

# User Guide

## Avalon User Guide



Part Number: PUB-00022 Revision A

July 20, 2026

## Document reference

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Avalon

Part Number: PUB-00022 Revision A

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# 1 Introduction

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This chapter topic provides an overview of the Avalon. It contains the following sections:

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## 1.1 Avalon IP

The Avalon is designed to provide the same capabilities of the Arcadia platform in an **all IP-focused form factor**, enabling deployment in environments where traditional physical I/O is not required.

It delivers the same intercom functionality, software environment, and configuration model as Arcadia, while removing most physical interfaces. The result is a device that is functionally aligned with Arcadia but **optimised for network-based workflows**.

**Note:** *The Avalon does not have physical I/O, so these will not be visible in the Avalon CCM.*

# 2

## Installing

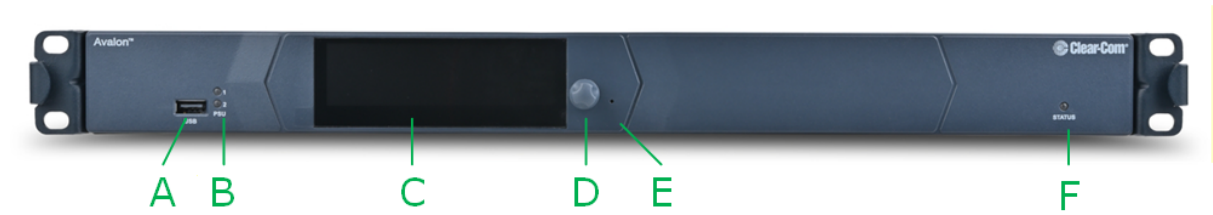
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## 2.1 Front Panel Avalon



Delete this text and replace it with your own content.

| Item | Description                                                                                                                                                                                                                      |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A    | USB A connector<br>Use to: <ul style="list-style-type: none"><li>• Register beltpacks</li><li>• Upgrade the Avalon</li><li>• Save/Restore system settings</li><li>• Obtain detailed logs for diagnostic purposes</li></ul>       |
| B    | Power Input LEDs                                                                                                                                                                                                                 |
| C    | Device menu display                                                                                                                                                                                                              |
| D    | Rotary Encoder. Use to navigate through the menu system                                                                                                                                                                          |
| E    | Pin reset. Pin reset causes the device to power cycle (reboot)                                                                                                                                                                   |
| F    | Status light:<br>Dim green - device initialising or booting<br>Slow green flash (2 Hz) - there are warning(s) on the device<br>Fast green flash (4 Hz) - there are error(s) on the device<br>Steady green - all OK on the device |

## 2.2 Rear Panel Avalon



| Item | Description                                                                                                                                                         |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A    | Internal power connector. Mains power lead with internal power supply                                                                                               |
| B    | External power supply connector. <b>CAUTION:</b> Before using, see <a href="#">System Power on page 11</a>                                                          |
| C    | Grounding screw                                                                                                                                                     |
| D    | Device serial number                                                                                                                                                |
| E    | RJ45 LAN connectors. Assignable to Management (HelixNet/I.V. Port), Dante primary, Dante secondary, AES67 for FreeSpeak IP transceivers                             |
| F    | SFP cage for optional fiber or RJ45 LAN modules. Assignable to Management (HelixNet/I.V. Port), Dante primary, Dante secondary, AES67 for FreeSpeak IP transceivers |

## 2.3 System Power

Avalon features dual power inputs:

- Mains power connector (IEC) internal power supply
- DC connector. External AC/DC power adapter (12V DC, 12A)

Both power inputs can be connected in parallel for redundancy.

### 2.3.1 Using the External DC Power Connector

**CAUTION: YOU MUST CONNECT THE EXTERNAL DC POWER SUPPLY IN THE ORDER DESCRIBED AND ILLUSTRATED BELOW:**

**1.** Connect the external power supply 12V cable connector (A) to the rear chassis 12V input connector of the Station.

**Note:** When connecting the power cable, be sure to push until the connector locks into the device.

**2.** Connect External Power Supply mains cord (B) to the AC input source.

Station (rear, left-side)



Mains connector





## 2.4 Device Allocation

Device Allocation allows you to give up HelixNet channels for additional I.V. Direct or panel ports in a configuration.

