Enable IP Streaming check box, or select USB streaming.
- **To stop sending the stream to a content service provider** but make it available as a network stream: Change from RTMP to RTSP streaming. Local video is still displayed on the connected screen(s).
- **To stop local video and the video portion of the stream,** but leave the stream running: Mute the video. Audio is available but the connected display is blank.
- **To stop the audio portion of the stream,** but leave the stream running: Mute the audio. Video continues to stream, and local video is still displayed on the connected screen(s).

Audio and video mute controls are available on every page of the web interface.

Changing MTU

STREAMING PAGE, ADVANCED SETTINGS

The default packet size for streaming is 1400. Do not change this except in consultation with your network administrator.

Configuring audio settings

The web interface provides separate controls for each of the audio inputs and outputs:
- **Inputs** – Left and right Line In, HDMI In, and USB Playback audio channels.
- **Outputs** – Left and right Line Out, HDMI Out, IP Stream, and USB Record audio channels.
- **Matrix** – Defines the source for each audio output.

Adjusting audio inputs and outputs

AUDIO PAGE

Muting and volume controls for all the audio inputs and outputs are available on the Inputs and Outputs tabs, respectively.
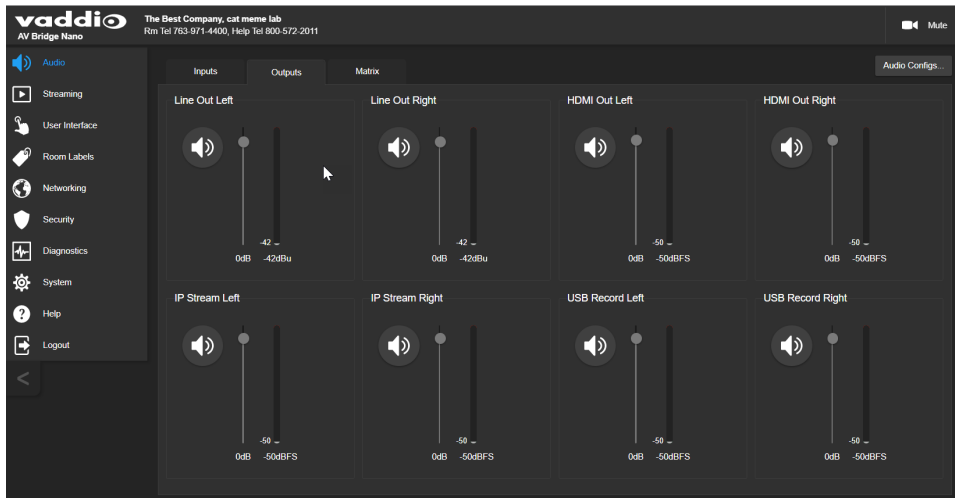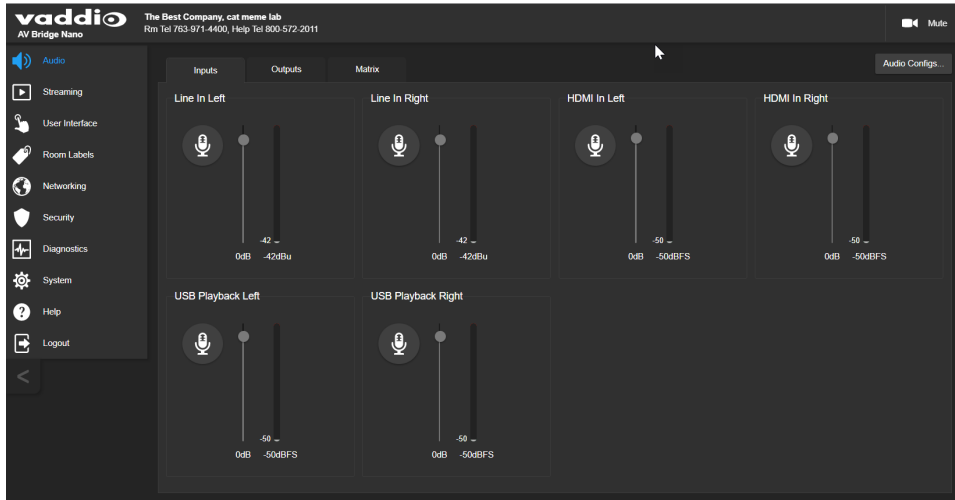
Routing audio

AUDIO PAGE, MATRIX TAB

The audio matrix defines where each audio output originates. Each column of the matrix shows one audio output, and each row shows one audio input. Table cells highlighted in blue mean that the input represented in that row is routed to the output represented in that column.
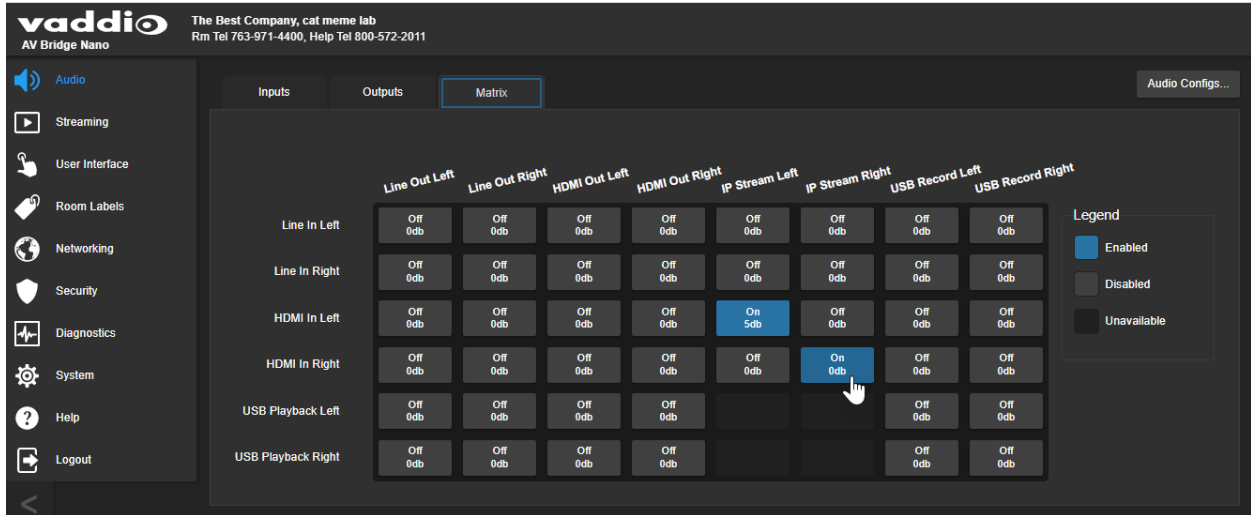
Setting gain between input and output (crosspoint gain)

