

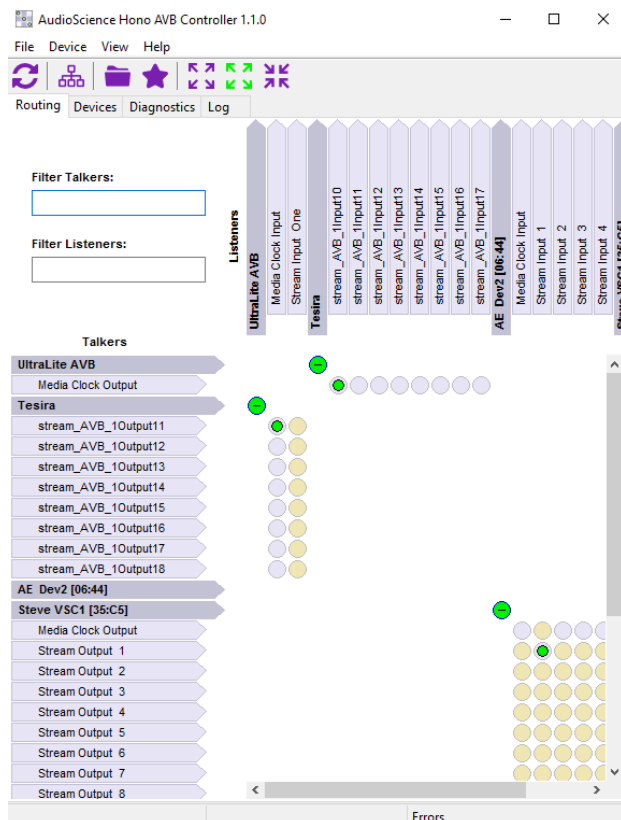


Hono AVB Controller v1.1.x

1 INTRODUCTION

Hono AVB Controller is a Graphical User Interface (GUI) application intended for use with AudioScience products combined with other 3rd party AVB devices. The controller provides configuration and routing of IEEE 1722 audio stream formats using the IEEE 1722.1 AVDECC protocol. It supports AudioScience AVB devices with IEEE 1722.1 dynamic stream mappings, allowing individual channels to be selected from incoming streams and routed to outgoing streams.

Hono AVB Controller is built upon the foundation of avdecc-lib, an open source AVB controller library. Avdecc-lib is part of the AVnu OpenAVB effort, an open source project for AVnu software, drivers and building blocks.



2 FEATURES

- View all IEEE 1722.1 enabled AVB devices and their streams.
- Route streams on AVB devices and examine existing stream routes.
- Presets
 - Save audio routing and device configuration presets
 - Apply previously saved presets
 - Edit presets offline and use for new device configurations
- View and adjust per-device settings, if implemented, including:
 - Lock/unlock devices
 - Device name
 - Device Sample rate
 - Media clock source
 - Network information
- View and adjust per stream settings including
 - Stream name
 - Media format
 - Audio channel mappings
 - IEEE 1722 Presentation time/stream latency
- View network status information, including:
 - IEEE 802.1AS clock synchronisation grandmaster
- View device error and notification logs
- Runs on Windows 7 and 10, 32 and 64bit platforms

3 REVISIONS

Date	Description
August 1, 2016	First Release, 1.0.24
August 17, 2016	Adding Presets, name tweaks to configuration dialog, 1.0.28
August 26, 2016	Device Configuration documentation, Update Menu bar, specify preset auto assignment rules, add appendix with 1722.1 commands
August 30, 2016	Activation Dialog, Mappings documentation, 1.1.0

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6 SYSTEM REQUIREMENTS

6.1 Windows

- Network switch with AVnu certified AVB support. Compatible switches include:
 - Extreme X430, X440, X460 with AVB license installed, v15.5.3.4 or later
- Computer with Ethernet NIC connected to an AVB network
- Windows 7 or 10

7 DEVICE REQUIREMENTS

- AudioScience Hono AVB device or other IEEE1722.1 compliant AVB device(s)
- See [Appendix](#) for the full list of the IEEE1722.1 device commands utilized by Hono AVB Controller.

8 INSTALLING HONO AVB CONTROLLER

8.1 Windows

1. Ensure you are logged on to your PC as an administrator
2. Download the Hono AVB Controller software from AudioScience's website:
http://www.audioscience.com/internet/products/avb/hono_avb_controller.htm
3. Run the installer, and follow the instructions provided
4. WinPcap software (<https://www.winpcap.org>) is required and included within this installer. If your computer already has WinPcap software installed, click **Cancel** when prompted.

Hono AVB Controller will then be installed. The application is added to the start menu under AudioScience. A desktop shortcut is also provided.

9 UNINSTALLING HONO AVB CONTROLLER

9.1 Windows


You should not need to uninstall Hono AVB Controller when upgrading to a new version. However, if you still wish to uninstall, the application can be uninstalled by:

- Using the Start menu shortcut: Start > Programs > AudioScience > Hono AVB Controller > Uninstall
- Going to Start > Run and entering C:\Program Files (x86)\AudioScience\Hono AVB Controller\Uninstall.exe

10 STARTING HONO AVB CONTROLLER

10.1 Where to find the Hono AVB Controller application

Windows

- By default Hono AVB Controller will be installed in Program Files (x86)
- It can be started in several ways:
 - Run by going to Start > Run and entering
C:\Program Files (x86)\AudioScience\Hono AVB Controller\bin\hono_avb_controller.exe
 - Using the Start menu shortcut: Start > Programs > AudioScience > Hono AVB Controller > Hono AVB Controller
 - Double-clicking on the desktop shortcut: 

10.2 Configuring Hono AVB Controller

10.2.1 Network Interface Selection

- The first time Hono AVB Controller is run, a dialog box will appear, providing a list of network interfaces from which to select. Once an interface is selected, it is remembered for future use, and this dialog box will not be shown when Hono AVB Controller is run subsequently.