- This feature is expected to be used primarily during the initial setup, as it includes significant changes to the system and a device reboot

| Allocation         | HelixNet Channels | I.V. Panels/Directs |
|--------------------|-------------------|---------------------|
| <b>1 (default)</b> | <b>24</b>         | <b>40</b>           |
| 2                  | 12                | 48                  |
| 3                  | 6                 | 56                  |
| 4                  | 0                 | 64                  |

The screenshot shows the Clear-Com web interface. The top navigation bar includes 'HARDWARE', 'CONFIGURATION', and 'STATUS' with a warning icon. The 'CONFIGURATION' tab is active, and the 'Host' sub-tab is selected. On the left, a sidebar for host 'ff30451d' shows details: NAME (ff30451d), TYPE (Avalon), IP ADDRESS (10.50.17.178), CONNECTIONS (DANTE, FSE, FSIC, FSII, HELIXNET, I.V. Direct, LQ, V-Series IrisX), LICENSED PORTS (64), VERSION NUMBER (4.4.83.1), and POWER STATUS (plugged in). The main content area shows the 'Device Allocation' tab for host 'ff30451d'. It includes a description: 'Provides the ability to redeploy the device hardware resources for Licensed Port use. Changes require a reboot.' Below this is a table with columns: Active, Label, HelixNet Channels, and I.V. Panels/Directs. The table lists four allocations: Allocation 1 (Active, 24 channels, 40 panels), Allocation 2 (12 channels, 48 panels), Allocation 3 (6 channels, 56 panels), and Allocation 4 (0 channels, 64 panels). An 'Apply' button is at the bottom right.

| Active | Label        | HelixNet Channels | I.V. Panels/Directs |
|--------|--------------|-------------------|---------------------|
| ✓      | Allocation 1 | 24                | 40                  |
|        | Allocation 2 | 12                | 48                  |
|        | Allocation 3 | 6                 | 56                  |
|        | Allocation 4 | 0                 | 64                  |

To configure Device Allocation see: [Configuring Device Allocation on page 36](#)

## 3

## Configuring from the Front Panel

---

Press the rotary controller to open the menu. Scroll through the menu items, then press the controller to select an item or confirm a change.

The following information and configuration options are available from the front panel menu:

### 3.0.1 Administration

- **Default CCM password.** Always visible so you cannot lock yourself out of the system
- **Avalon management/admin IP address.** Use this address to reach the configuration tool (CCM)
- **Reboot.** Power cycles the system
- **Reset to Default.** Restores the system factory settings. When you reset the system from the front panel menu, network settings are also reset. When you reset the system from CCM, network settings are not reset
- **Reset the CCM Password.** Resets the CCM password to the default password shown at the top of the menu screen.

# 4      System Examples

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This chapter topic contains examples of typical applications. It contains the following sections:

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## 4.1 Avalon with FreeSpeak Edge IP Transceivers

This setup has a total of 6 FS Edge transceivers with 16 beltacks. The transceivers are connected via a network that is configured for AES67 traffic. These are configured using the CCM. There are four channels and a Dante network.

**Note:** *The Dante network must be on a different VLAN or network from the IP transceivers.*

**Note:** *The AES67 network must be set up correctly for the IP transceivers in order to meet the needs of Clear-Com IP transceivers for high levels of PTP accuracy.*

See the *AoIP Network Recommendations* guide, available from the [Clear-Com FSII Knowledge Center](#).

FS Edge 5 GHz  
beltacks x 16

Register at the  
Base or in the  
CCM



**Note:** This setup assumes a dedicated network switch for the Avalon, transceivers and CCM.

**Note:** You cannot configure the IP transceiver network (AES67) and Dante to the same network port.

FS Edge 5 GHz  
TCVRs x 6



**1 GB  
Managed  
Network  
Switch**

**LAN 1**  
Management (CCM)  
and AES67



**LAN 2**  
Dante

1. You will need to use the **Discovery** feature in the CCM to add IP transceivers to your system.

2. You will need to configure Dante feeds in the Audinate Dante Controller before these can be added to channels in the CCM.

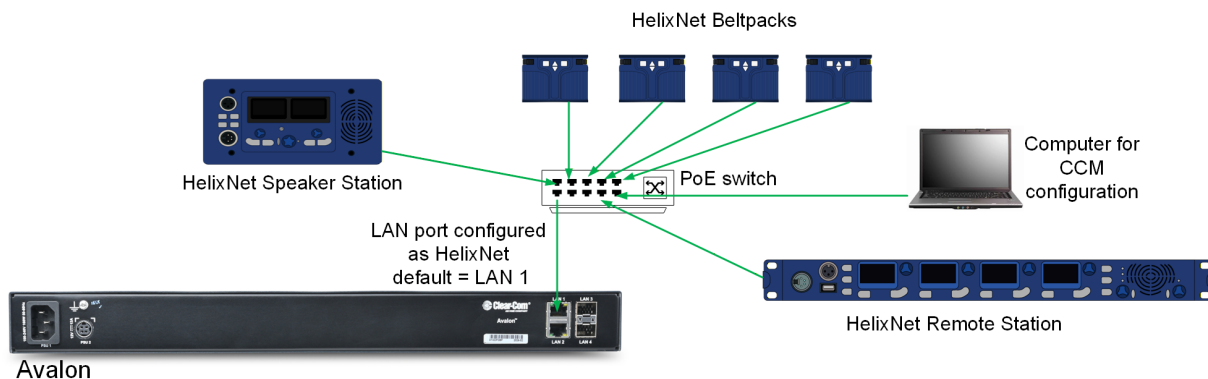
Key

Cat5e/6a Shielded  
Ethernet cable  
23/24 AWG  
(max 100m)