To adjust crosspoint gain between any input and the output to which it is routed, right-click the table cell in the matrix to open a gain control.
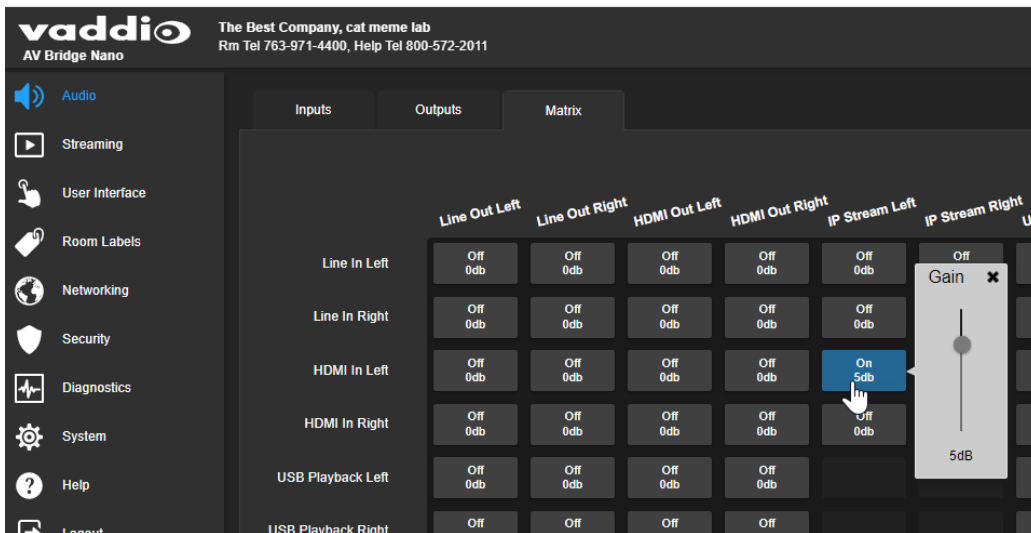
Saving the audio configuration

Audio configurations include the input and output settings and the audio matrix settings. Storing your audio settings as a configuration lets you avoid needing to set it up again in the future.

To save an audio configuration:

1. On any tab of the Audio page, select Audio Configs. The Audio Configs box opens. If any custom configurations have been stored, their buttons are shown as active.
2. Select a custom config button, then select Store.
3. To rename the configuration, right-click the button, enter the name, and save your change.

To recall an audio configuration:

Open the Audio Configs box and select the desired configuration.
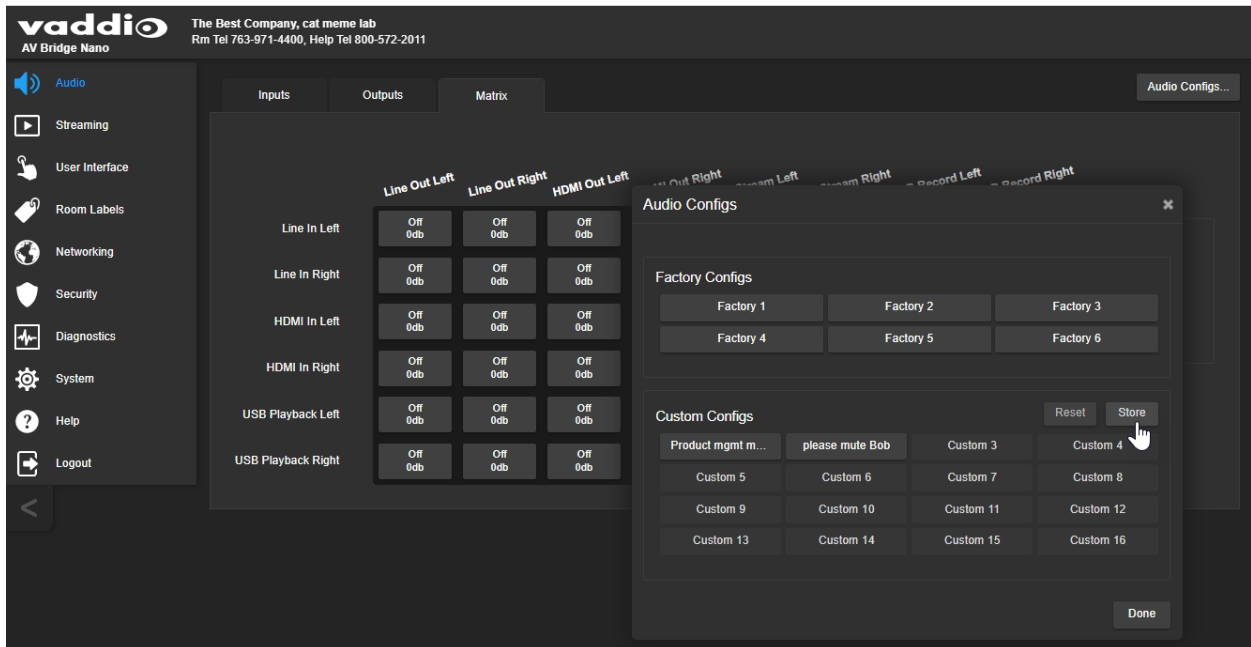
Customizing labels

Some of the labels in the web interface are customizable. You may find it helpful for the names of inputs, outputs, and configurations to indicate what they are in your installation – for example, "Podium Mic". You can rename:

- Audio inputs and outputs
- Audio configurations

When in doubt, try it.

Right-click the label you want to rename. If it is customizable, it opens a dialog box.

Locking the front panel

USER INTERFACE PAGE

Select Lock Front Panel to disable the Stream button.