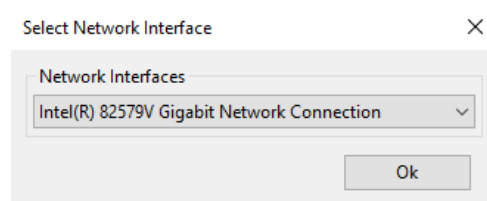



Figure 1. Select Network Interface Dialog

- To display this dialog at any other time, click the  icon in the main toolbar

11 USING HONO AVB CONTROLLER

Menu bar ————— File Device View Help

Tabs ————— Routing Devices Diagnostics Log

Filter Talkers:

Filter Listeners:

Listeners

- AE Dev2 [06:44]
- Media Clock Input
- Stream Input 1
- Stream Input 2
- Stream Input 3
- Stream Input 4
- Steve VSC1 [35:C5]
- Hono AVB Custom 1881 [0E:A3]
- T3 4.4D [06:38]
- Tesira
- T2 4.4M [02:12]

Talkers

- AE Dev2 [06:44]
- Steve VSC1 [35:C5]
- Media Clock Output
- Stream Output 1
- Stream Output 2
- Stream Output 3
- Stream Output 4
- Stream Output 5
- Stream Output 6
- Stream Output 7
- Stream Output 8
- Stream Output 9
- Stream Output 10
- Stream Output 11
- Stream Output 12
- Stream Output 13
- Stream Output 14
- Stream Output 15
- Stream Output 16
- Hono AVB Custom 1881 [0E:A3]
- T3 4.4D [06:38]
- Tesira
- T2 4.4M [02:12]

Stream ID: 0x0CC47A3135C50041
Stream Latency: 289.35 us
Stream Format: IEC61883-6_AM824_MBLA_48KHZ_2CH

Errors

Figure 2. Hono AVB Controller

11.1 Menu bar

The menu bar includes four menus: **File**, **Device**, **View**, **Help**.

11.1.1 File

- [Load Preset](#): apply a saved preset
- [Save Preset](#): save a preset
- [Network Interface](#): open the select network interface dialog
- Exit: Quit Hono AVB Controller

11.1.2 Device

- Refresh: Clear all information and rediscover devices on the network
- Configure: Open the [Device Configuration](#) window for the device selected in the [Devices view](#)

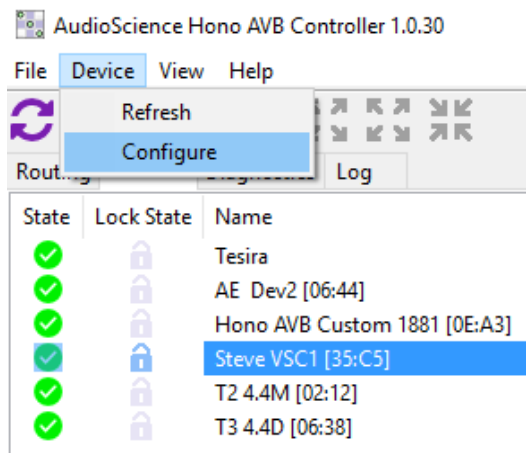


Figure 3: Configure Device

11.1.3 View

Note: These menu options apply only to the [Routing View](#).

- Expand All: expand all devices and streams
- Expand Active: expand only the devices that currently have a connection
- Contract All: show only device names (Hide Stream Names)

11.1.4 Help

- About: opens a window with information about Hono AVB Controller
- Activate License: opens a window for activating your permanent Hono AVB Controller license key

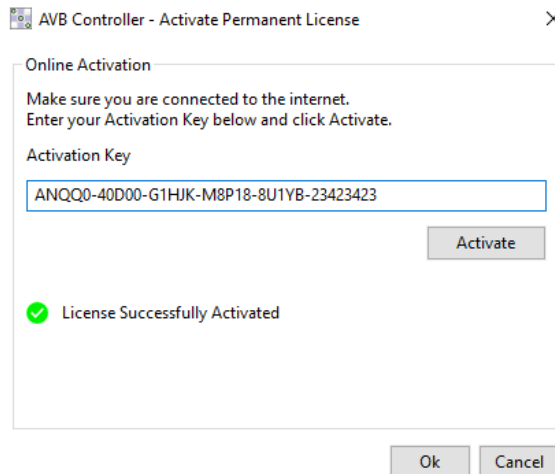


Figure 4: License Activation Dialog

11.2 Tool bar



Network Refresh

Clear all information and rediscover devices on the network.



Select Network Interface

Open the [select interface dialog](#).



Load Preset

Load a preset. See [Applying a Preset](#).



Save Preset

Save a preset. See [Saving a Preset](#).



Expand All Connections

Expand all devices and streams.



Expand Active Connections

Expand only the devices that currently have a connection.



Contract All Connections

Show only device names.

11.3 Tabs

Hono AVB Controller consists of four tabbed views. The use of each of these tabs is described in the next section

- [Routing](#)
- [Devices](#)
- [Diagnostics](#)
- [Log](#)

11.3.1 Routing View

Hono AVB Controller opens with the routing tab selected. This view provides a matrix for controlling and monitoring streams.

Double-clicking on a device name opens the [Device Configuration](#) window.

Figure 5. Routing View

11.3.1.1 Expanding a Device Intersection

In the Routing View, a toggle button at the intersection of a Listener and a Talker indicates that stream connections between those two devices are possible. If a button is not present at a device intersection, the two devices do not share the same IEEE 802.1AS Grandmaster ID and therefore cannot be connected.

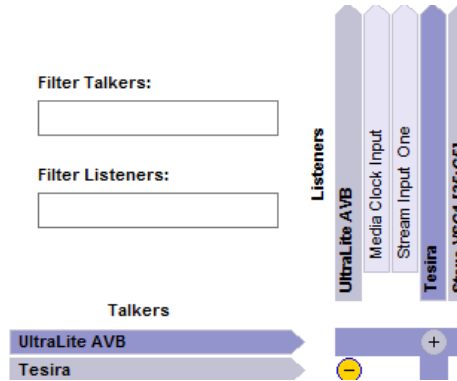


Figure 6: Device Intersection

Clicking on the toggle button at a device intersection will expand the matrix to reveal the Talker and Listener streams and the connection crosspoints for the device pair.