### 4.1.1 Outline of General Setup and Configuration

- For network setup, see [Network Setup for IP Transceivers on page 88](#).
- To access the CCM, see [The Core Configuration Manager \(CCM\) on page 22](#).
- To add IP transceivers to your system, see [Using FreeSpeak Wireless Intercom on page 86](#).
- For information on the connection process for IP transceivers, see the Quick Start Guides (QSGs) for FS Edge IP transceivers available from the [FreeSpeak Edge Knowledge Center](#).
- For information about connecting to Dante, see:  
[Using Dante Systems on page 139](#).
- For information about Channels see: [Managing Channels on page 45](#).

## 4.2 Avalon as HelixNet System Host



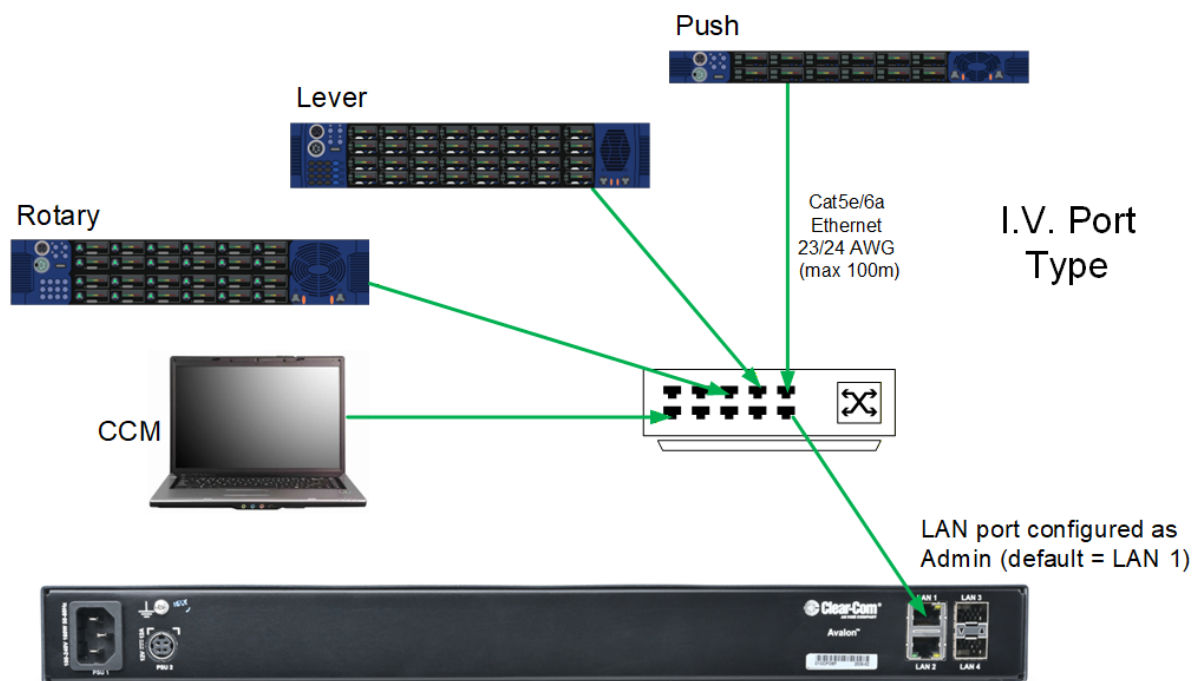
Up to:

- 24 HelixNet enabled channels (subject to licensed ports and device allocation)
- 128 HelixNet user stations

For information on how to configure this set up see [Using HelixNet Wired Partyline Intercom on page 98](#).

## 4.3 Avalon with V-Series Panels (I.V. Port)

V-Series, V-Series Iris & IrisX Panels



For information on how to configure this set up see [Connecting Keypanels via I.V. Ports on page 116](#)

## 4.4 Avalon using LQ as Interface Expansion (I.V. Direct)

I.V. Direct connections enable various workflows:

- Interface expansion via LQ
  - 2-Wire and 4-Wire
  - 2-way radio
  - SIP
  - Agent-IC and Station-IC
  - LAN/WAN/Internet

### Remote Partyline (Encore) to Avalon



### Radio to Avalon



### Agent-IC to Avalon



For configuration examples see [Using I.V. Direct on page 123](#)

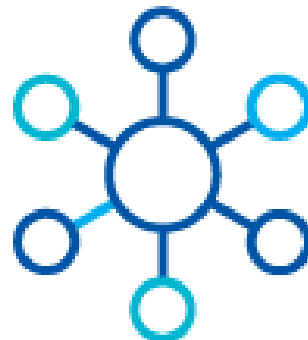
## 5 Workflows

Avalon's Essential feature set includes various configuration options to provide users with effective intercom workflows.