System maintenance

This chapter covers the tasks on the System page:
- Exporting (backing up) and importing configuration data
- Updating firmware
- Rebooting

The screen shots in this chapter may look different from your device's web interface. Some may be from other products within the same product family, and may lack features that your device offers or show features that are not available on your device.

It also covers information that may help if you need to contact Vaddio Technical Support.

Exporting and importing configuration data

You can export a device's configuration and save it as a backup. This allows you to quickly restore customized information if you need to restore factory defaults or replace the unit, or import a configuration to multiple devices.

The exported data includes settings that may be the same on several devices – NTP and time zone information, audio and video settings, and streaming settings.
The export file does not include security settings, room labels, or network settings.

When importing a configuration to multiple devices:
- All the devices must be of the same model.
- All the devices must have compatible firmware versions installed.

To export a configuration:

To save a copy of the current configuration, select Export Data.

The configuration exports as a `.dat` file and downloads to your default file download location. The filename is the device's hostname followed by the `.dat` file extension.
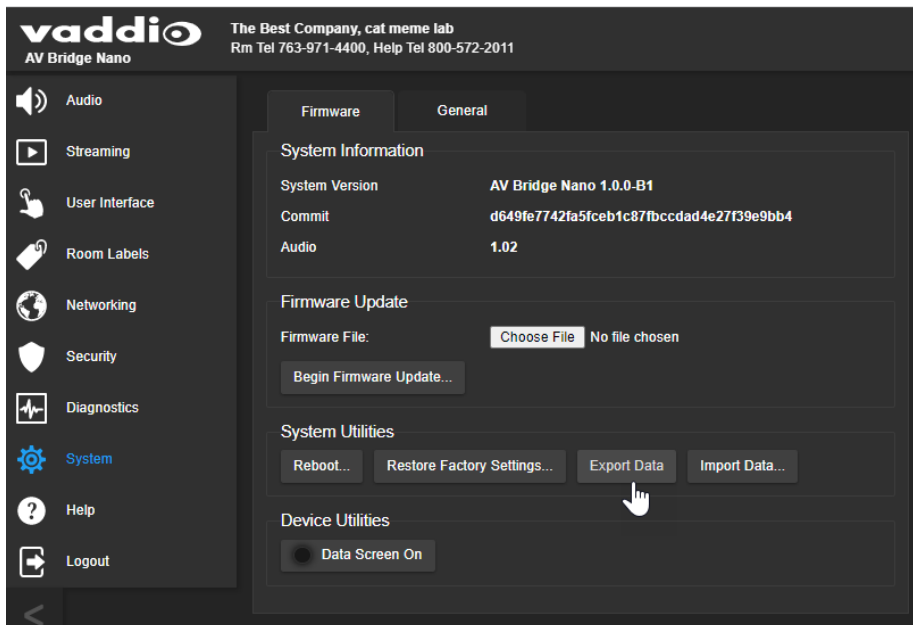
To import a configuration:

1. Select Import. The Import Data box opens.
2. Select Choose File, and browse to the `.dat` file to be imported.
3. Select Begin Importing Data. When the import is complete, the device reboots.

Updating the firmware

From time to time, we issue new firmware to introduce new features and other product improvements, and to fix issues that turn up. We recommend keeping all your Vaddio products up to date, to get the most out of them.

Note
It is rare for an update to generate errors. If this happens, please read them carefully and record them. Screen shots of the error message may be very helpful in troubleshooting the problem. If the update does not finish successfully, ***do not remove power.*** *Contact Vaddio technical support immediately.*

1. Go to the appropriate product page and download the firmware update file.
2. Select the firmware file that you downloaded.
3. Select Begin Firmware Update.
4. Read the information in the Confirm dialog box, then select Continue.

The device reboots as the last step in the update process.

We recommend also checking for firmware updates for all connected Vaddio products.
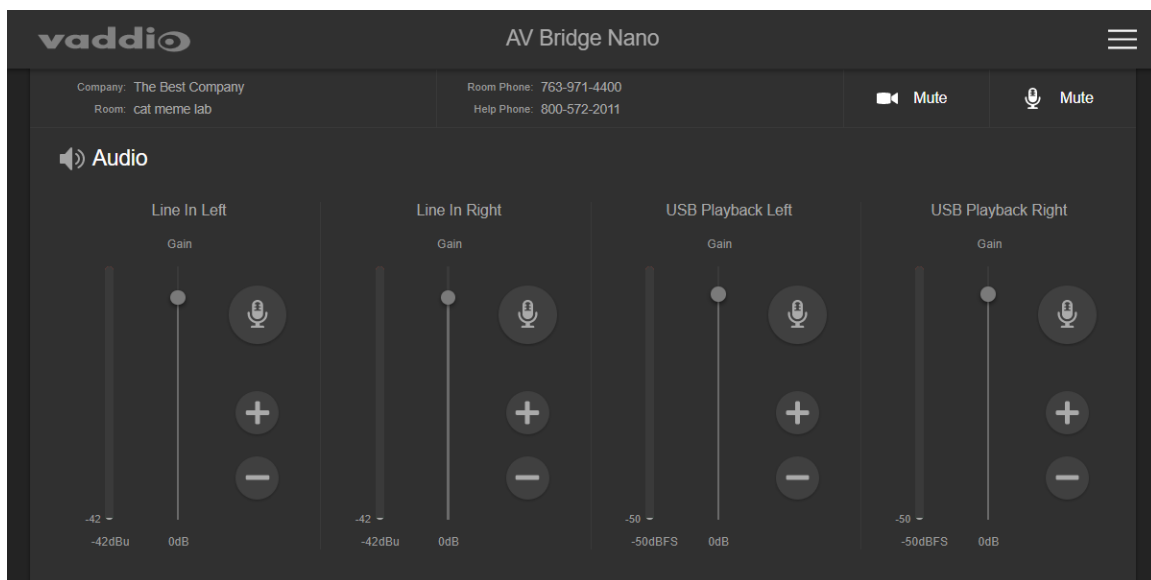
Operating the AV Bridge Nano

The AV Bridge Nano provides a web-based user interface in addition to the front panel controls for basic functions. *To access the web interface, you may need to log in with the `user` account credentials, depending on how the device is configured.* The admin login is not required.

Contact the administrator for information on accessing and logging in to the web interface.