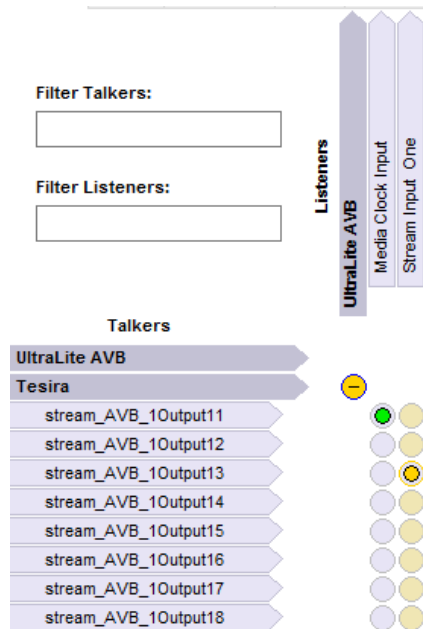


Figure 7: Device Intersection Expanded

Matrix crosspoints that can be connected will appear as purple circles

Matrix crosspoints with different stream formats will be indicated by amber circles

A disconnected device will be disabled in the Routing View. Matrix crosspoints for that device will also be disabled – indicated by a grey circle

Connections that were active before the disconnection are indicated by a black dot

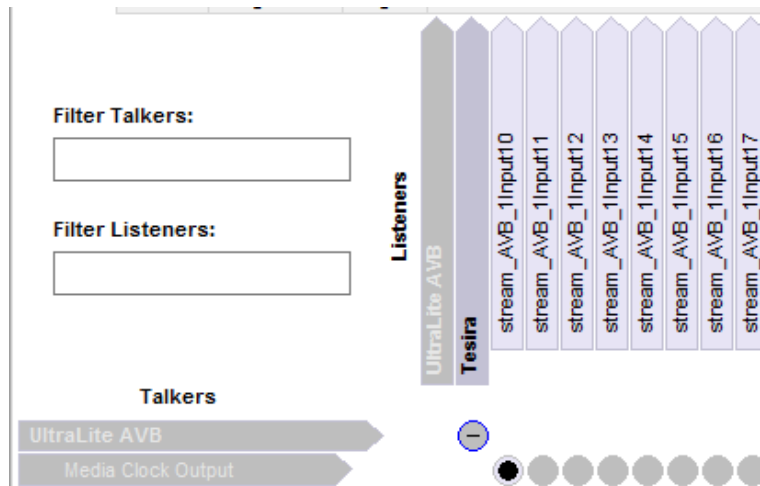


Figure 8: Disconnected Device Intersection Expanded

11.3.1.2 Connecting a Stream

Hono AVB Controller will attempt to connect the device streams when you click on an applicable crosspoint.

11.3.1.2.1 Connection Success

A green circle ● will appear in the matrix crosspoint if the connection is successful.

11.3.1.2.2 Connection Warning

Though not recommended, Hono AVB Controller allows streams of different formats to be connected.

An amber circle ● will appear if the connection has a format mismatch. A popup will accompany a connection warning, describing the different formats:

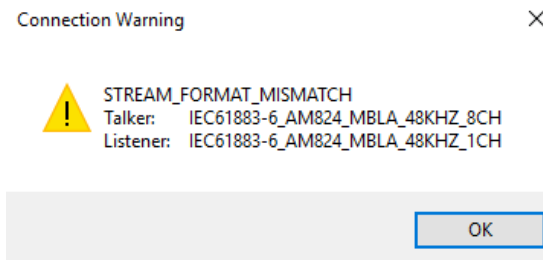


Figure 9: Connection Warning Example Popup

11.3.1.2.3 Connection Failure

If a connection cannot be established, a popup will appear, indicating why the connection failed:

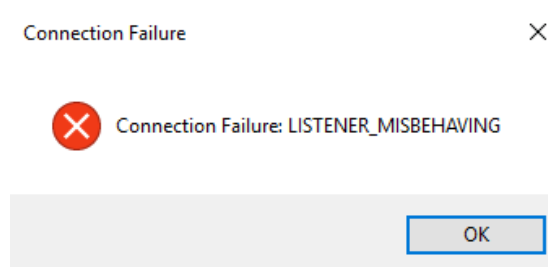


Figure 10: Connection Failure Example Popup

11.3.1.3 Device Intersection Connection Status

Device intersection toggle buttons indicate the connection status of the device pair. A toggle button will be green when valid connections exist and yellow if a warning connection exists between the devices.

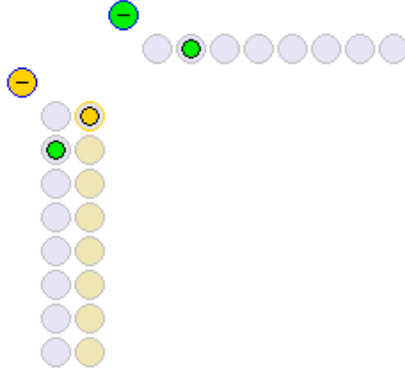




Figure 11: Device Intersection Button Colors

11.3.2 Device View

The devices tab provides a network-wide overview of device configuration and operating information. This tabular view presents the following information, in columns from the left:

- **State** : The status of the device.  Connected or  Disconnected
- **Lock State** : The permission status of the device. See [Lock Status](#)
- **Name** : The Entity Name of the device
- **Group Name** : The Group Name of the device
- **Vendor**: The Vendor Name of the device
- **MAC** : The MAC address of the device
- **Firmware Version**: The current firmware version of the device
- **Entity ID**: The Entity ID of the device

Double-clicking on a device opens the [Device Configuration](#) window.

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File Routing Help

Routing Devices Diagnostics Log

State	Lock State	Name	Group Name	Vendor	MAC Address	Firmware Version	Entity ID
✔	🔒	UltraLite AVB		MOTU	00:01:F2:00:21:47	1.2.5+30803/14/16 1...	0001F2FFFE002147
✔	🔒	Tesira	0	Biamp Systems	00:90:5E:16:11:E0	1.2.0.8	00905EFFFFE1611E0
✔	🔒	ASP1	ASI	AudioScience, Inc.	00:1C:F7:00:0E:AC	0.1.48-exp9	001CF7FFFF000EAC
✔	🔒	ASP2	ASI	AudioScience, Inc.	00:1C:F7:00:0E:A3	0.1.48-exp9	001CF7FFFF000EA3
✔	🔒	Steve VSC1 [35:C5]	ASI	AudioScience, Inc.	0C:C4:7A:31:35:C5	4.19.17	0CC47AFFFF3135C5
✔	🔒	T1 4.4M [02:1B]	ASI	AudioScience, Inc.	00:1C:F7:00:02:1B	0.1.48-exp9	001CF7FFFF00021B
✔	🔒	T2 4.4M [02:12]	ASI	AudioScience, Inc.	00:1C:F7:00:02:12	0.1.48-exp10	001CF7FFFF000212
✔	🔒	T3 4.4M [06:38]	ASI	AudioScience, Inc.	00:1C:F7:00:06:38	0.1.48-exp9	001CF7FFFF000638
✔	🔒	AVB 2in/2out	XMOS AVB Group	XMOS	00:22:97:00:41:BC	6.0.7beta0	002297FFFE0041BC