Muting and audio controls

The operator's Audio page provides these controls:
- **Video mute** – Sends black video. Audio remains on unless you mute it also.
- **Audio mute** – Mutes all output channels. It will not affect any audio inputs. Video remains on unless you mute it also.
- **Per-channel audio controls** for up to four audio channels – Provides greater control over the audio.

About viewing streams

To operate the device effectively, you may need to be able to view one of these:
- HDMI output (the display connected to the device)
- USB stream
- IP stream

The AV Bridge Nano can deliver a USB stream or an IP stream (RTSP or RTMP). The desired stream type must be selected. IP streaming is disabled by default, and must be enabled as well as selected.

If you are unable to view the desired stream, this usually means it is not selected. Contact your system administrator.

The Vaddio Deployment Tool provides convenient access to the stream from the AV Bridge Nano and those of any other Vaddio devices on the network. This tool is available as a free download at https://info.legrandav.com/VaddioDeploymentTool. If the Vaddio Deployment Tool is not available to you, do one of these things:

To view the IP stream:
- If RTSP streaming is selected, you will need to know the streaming URL for the IP stream. Contact the system administrator for this information. It is available from Streaming page in the admin portion of the web interface.
- You will need a stream viewer application such as VLC Media Player to view the RTSP stream.
- If RTMP streaming is selected, you will need to know the service provider and channel.

To view the USB stream:

Connect a computer to the USB port on the device, and do one of these things:
- Open a stream viewer and select the camera as the video capture device.
- Start or join a conference.

When viewing either stream, keep in mind that there is always inherent latency and network-dependent latency, so the video and audio may not be perfectly synchronized.

Command Line Interface SHell (CLISH) reference

The Vaddio Command Line Interface SHell (CLISH) allows an external device such as an AMX or Crestron presentation system to control the device.

Requirements

- SSH (recommended) or Telnet must be enabled on the Security page of the device's web interface.
- Your computer or third-party control system must have a suitable SSH or Telnet client. If using Telnet, port 23 is used.
- Your computer or third-party control system must be able to connect to the device over the network.

When you start a CLISH session, you must log in using the admin account.

Usage notes

- The > character is the command prompt.
- In addition to the control commands, session management commands are available – help, history, and exit.
- CTRL-5 clears the current serial buffer on the device.

Getting more information

Use a question mark as a command or command parameter to display a list of available commands, subcommands, or command parameters. For example, `?` returns all top-level commands; `network ?` returns the valid subcommands for the `network` command; and `network ping ?` returns the parameters available for the `network ping` command.

Firmware updates sometimes implement new command parameters. We do not update the manuals for every firmware update. Querying will help you discover any command parameters that have been added since the last update.

Typographical conventions

- { x | y | z} – Choose x, y, or z.
- <variable> – The named variable (such as <ip address>) is required.
- < x..y > – A value in the range of x through y is required.
- [parameter] – The parameter (such as [speed]) is not required.

Audio and video management commands

The following commands are available for audio management:

- audio volume
- audio mute
- audio route
- audio crosspoint-gain
- video mute

Channels available for audio commands

Audio mute and volume commands may be applied to all audio channels at once (`master`) or one specific input or output. Routing and crosspoint gain commands specify individual channels.

Inputs

`master`	Line in, USB playback, and HDMI audio in (Not available for `audio route` and `audio crosspoint-gain` commands)
`line_in_left,` `line_in_right`	Microphones or other line-level inputs

`usb_playback_`
`left,` `usb_`
`playback_right`
	USB audio from the far end

`hdmi_in_left,` `hdmi_in_right`	Audio from a connected HDMI input device

Outputs

`master`	Speakers, USB record, and HDMI audio out (Only available for `audio mute` command)
`line_out_left,` `line_out_right`	Speakers or other line-level outputs

`usb_record_`
`left,` `usb_`
`record_right`
	USB audio from your site

`ip_out_left,` `ip_out_right`	Audio portion of the IP stream
`hdmi_out_left,` `hdmi_out_right`	Audio out to a connected HDMI device

audio volume

Gets or sets the volume of the specified audio channel. The valid range depends on the channel.

See Channels Available for Audio Commands for the audio input and output channels available on your device.

Synopsis	audio <channel> volume { get | up | down | set <level> }	
Options	`get`	Returns the current volume of the specified channel.
	`up`	Increases the volume of the specified channel by 1 dB.
	`down`	Reduces the volume of the specified channel by 1 dB.
	`set <level>`	Sets the volume of the specified channel in dB.

Examples	`audio line_in_1 volume up`
	`OK`
	`>`
	
	Increases the volume for Line In 1 by 1 dB.
	
	`audio line_out_1 volume get`
	`volume -10.0 dB`
	`OK`
	`>`
	
	Returns the current volume for the speaker connected to the line out port.	

audio mute

Gets or sets the mute status of the specified audio channel.

See Channels Available for Audio Commands for the audio input and output channels available on your device.

Synopsis	audio <channel> mute {get | on | off | toggle}	
Options	`get`	Returns the current mute state of the specified channel.
	`on`	Mutes the audio for the specified channel.
	`off`	Unmutes the audio for the specified channel.
	`toggle`	Changes the mute state for the specified channel – unmutes if it was muted, mutes if it was not.

Examples	`> audio master mute get`
	`mute:  off`
	`OK`
	`>`
	
	Returns the current mute state of master mute. It is off, so audio is not globally muted. Some audio channels may be muted, however.
	
	`>audio line_out_1 mute on`
	`OK`
	`>`
	
	Mutes the Line Out 1 port.	

audio route

Gets or sets the input routed to the specified output.

See Channels Available for Audio Commands for the audio input and output channels available on your device.

Synopsis	audio <channel> route { get | set <inputs> }	
Options	`get`	Returns the routing for the specified output.
	`set`	Sets the routing for the specified output. More than one input may be routed to the specified output.

Examples	`> audio ip_out_left route get`
	`[ hdmi_in_left ]`
	`OK`
	`>`
	
	Returns the current source for the left channel of the IP stream.
	
	`> audio ip_out_right route set hdmi_in_right`
	`>`
	
	Sets the right channel of the IP stream to use the right channel of the HDMI audio input as its source.	

audio crosspoint-gain

Gets or sets thegain for the input routed to the specified output, in dB, for a given output and input.

See Channels Available for Audio Commands for the audio input and outputs channels available on your device.

Synopsis	audio <output> crosspoint-gain <input> {get | set <level>}	
Options	`get`	Returns the routing gain from the specified input to the specified output.
	`set` <-12.00 .. 12.00>	Sets the routing gain from the specified input to the specified output. Valid range is -12.00 dB to 12.00 dB.

Examples	`> audio usb_record_left crosspoint-gain line_in_left set 6.00`
	`OK`
	`>`
	
	Sets the crosspoint gain of USB record left and line in left to 6 dB.	

video mute

Gets or sets the video mute status. When video is muted, the device sends black video. This can be desirable when preparing the room or when privacy is needed.

Synopsis	video mute { get | off | on | toggle}	
Options	`get`	Returns the current video mute status.
	`off`	Unmutes the video. (Normal video resumes.)
	`on`	Mutes the video. (Black screen with message)
	`toggle`	Changes the video mute status.

Examples	**video mute get**
	`mute:  off`
	`OK`
	`>`
	
	Video is not muted.
	video mute on
	Transmits black video.	

Communication and networking commands

The following commands are available for managing communication and discovering communication-related settings:

- streaming ip enable
- streaming settings get
- network settings get

streaming ip enable

Set or change the state of IP streaming.

Synopsis	streaming ip enable { get | on | off | toggle}	
Parameters	`get`	Returns the current state of IP streaming
	`on`	Enables IP streaming.
	`off`	Disables IP streaming.
	`toggle`	Changes the state of IP streaming (on if it was off, or off if it was on). **streaming ip enable toggle** has the same effect as selecting the Enable IP Streaming checkbox in the web interface.

Example	`>`**streaming ip enable on**
	`> OK`
	
	Enables IP streaming.
	
	`>`**streaming ip enable get**
	`enabled: true`
	`> OK`
	
	Returns the current state of IP streaming.

streaming settings get

Returns current IP and USB streaming settings.

Synopsis	streaming settings get	
Parameters	`IP Custom_Frame_Rate`	Frame rate selected in Custom mode.
	`IP Custom_Resolution`	Resolution selected in Custom mode.
	`IP Enabled`	Specifies whether IP streaming is enabled (`true` or `false`).
	`IP MTU`	MTU for IP streaming. Default is 1400.
	`IP Port`	The RTSP port number used for IP streaming. Default is 554.
	`IP Preset_Quality`	Quality selected in Easy mode.
	`IP Preset_Resolution`	Resolution selected in Easy mode.
	`IP Protocol`	The IP streaming protocol in use.
	`IP URL`	The URL where the stream is available.
	`IP Video_Mode`	Video quality mode selected (`preset` or `custom`).
	`USB Active`	Specifies whether USB streaming is active.
	`USB Device`	The USB device name.
	`USB Frame_Rate`	The current frame rate for the USB stream (0 if not active).
	`USB Resolution`	The current resolution for the USB stream (0x0 if not active).
	`USB Version`	The USB version in use (USB 3).
Example	``` IP Custom_Frame_Rate 30 IP Custom_Resolution 720p IP Enabled true IP MTU 1400 IP Port 554 IP Preset_Quality High Quality (Best) IP Preset_Resolution 1080p IP Protocol RTSP IP URL vaddio-av-bridge-nano-stream IP Video_Mode preset USB Active true USB Device AV Bridge Nano USB Frame_Rate 30 USB Resolution 1080p USB Version 3 OK > ```	

network settings get

Returns the device's current network settings, including MAC addres, IP address, netmask, and gateway.

Synopsis	network settings get
Example	**network settings get** Name: eth0:WAN MAC Address: 00:04:a3:85:0a:ee IP Address: 10.30.240.187 Netmask: 255.255.255.0 VLAN: Disabled Gateway: 10.30.240.254 Hostname: bergstrom OK >

Maintenance and troubleshooting commands

The following commands are available for maintenance and troubleshooting:

- network ping
- version
- system reboot
- system factory-reset

network ping

Sends an ICMP ECHO_REQUEST to the specified IP address or hostname.

Synopsis	network ping [count <count>] [size <size>] <destination-ip>	
Options	<count>	The number of ECHO_REQUEST packets to send. Default is five packets.
	<size>	The size of each ECHO_REQUEST packet. Default is 56 bytes.
	<destination-ip>	The IP address where the ECHO_REQUEST packets will be sent.
Examples	>**network ping 192.168.1.66** PING 192.168.1.66 (192.168.1.66): 56 data bytes 64 bytes from 192.168.1.66: seq=0 ttl=64 time=0.476 ms 64 bytes from 192.168.1.66: seq=1 ttl=64 time=0.416 ms 64 bytes from 192.168.1.66: seq=2 ttl=64 time=0.410 ms 64 bytes from 192.168.1.66: seq=3 ttl=64 time=0.410 ms 64 bytes from 192.168.1.66: seq=4 ttl=64 time=3.112 ms --- 192.168.1.66 ping statistics --- 5 packets transmitted, 5 packets received, 0% packet loss round-trip min/avg/max = 0.410/0.964/3.112 ms > Sends five ECHO_REQUEST packets of 56 bytes each to the host at 192.168.1.66.	
	>**network ping count 10 size 100 192.168.1.1** Sends 10 ECHO_REQUEST packets of 100 bytes each to the host at 192.168.1.1. The command returns data in the same form as above.	

version

Returns the current firmware version.

Synopsis	version
Example	**version** Returns current firmware version information.

system reboot

Reboots the system either immediately or after the specified delay. Note that a reboot is required when resetting the system to factory defaults (system factory-reset).

Synopsis	system reboot [<seconds>]	
Options	<seconds>	The number of seconds to delay the reboot.
Examples	Reboots the system immediately. >`system reboot 30` Reboots the system in 30 seconds. The response is in the same form; the system message appears at the end of the delay.	

system factory-reset

Gets or sets the factory reset status. When the factory reset status is on, the system resets to factory defaults on reboot.

Synopsis	system factory-reset { get | on | off}	
Options	`get`	Returns the device's current factory reset status.
	`on`	Enables factory reset on reboot.
	`off`	Disables factory reset on reboot.