Figure 12. Devices View

11.3.3 Diagnostics View

The Diagnostics View includes information pertaining to a device's AVB status. This tabular view presents the following informing, in columns from the left:

- **State:** The connection status of the device. ✔ Connected or ✘ Disconnected
- **Name:** The Entity Name of the device
- **Group Name:** The Group Name of the device
- **Vendor:** The Vendor Name of the device
- **Model Name:** The Model Name of the device
- **MAC:** The MAC address of the device
- **Firmware Version:** The current firmware version of the device
- **Entity ID:** The Entity ID of the device
- **AVB:** ✔ IEE802.1AS capable or ✘ not asCapable
- **Grandmaster ID:** The gPTP Grandmaster ID of the device
- **GM Changes:** The number of gPTP Grandmaster changes
- **pDelay:** The propagation delay of device (ns)
- **Link up:** The number of the link ups
- **Link down:** The number of link downs

Double-clicking on a device opens the [Device Configuration](#) window.

AudioScience Hono AVB Controller 1.0.24

File Routing Help

Routing Devices Diagnostics Log

State	Name	Group Name	Vendor	Model Name	MAC Address	Firmware Version	Entity ID	AVB	Grandmaster ID	GM Changes	pDelay	Link Up	Link Down
✔	UltraLite AVB		MOTU	UltraLite AVB	00:01:F2:00:21:47	1.2.5+30803/14/16 1...	0001F2FFFE002147	✔	0001F2FFFE002147		175		
✔	Tesira	0	Biamp Systems	Tesira	00:90:5E:16:11:E0	1.2.0.8	00905EFFFFE1611E0	✔	0001F2FFFE002147	7	185	1	1
✔	AVB 2in/2out	XMOS AVB Group	XMOS	AVB-LC	00:22:97:00:41:BC	6.0.7beta0	002297FFFE0041BC	✔	0001F2FFFE002147				
✔	T1 4.4M [02:1B]	ASI	AudioScience, Inc.	Hono AVB 4.4M [02:1B]	00:1C:F7:00:02:1B	0.1.48-exp9	001CF7FFFF00021B	✔	000496FFFFE7E1910	2	42	1	0
✔	T2 4.4M [02:12]	ASI	AudioScience, Inc.	Hono AVB 4.4M [02:12]	00:1C:F7:00:02:12	0.1.48-exp10	001CF7FFFF000212	✔	000496FFFFE7E1910	2	39	1	0
✔	T3 4.4M [06:38]	ASI	AudioScience, Inc.	Hono AVB 4.4M [06:38]	00:1C:F7:00:06:38	0.1.48-exp9	001CF7FFFF000638	✔	000496FFFFE7E1910	2	40	1	0
✔	Steve VSC1 [35:C5]	ASI	AudioScience, Inc.	Hono AVB 64.64V [35:C5]	0C:C4:7A:31:35:C5	4.19.17	0CC47AFFFF3135C5	✔	000496FFFFE8B939F	1	160	0	0
✔	ASP1	ASI	AudioScience, Inc.	Hono AVB Custom 9811 [0E:A3]	00:1C:F7:00:0E:AC	0.1.48-exp9	001CF7FFFF000EAC	✔	000496FFFFE8B939F	2	74	1	0
✔	ASP2	ASI	AudioScience, Inc.	Hono AVB Custom 1881 [0E:A3]	00:1C:F7:00:0E:A3	0.1.48-exp9	001CF7FFFF000EA3	✔	000496FFFFE8B939F	2	86	1	0

Figure 13. Diagnostics View

11.3.4 Log View

The Log view stores error and notification messages.

This tabular view presents the following information, in columns from the left:

- **Timestamp** : The time and date of the event
- **Type** : The type of event - ERROR or NOTIFICATION
- **Message** : The message received
- **Entity ID**: The Entity ID of the device sending the message, if applicable
- **Command Type**: The command type that triggered the message, if applicable
- **Desc Name**: The descriptor name of the message, if applicable
- **Desc Index**: The descriptor index of the message, if applicable
- **Status**: The status of the message, if applicable

Figure 14. Log View

Timestamp	Type	Message	Entity ID	Command Type	Desc Name	Desc Index	Status
Wed Aug 03 09:32:25 2016	ERROR	COMMAND_TIMEOUT	0x22977ffe0041bc	REGISTER_UNSOLICITED_NOTIFICATION	ENTITY	0	
Wed Aug 03 09:32:26 2016	ERROR	COMMAND_TIMEOUT	0x22977ffe0041bc	GET_AVB_INFO	STRINGS	1	
Wed Aug 03 09:32:26 2016	ERROR	RESPONSE_RECEIVED	0x22977ffe0041bc	GET_COUNTERS			NOT_SUPPORTED
Wed Aug 03 09:32:27 2016	ERROR	COMMAND_TIMEOUT	0x22977ffe0041bc	LOCK_ENTITY	UNKNOWN	65535	
Wed Aug 03 09:32:28 2016	ERROR	COMMAND_TIMEOUT	0x22977ffe0041bc	GET_AVB_INFO	UNKNOWN	65535	
Wed Aug 03 09:32:28 2016	ERROR	COMMAND_TIMEOUT	0x22977ffe0041bc	GET_AVB_INFO	ENTITY	0	
Wed Aug 03 09:32:35 2016	ERROR	aem_cmd_get_avb_counters_resp_read error					
Wed Aug 03 09:32:35 2016	ERROR	aem_cmd_get_avb_counters_resp_read error					
Wed Aug 03 09:32:36 2016	ERROR	COMMAND_TIMEOUT	0x1f2fffe002147	GET_COUNTERS	ENTITY	0	

Click to change the logging level

Click to remove all messages

11.4 Status Bar

The Status Bar displays the following information:

- The current device being enumerated (e.g. Scanning... UltraLite AVB)
- Error Status



Figure 15. Status Bar

11.5 Device Configuration Window

The Device Configuration window is used to view and modify settings for a specific device. Double clicking on a device name in the [Routing](#) view or double-clicking on a device in the [Devices](#) or [Diagnostics](#) views opens the Configuration window. The Configuration Window consists of:

- Device
 - Name
 - Group Name
 - Default Name
 - Entity ID
 - MAC
 - Firmware Version
- Clock Source
 - Sampling Rate
 - Clock Source
- AVB Info
 - Grandmaster ID
 - IEEE 802.1AS Mode (Slave or Master)
 - Propagation Delay
 - Grandmaster Changes
 - IEEE 802.1AS Capability
 - Link up/Link Down Counters
- Talkers/Listeners
 - Name
 - Stream Format
 - Dynamic Mappings

Figure 16. Device Configuration Window

The AVDECC Device Configuration window is divided into several sections:

- Device:** Fields for Name (ASP1), Group Name (ASI), Default Name (Hono AVB Custom 9811 [0E:A]), Entity ID (001CF7FFFF00EAC), MAC (00:1C:F7:00:0E:AC), and Firmware Version (0.1.48-exp9).
- Clock Source:** Sample Rate (48000Hz) and Clock Source (Media Clock Input).
- AVB Info:** Grandmaster ID (000496FFFE8BC93F), Mode (SLAVE), Propagation Delay (75), GM changes (2), asCapable (TRUE), LinkUp (1), and LinkDown (0).
- Talkers:** A table listing output devices and their channel assignments.
- Listeners:** A table listing input devices and their channel assignments.

Talker Name	Format	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Media Clock Output	1-Channel																																
Stream Output 1	8-Channel	1	2	3	4	5	6	7	8																								
Stream Output 2	8-Channel									9	10	11	12	13	14	15	16																
Stream Output 3	2-Channel									3	0																						
Stream Output 4	1-Channel									4																							

Listener Name	Format	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Media Clock Input	1-Channel																																
Stream Input 1	8-Channel	1	2	3	4	5	6	7	8																								
Stream Input 2	8-Channel									9	10	11	12	13	14	15	16																
Stream Input 3	1-Channel									0																							
Stream Input 4	1-Channel									0																							

Buttons: Ok, Cancel

11.5.1 Setting Name options

In the “Device” grouping, you have the option to set a device’s name and group name to make it easier to identify each unit. Enter the name you wish to set and click “Ok” at the bottom of the window or continue on to make other changes as needed.

The screenshot shows a window titled "Device" with two input fields. The "Name:" field contains the text "ASP1" and the "Group Name:" field contains the text "ASI".

Figure 17: Device and Group Names

Talker and Listener names can also be changed in the same manner.

Talkers	
Talker Name	Format
Media Clock Output	1-Channel
Stream Output 1	8-Channel
Stream Output 2	8-Channel
Stream Output 3	2-Channel
Stream Output 4	1-Channel

Figure 18: Talker Names

11.5.2 Setting Sample Rate options

In the “Clock Source” grouping, you will see a drop down box with different options for setting the sampling rate. Select the sampling rate that you wish to set and click “Ok” at the bottom of the window to make the change or continue on to make other changes as needed.

Note that the sampling rate cannot be changed if there is an active connection involving the device. If the drop down box is greyed out, you must close the Device Configuration window, disconnect the connections to that device, and reopen the Device Configuration window before you can continue.

The screenshot shows a window titled "Clock Source" with a "Sample Rate:" label and a dropdown menu currently showing "48000Hz". Below it is a "Clock Source:" label with a list box containing "48000Hz" and "96000Hz".

Figure 19: Sample Rate dropdown

11.5.3 Setting Clock Source options

In the 'Clock Source' grouping, you will see a drop down box with different options for setting the Clock Source. The list of options is read from the AVB device. Both names and options may vary between manufacturers. Choose the option that matches your setup and click it to set. Then click "Ok" at the bottom of the window to make the change or continue on to make other changes as needed.

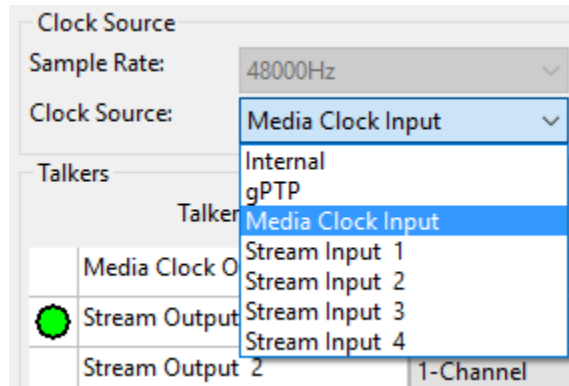


Figure 20: Clock Source dropdown

11.5.4 AVB Audio Routing in Hono AVB Controller

The following section describes how to configure AVB routing and channel mappings with the Device Configuration window

11.5.4.1 AVB Routing concepts and terminology

IEEE 1722.1 mappings are used to define the routing between Audio Clusters and the Listener or Talker streams.

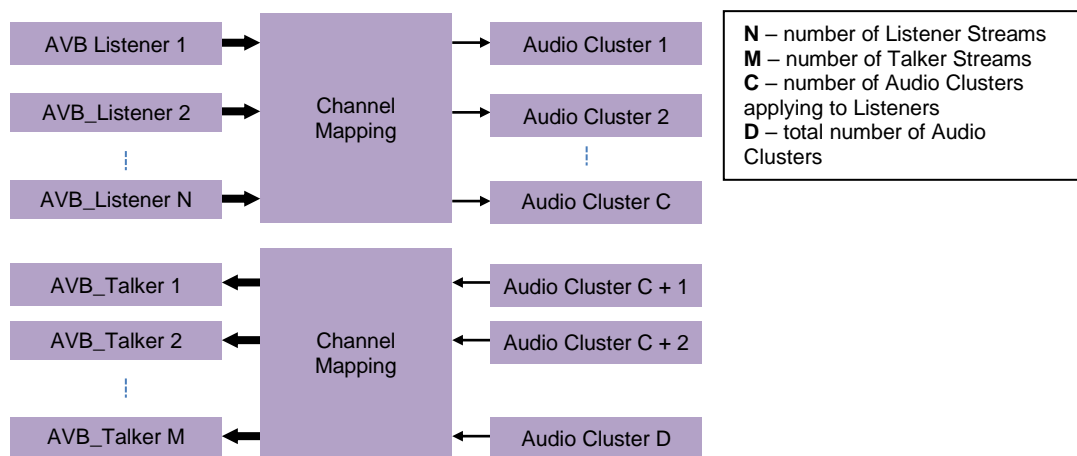


Figure 21: AVB Mappings

IEEE1722.1 Mappings are implemented dynamically or statically. Dynamic mappings can be changed at runtime by Hono AVB Controller via the [Channel Mappings](#) grid. If a device implements static mappings, this portion of the Device Configuration window will be disabled.