Examples	>`system factory-reset get`
	`factory-reset (software):     off`
	`factory-reset (hardware):     off`
	`OK`
	`>`
	
	Returns the factory reset status.
	
	This evaluates the most recent `system factory-reset` on or off command, if one has been received, then reads the rear panel DIP switches and returns the status `on` if they are all in the down position.
	
	>`system factory-reset on`
	`factory-reset (software):     on`
	`factory-reset (hardware):     off`
	`OK`
	`>`
	
	Enables factory reset upon reboot.
	
	Note
	This command does not initiate a factory reset. The factory reset takes place on the next reboot.

Information and session management commands
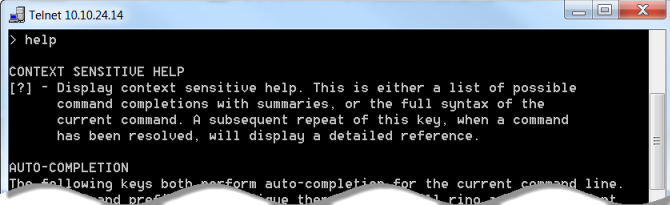
The following commands are available for CLISH help and session management:
- help
- history
- exit

You can also use a question mark as a command or command parameter to display a list of available commands, subcommands, or command parameters. For example, **?** returns all top-level commands; **system ?** returns the valid subcommands for the system command; and **system reboot ?** returns any parameters available for the system reboot command.

help

Displays an overview of the CLI syntax.

Synopsis	help
Example	**help**

Note

Use ? as a command parameter to see information about a given command's syntax.

history

Returns the most recently issued commands from the current session. Since many of the programs read user input a line at a time, the command history is used to keep track of these lines and recall historic information.

Synopsis	history <limit>	
Options	<limit>	Integer value specifying the maximum number of commands to return.
Examples	`history` Displays the current command buffer.	
	`history 5` Sets the history command buffer to remember the last 5 unique entries.	
Additional information	You can navigate the command history using the up and down arrow keys. This command supports the expansion functionality from which previous commands can be recalled from within a single session. History expansion is performed immediately after a complete line is read. Examples of history expansion: * `!!` Substitute the last command line. * `!4` Substitute the 4th command line (absolute as per 'history' command) * `!-3` Substitute the command line entered 3 lines before (relative)	

exit

Ends the command session.

Synopsis	exit
Example	`exit`

Troubleshooting and care

If the equipment does not power up as expected, use this table to determine whether to call Vaddio Technical Support.

Note
If the equipment behaves in a way that suggests even a remote possibility of a bad cable, please try a known good cable with the same pin-out. Factory-made cables can be defective. Cables can appear to be good but only work part of the time. A cable may pass a standard continuity check but be unable to pass enough power to the connected device. Crimping tools can crimp unevenly, contacts can break internally, and individual conductors in the cable can break inside the jacketing material. Any of these can result in a cable that passes a continuity check but does not work reliably.

(The author would like to confess having made more than a few almost-good cables. It happens.)

What is it doing?	Possible causes	Check and correct
Nothing. The buttons do not light up.	Power is not connected.	Check the connections from the wall outlet to the power supply and from the power supply to the device.
	The wall outlet is not active. (Check by finding out if it powers something else, such as a laptop or phone charger.)	Use a different outlet.
	The device or its power supply is bad.	Contact your reseller or Vaddio Technical Support.
Unable to access the web interface.	The device is not connected to the network.	Be sure the network cable is connected. Check using a known good cable.
	The device is not at the IP address you browsed to.	Follow the procedure for Getting the Device's IP Address. If it is 169.254.1.1, see Configuring the Device for Your Network.
Unable to access the device's stream.	Streaming is not enabled on the device.	Log in to the device's web interface as admin and enable the appropriate stream.
	The desired stream type is not selected.	Select the appropriate stream in the web interface.
A connected HDMI source is not working.	No power to the HDMI source.	Check the power connection.
	HDMI cable not connected correctly.	Check and correct cable connections.
	A cable is bad.	Check using a known good cable.
	There is a problem with the device.	Refer to the troubleshooting information in the camera manual.
IP and MAC address appear in video output	The data display has been selected. This is normal.	To clear the display, press the IP button, or select the Data Screen On/Off control on the System page.

Rebooting

This can help if the device stops responding as you expect.

In the System Utilities section, select Reboot, then confirm. You will need to log in again after the reboot.
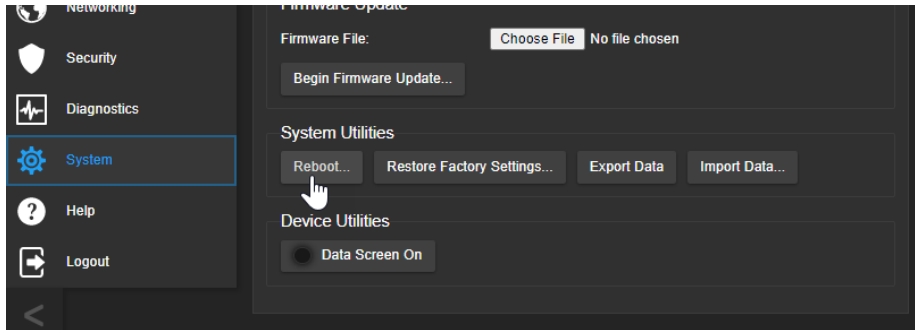
If rebooting the device doesn't fix the problem, you may need to restore factory defaults. Before you take that step, back up the configuration.

Restoring factory defaults

This operation returns the device to its original state.
- Any settings you have customized will be lost.
- Anyone who is logged in to the web interface is logged out.
- You will need to do the initial device setup again to be able to communicate with the device.

To save and restore your customized settings, export the device configuration before restoring factory defaults. See Exporting and Importing Configuration Data. Then import the configuration after completing the initial device configuration. Device behavior settings are preserved in the configuration file; identity settings such as passwords, device hostname, and IP streaming path and URL are not.

You can restore factory defaults from the web interface, CLISH, or using the device's IP button.

To restore factory defaults from the web interface:

1. Go to the System page.
2. If you have customized the device's room label or behavior settings and will want to restore them, export the configuration.
3. Select Restore Factory Settings.
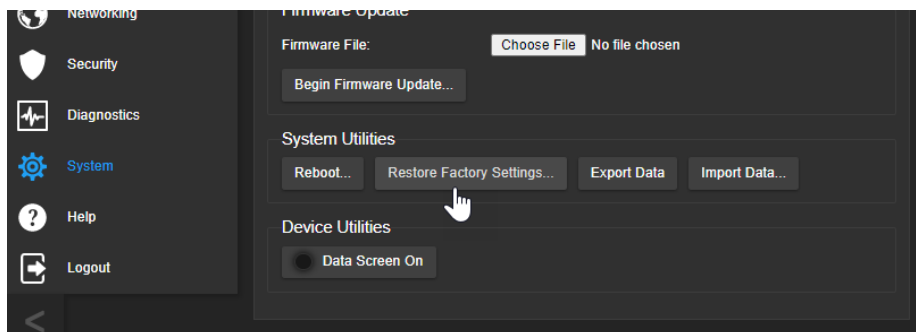
4. A confirmation message informs you that the action cannot be undone. This is your cue to make sure you have successfully exported the configuration before you confirm.

To restore factory defaults using the IP button:

1. Disconnect power.

2. Then hold down the IP button while reconnecting power, and continue to hold it for 15 seconds.

The device returns to factory defaults and reboots.

If you hold down the IP button for more than 45 seconds, there is a small but nonzero risk that a portal may open in the space-time continuum. If this occurs, please exercise good judgment. Vaddio is not responsible for what happens next.

When the process is complete, you will need to access the web interface and complete the initial device set-up and any other configuration that may be needed.

Contacting Vaddio Technical Support and viewing diagnostic logs

HELP AND DIAGNOSTICS PAGES

If you can't resolve an issue using your troubleshooting skills (or the Troubleshooting table in this manual), we are here to help. Technical support contact information is on the Help page.
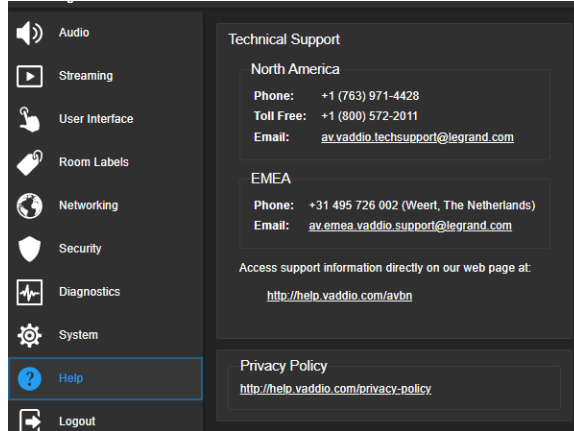
Note

The Help page may provide a link to our standard privacy notice. This product does not record or save audio or video files, and it does not store any identifying information other than what you may choose to enter on the Room Labels page of the web interface. However, the device's IP address is considered "personally identifiable information" for the purposes of the privacy notice. This information is stored for display to the user, but not otherwise shared or transmitted.

Your Vaddio technical support representative may ask you to download and email the event log file available from the Diagnostics screen. The event log may include large numbers of internal events even when no errors have occurred. Rebooting generates over 100 log entries.
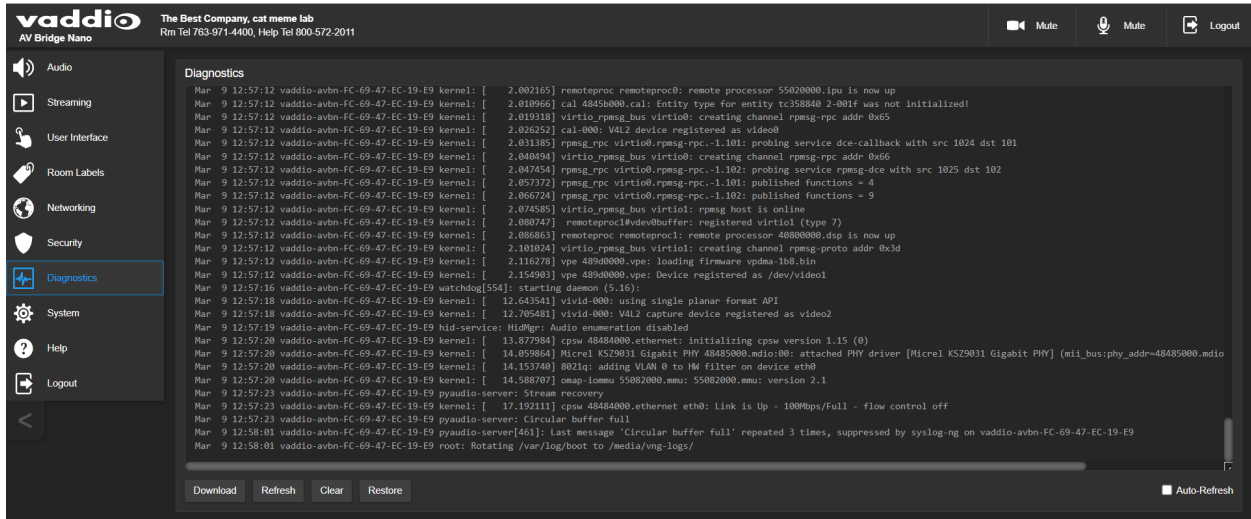
Operation, storage, and care

For smears or smudges on the product, wipe with a clean, soft cloth. Do not use any abrasive chemicals.

Keep this device away from food and liquids.

Do not operate or store the device under any of the following conditions:
- Temperatures above 40°C (104°F) or below 0°C (32°F)
- High humidity, condensing or wet environments
- Inclement weather
- Severe vibration
- Corrosive atmosphere
- Dry environments with an excess of static discharge
- As an object of a cat's desire to knock things from elevated surfaces

Do not attempt to take this product apart. There are no user-serviceable components inside.

Glossary

B

bandwidth
> Data transfer rate (bits per second) for the stream. In some cases, using a high bandwidth can slow down other network traffic. On networks with very low bandwidth, video issues may result. Streaming at a lower resolution or frame rate can reduce bandwidth usage.