The following sections describe how to configure AVB routing and channel mappings for an AudioScience Hono AVB device.

AudioScience mappings route to the embedded mixer in the Hono AVB device. AVB_Audio_In nodes, which are all mono, are used as the mixer audio input nodes for Listeners streams. AVB_Audio_Out nodes, which are all mono, are used as the mixer audio output nodes for Talker streams.

11.5.4.2 Talker Configuration

Talkers	Talker Name	Format	1	2	3	4	5	6	7	8
	Media Clock Output	1-Channel								
<input checked="" type="checkbox"/>	Stream Output 1	1-Channel	1							
	Stream Output 2	1-Channel		2						
<input checked="" type="checkbox"/>	Stream Output 3	1-Channel			3					
	Stream Output 4	1-Channel				4				

Indicates connection status*

These column headings represent each possible channel in a stream.

In this configuration, channel 1 of each Talker is being routed to a different AVB_Audio_Out node. This particular example shows that Talker[4] (Stream Output 4) is routing its first channel to AVB_Audio_Out 4.

Figure 22: Talker Configuration

*Making changes to Stream Formats or Channel Mappings while a stream is connected is not permitted; these options are greyed out in this condition. You will need to disconnect streams before making changes to these settings.

11.5.4.3 Listener Configuration

Listeners		Listener Name	Format	1	2	3	4	5	6	7	8
	Media Clock Input	1-Channel	▼								
	Stream Input 1	1-Channel	▼	1							
	Stream Input 2	1-Channel	▼		2						
	Stream Input 3	1-Channel	▼			3					
	Stream Input 4	1-Channel	▼				4				

Terminology is similar on the Listener side. Here, the first channel of Listeners 1 – 4 are routed to mixer nodes AVB_Audio_In 1 – 4, respectively.

Figure 23: Listener Configuration

11.5.4.4 Setting Stream Format

In the section for either the Talkers or the Listeners (depending on your routing scheme), select the drop down box next to the stream name you are setting the channels for as shown below. You will see options for the channel counts supported. Choose the number that matches the number of channels you will set on the other end of the link.

Note that changes cannot be made if there is an active connection involving the stream. If the drop down box is greyed out, you must close the Device Configuration window, disconnect the connection(s) involving that stream, and then reopen the Device Configuration window before you can continue.

Once you have selected the correct channel count option, you are ready to map the channels in the stream. See [Channel Mapping](#) section.

	Media Clock Output	1-Channel	▼	
	Stream Output 1	1-Channel	▼	1
	Stream Output 2	1-Channel	▼	2
	Stream Output 3	1-Channel	▼	3
	Stream Output 4	1-Channel	▼	4
	Listeners			
	Listener Name			1

1-Channel
2-Channel
4-Channel
8-Channel
16-Channel
24-Channel
32-Channel

Figure 24: Stream Format dropdown

Please note that not all AVB units are capable of using all channels. For example, the AudioScience Hono AVB 4.4M is able to send and receive 8 channel streams, but since it only has 4 physical ins and outs, it can only use a subset of the 8 channels at one time. Allowing the ability to set the stream channel count to 1,2,4, 8 or more channels gives the flexibility to connect to a broad range of other AVB equipment. It's important to be aware that selecting 8 channel streams does not expand the unit's native capabilities; setting a Hono AVB 4.4M stream to 8-Channel mode does not allow it use more than its 4 physical channels, it just allows you to connect to another AVB device that only supports 8-Channel streams.

11.5.4.5 Channel Mapping

Once you've selected the format you wish to use, the mapping section will change to reflect your usable channels. In the example below, Stream Input 1 on a Hono AVB 4.4M has been set to 4-Channel mode. This means that all 4 of the unit's available Listener channels will be received on a single stream from the Talker. Note how the channels show 1,2,3,4 for Stream Input 1 and 0 for all other Stream Inputs. This is because we are using all 4 available channels on Stream Input 1 and there are no more channels available.

Listeners		Listener Name	Format	1	2	3	4	5	6	7	8
	Media Clock Input	1-Channel	▼								
	Stream Input 1	4-Channel	▼	1	2	3	4				
	Stream Input 2	1-Channel	▼	0							
	Stream Input 3	1-Channel	▼	0							
	Stream Input 4	1-Channel	▼	0							

Figure 25: Active channel mapping example

Note that the box has been colored green to indicate this is a valid number to use for this type of AVB unit. If you tried to enter an invalid number (in this case 5 or anything higher, because this is a 4 channel AVB unit) then the box would turn red as in the example below.

Listeners		Listener Name	Format	1	2	3	4	5	6	7	8
	Media Clock Input	1-Channel	▼								
	Stream Input 1	4-Channel	▼	1	2	3	4				
	Stream Input 2	1-Channel	▼	5							
	Stream Input 3	1-Channel	▼	0							
	Stream Input 4	1-Channel	▼	0							

Figure 26: Channel mapping error example

Also note that the boxes will auto-fill when you press enter after typing a number, making setup a little easier. Type “1” in the first box and press enter and it will automatically fill in the remaining available channels in order (2,3,4 in this case).


One final note about number entry on the input side: if you subsequently enter the same number in another box, it will remove it from the first entry and replace that one with a 0 because you cannot have the same number in more than one box. This is not the case on the outputs. This follows logically because there is no reason to receive 2 different signals on the same input but there could be situations where you want to transmit the same signal out to 2 different devices.

11.6 Presets

Presets save device configuration and routing settings as device [roles](#) – transferable sets of parameters.

11.6.1 Saving Presets

To save a preset:

1. Click the [Save Preset](#) icon  from the main toolbar or select **File > Save Preset** from the main menu.
2. Select the devices that you wish to include in the preset. Click **All** to select all devices, or **None** to clear all selections. By default, all devices are selected.
3. Select the parameters that you wish to save for the selected devices.
4. Click **Save**.

Note: The Device Name will always be saved.