D

DHCP
> Dynamic Host Configuration Protocol. A network management protocol that assigns an IP address to a device automatically when it is connected to the network.

F

far end
> (conferencing) A location in the conference other than the one where you are. Far-end video is what you typically see in a conference – the people at the other end of the call.

felis catus
> What the internet is made of.

G

gateway
> Network information automatically assigned in a DHCP network. If installing equipment on a non-DHCP network, get this information from the network administrator.

H

HDMI
> (High-Definition Multimedia Interface) A video output format; may also carry audio information.

HID audio controls
> (Human Interface Device) Controls to enable conference participants to use the conferencing client to control the audio.

HTTP
> HyperText Transfer Protocol. The magic that makes websites work.

HTTPS
> HyperText Transfer Protocol Secure. The magic that uses encryption to make websites work securely. See "SSL certificate" for more information.

I

IP address
> Where a given device is on the IP network, logically. The IP address enables the network to route data to the right device – and that's why IP address conflicts are bad.

IP address conflict

Two or more devices attempting to use the same IP address on a network. Results are unpredictable but never good.

L

LED

Light-Emitting Diode. A status light.

M

MTU

Maximum Transmission Unit. The largest number of bytes allowed in a packet. If you don't know what that means, don't change MTU size.

N

near end

(conferencing) Your location in a conference. When you mute the video, your camera stops sending near-end video.

NTP

Network Time Protocol. Ensures that NTP-enabled devices on the network all show the same system time, so timestamps are accurate.

P

PoE, PoE+, PoE++

Power over Ethernet; a means of powering a device using its network connection. Requires a mid-span power injector. PoE+ and PoE++ deliver more power than PoE.

R

RCLB

Really Cool Logo Badge. A visual cue that the device is a genuine Vaddio product. Accept no substitutes!

RTMP

Real-Time Messaging Protocol. Used for livestreaming video (and audio, if available) to a service such as YouTube Live.

RTSP

Real-Time Streaming Protocol. Used for streaming video and audio over your network.

S

soft conferencing client

A conferencing application (such as Zoom, Google Hangouts, or Skype for Business) that uses a computer rather than requiring a conferencing codec.

SSL certificate

A file used with HTTPS proving that a web page really originates from its purported source. Vaddio devices use self-signed SSL certificates. Since these are not issued by a recognized

certificate authority, your browser will pop up security warnings the first time you try to browse to the device's web interface.

streaming protocol
A set of rules that define how video and audio data are sent over the network. See RTMP and RTSP.

subnet mask
Network information automatically assigned in a DHCP network. If installing equipment on a non-DHCP network, get this information from the network administrator.

U

UCC, UC conferencing
Unified Communications Conferencing; refers to soft-client conferencing (such as Zoom or Skype for Business) using a computer with USB-connected peripherals.

USB 2
An older, lower-speed USB protocol; good for audio but offers lower maximum resolutions for video conferencing. USB 2 products can be connected to USB 2 or USB 3 ports on your computer.

USB 3
A high-speed USB protocol, capable of handling high-quality video and audio as in conferencing applications. USB 3 products should be connected to USB 3 ports; performance may be degraded otherwise.

USB playback
Audio from other sites (far-end audio) in a conference call. Considered an input because it's part of the incoming USB stream.

USB record
Audio from your site (near-end audio) in a conference call. Considered an output because it's part of the outbound USB stream.

Photo credits

This guide may include some or all of these photos.

European Space Agency (ESA) astronaut Samantha Cristoforetti, a Flight Engineer with Expedition 42, photographs the Earth through a window in the Cupola on the International Space Station
By NASA - https://blogs.nasa.gov/ISS_Science_Blog/2015/03/06/women-in-space-part-two-whats-gender-got-to-do-with-it/, Public Domain, https://commons.wikimedia.org/w/index.php?curid=38834990

Carl Sagan, Bruce Murray, Louis Friedman (founders) and Harry Ashmore (advisor), on the occasion of signing the papers formally incorporating The Planetary Society
By credit NASA JPL - JPL, Public Domain, https://commons.wikimedia.org/w/index.php?curid=1180927

Main Control Room / Mission Control Room of ESA at the European Space Operations Centre (ESOC) in Darmstadt, Germany
By European Space Agency - ESOC flickr, Credit: ESA - Jürgen Mai, CC BY-SA 3.0-igo, https://commons.wikimedia.org/w/index.php?curid=36743173

Expedition 42 on orbit crew portrait, International Space Station, Mar. 7, 2015 – Barry Wilmore (Commander) Top, Upside down, to the right cosmonaut Elena Serova, & ESA European Space Agency Samantha Cristoforetti. Bottom center US astronaut Terry Virts, top left cosmonauts Alexander Samokutyaev and Anton Shkaplerov.
By NASA - https://www.flickr.com/photos/nasa2explore/16166230844/, Public Domain, https://commons.wikimedia.org/w/index.php?curid=38931301

Pho. By J. Nguyen~commonswiki assumed (based on copyright claims). - No machine-readable source provided. Own work assumed (based on copyright claims)., CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=587914

European Space Agency astronaut Luca Parmitano, Expedition 36 flight engineer, outside the International Space Station
By NASA - http://spaceflight.nasa.gov/gallery/images/station/crew-36/html/iss036e016704.html, Public Domain, https://commons.wikimedia.org/w/index.php?curid=27263573

Chris Cassidy, Luca Parmitano, and Karen Nyberg, ISS, 2013. Photo Credit: NASA

Nicolas Altobelli, Rosetta Scientist at ESA's European Space Astronomy Centre, Villanueva de la Cañada, Madrid, Spain
By European Space Agency - Nicolas Altobelli talks to the media, CC BY-SA 3.0-igo, https://commons.wikimedia.org/w/index.php?curid=36743144

Andrea Accomazzo, ESA Rosetta Spacecraft Operations Manager, providing a live update from the Main Control Room at ESA's European Space Operations Centre, Darmstadt, Germany during the Rosetta wake-up day.
By European Space Agency - Live update from the Main Control Room, CC BY-SA 3.0-igo, https://commons.wikimedia.org/w/index.php?curid=36743150

May also contain random images of the author's own cats. You're welcome.

Index

VADDIO®

A brand of legrand®