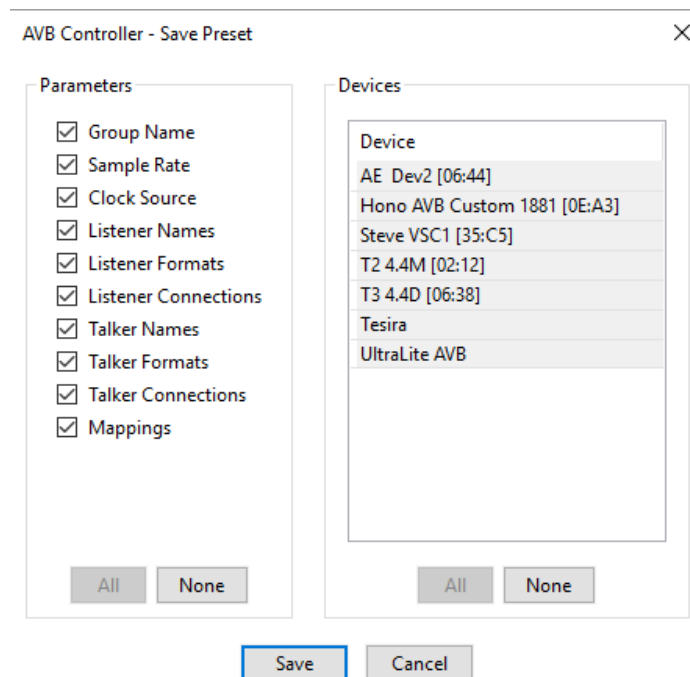



Figure 27. Save Preset Dialog

Presets are saved as an xml file, which can be manually edited if required, using a text editor. The following device parameters can be saved:

- Group Name
- Sampling Rate
- Clock Source
- Listeners Configuration
 - Name
 - Format
 - Connected Talker
- Talkers Configuration
 - Name
 - Format
 - Connected Listeners
- Mappings

11.6.2 Applying Presets

To load a preset, click the [Load Preset](#) icon  from the main toolbar or select **File > Load Preset** from the main menu.

11.6.2.1 Preset Parameters

The Parameters column lists the fields read from the selected xml file. Parameters not saved will appear as disabled. Select the parameters you wish to apply from the preset to the target device(s).

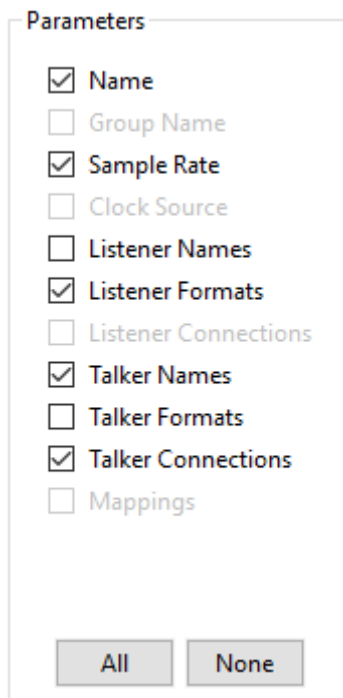


Figure 28. Load Preset Parameters

11.6.2.2 Saved Roles

The Saved Roles column lists the roles that were saved in the preset.

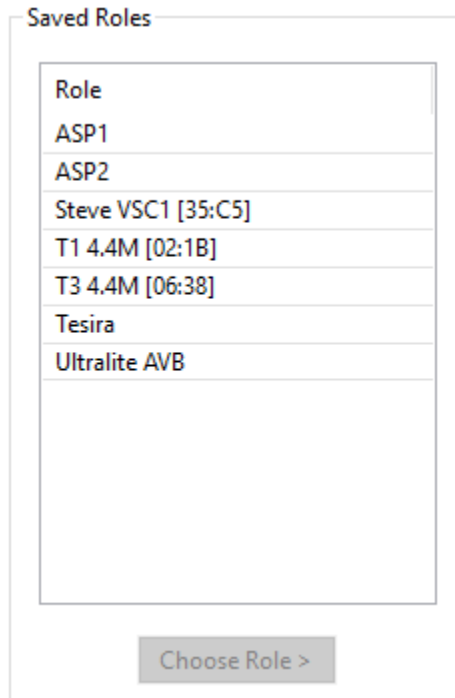


Figure 29. Load Preset Saved Roles

Roles are shown with the device name from which they were saved. You can apply a role to the same physical device from which it was created, or to a different device on the same network, or to another device on a new network. You can apply a role to multiple devices. You cannot apply multiple roles to the same device

When a role is applied to the same physical device, or a device of the exact same model, the configuration and routing should be replicated perfectly. If a role is applied to a different type of device, the success of the assignment will depend on the functionality of the target device.

11.6.2.3 Automatic Assignments

Hono AVB Controller will automatically assign roles to devices, based on the following rules:

- If there is a perfect device match (i.e. the device entity ID on the original network from which the role was created is also found on the target network)
- If there is a device name match (i.e. a device has been swapped out and renamed)

Note that if a physical device match and a device name match are both present on the target network, the role will be automatically assigned to the **physical** match. You can adjust these assignments manually as you wish.

11.6.2.4 Manual Assignments

To manually apply a role to a device:

- Drag the role onto the device, or:
- Select the role in the 'Saved Roles' column and the device(s) in the 'Apply Role' list, and click **Choose Role**.

11.6.2.5 Choose Roles

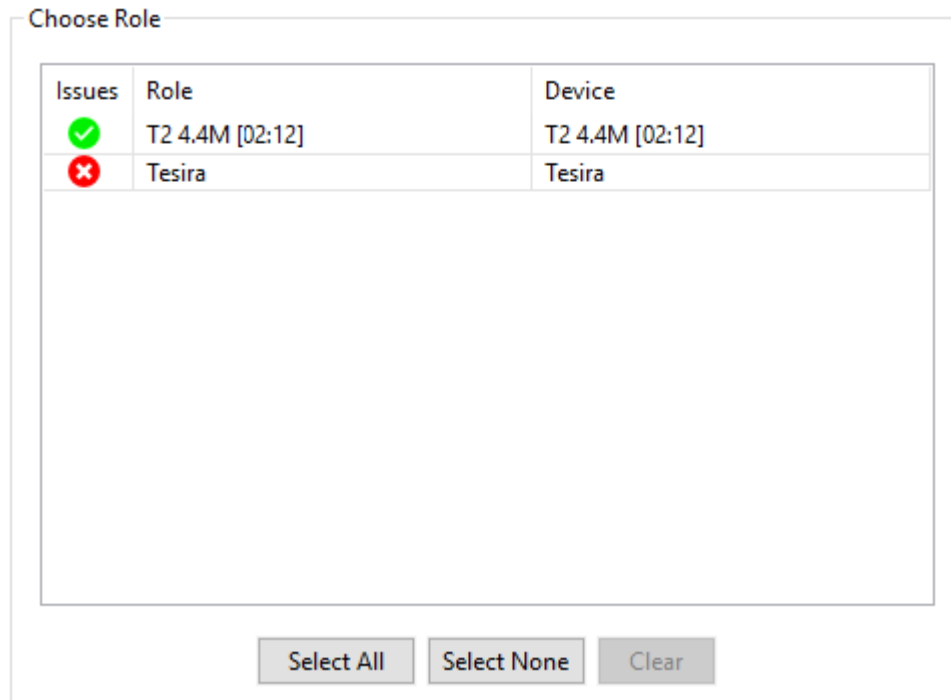


Figure 30. Load Preset Choose Roles

When a role is chosen (manually or automatically), the 'Issues' column will indicate whether there are any conflicts between the saved role and the device configuration: ✔ no issues, or issues ✘.

11.6.2.6 View Issues

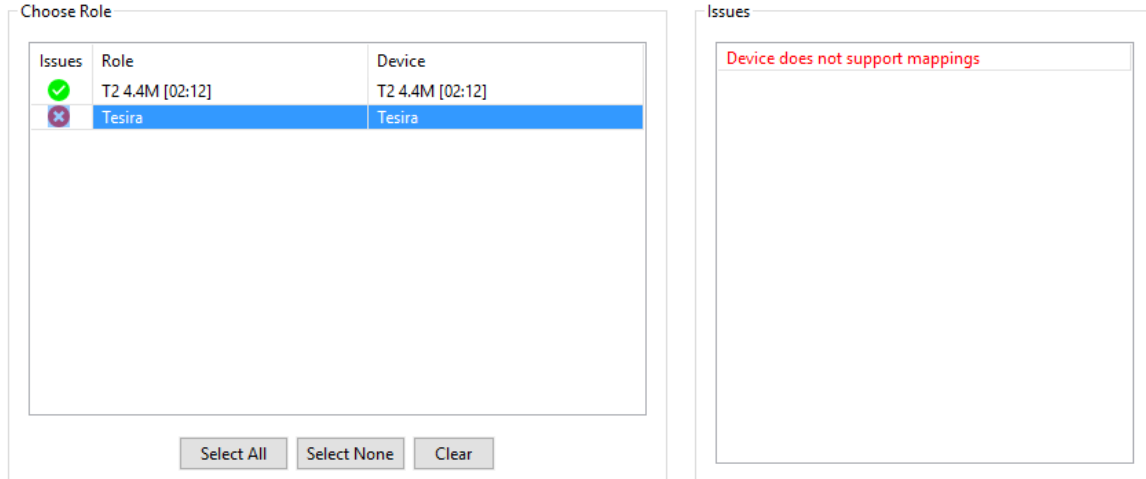


Figure 31. Load Preset View Issues

To view any conflicts a saved role has with a device, select the Role-Device pair from the ‘Apply Role’ list and click **View Issues**.

11.6.2.7 Load Preset Considerations

Note that including the ‘Sample Rate’, ‘Talker/Listener Formats’, or ‘Mappings’ parameters will require the load process to disconnect and reapply connections to that device. If ‘Talker/Listener Connections’ is not selected, the disconnected connections will not be reapplied.

11.6.2.8 Applying the Preset

To apply the preset, click **Ok**. Click **Cancel** to abandon the operation.

11.7 Lock a Device

IEEE1722.1 supports locking a device – preventing other controllers from sending state-altering commands to the device.




To lock a device, right-click on the device in the [Devices View](#) and select **Lock...**

To lock for one minute, click **Lock... > Temporary (1 minute)**

To lock until unlocked again, click **Lock... > Persistent (until unlocked)**

11.7.1 Lock State

The [lock state](#) icon in the Device View has three possible states:

-  : Unlocked
-  : Locked by this controller
-  : Locked by another controller

12 APPENDIX

12.1 IEEE1722.1 Commands

These commands are utilized in Hono AVB Controller v.1.0.x.

All AudioScience AVB devices support these commands. Third-party devices may lack one or more of the following:

Command	Description
ACQUIRE_ENTITY	Used by a Controller to obtain exclusive access to a device (long-term lock). See Lock a Device .
LOCK_ENTITY	Used to provide short-term exclusive access to a device to perform atomic operations. See Lock a Device .
GET_STREAM_INFO	Used to get the current values of the dynamic information of a Stream, such as MSRP accumulated latency, Stream ID, etc.
SET_STREAM_FORMAT	Used to set the format of a Stream. See Setting Stream Format .
SET_NAME	Used to set the value of a name field within a descriptor. See Setting Name .
SET_SAMPLING_RATE	Used to change the sampling rate of an audio unit. See Setting Sampling Rate .
SET_CLOCK_SOURCE	Used to change the Clock Source of a Clock Domain. See Setting Clock Source .
REGISTER_UN SOLICITED_NOTIFICATION	Used to indicate to a device that Hono AVB Controller wishes to receive unsolicited response notifications. If this command is not supported by a device, state-altering changes made by another Controller will not be recognized by Hono AVB Controller during runtime.
DEREGISTER_UN SOLICITED_NOTIFICATION	Used to remove Hono AVB Controller from receiving unsolicited response notifications from a device.
GET_AVB_INFO	Used to get the dynamic AVB information for an AVB interface, such as the gPTP grandmaster id, propagation delay, etc.
GET_COUNTERS	Used to get performance variables and diagnostics counters from a device.
GET_AUDIO_MAP	Used to fetch the dynamic mapping between the Audio Clusters and the Listeners or Talkers. See Mappings .
ADD_AUDIO_MAPPINGS	Used to add mapping entries to the dynamic mappings between the Audio Clusters and the Listeners or Talkers. See Channel Mapping .
REMOVE_AUDIO_MAPPINGS	Used to remove mapping entries to the dynamic mappings between the Audio Clusters and the Listeners or Talkers. See Channel Mapping .