Combined with the ability to have various keys on the intercom user stations, Avalon Essential gives you tools to increase the power and efficiency of your teams.

### 5.1 Channels for Teams

- Channels support team collaboration where everyone hears everyone
- Use a main channel for announcements and sub-channels for focused collaboration



You may have a team of people working on a project. Partyline channels enable everyone to talk and be heard by any member of the channel without restrictions. Channels are a mainstay of Clear-Com intercom systems.

For example, a Main / Production partyline is established for everyone to convey important announcements. Then, additional sub-channels are created for sections of the team who collaborate on different topics. Creating and assigning sub-channels minimizes chatter on the main channel and enables collaboration on team topics and tasks.

### 5.2 Directs for Private Conversations

- Directs support 1:1 communication between team members
- If the call recipient does not have a direct key, they can respond using a reply key



In some cases, the ability to have a private conversation with a team member is needed. With a direct talk key, you can contact someone directly, whether the call recipient has a key to you or not (in which case, they can respond with the reply key).



## 5.3 Groups for Announcements with a Private Talk Back

- Groups allow announcements or general requests to multiple users
- If someone responds, the conversation automatically becomes private for follow-up



A variation of directs are groups, which allow direct talk to the assigned users of the group at the press of a button. Responding to a group call automatically becomes a private conversation.

## 5.4 IFB for Interrupting/Ducking

- IFB (Interruptible Foldback) overrides background audio to deliver critical instructions clearly. IFB are commonly used in broadcast and paging environments
- IFB are for switching between awareness monitoring and one-way instructions with clarity and priority



This communication system workflow is commonly used in broadcast. For example, on-air talent hears program- or monitoring audio input until someone talks to them, interrupting the program or monitoring audio to get the talent's undivided attention. This same workflow is also common in paging systems whether it is in the lobby of the theater or a supermarket where background music feeds the paging zone and ducks during a page. In theatre, a performer can be given an ongoing clear guide track which ducks when receiving instructions from a stage manager.

## 5.5 Roles

- Roles are used to assign keysets to intercom user stations, defining their function and simplifying setup. Roles can be made for specific users (for example, John) or their operational roles (for example, Cameras)



You are provided with role templates, but these can be created, edited and cloned to suit your team needs.

## 6

## The Core Configuration Manager (CCM)

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This chapter contains the following sections:

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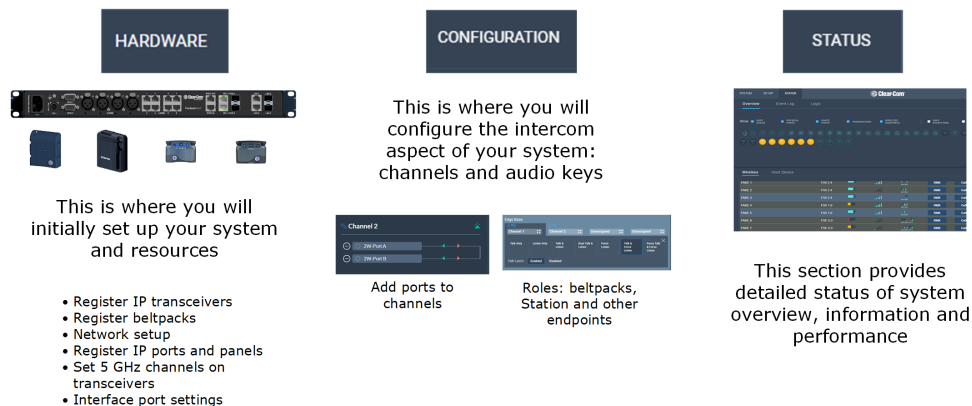
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## 6.1 CCM Introduction

The CCM is an easy-to-use browser-based software tool with intuitive menus that enable you to quickly set up, configure and edit your system. It provides an overview of all the system components and interfaces. It is password protected and suitable for use in light sensitive environments.

The graphic shows an Arcadia unit, but is applicable to Avalon and Arcadia.

At-a-glance guide to using the Core Configuration Manager (CCM)



### 6.1.1 CCM Configuration and Information Icons

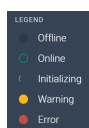
Pencil 

Click to label this device

Cog 

Click to go to configuration options

Status legend



Click on the icon for status information

The CCM makes use of context sensitive navigation to help with troubleshooting and configuring specific devices. For example, from a beltpack in the **Resources** page, click the cog icon to go to role configuration for this beltpack.

Hover over an icon, it will enlarge if it is clickable.

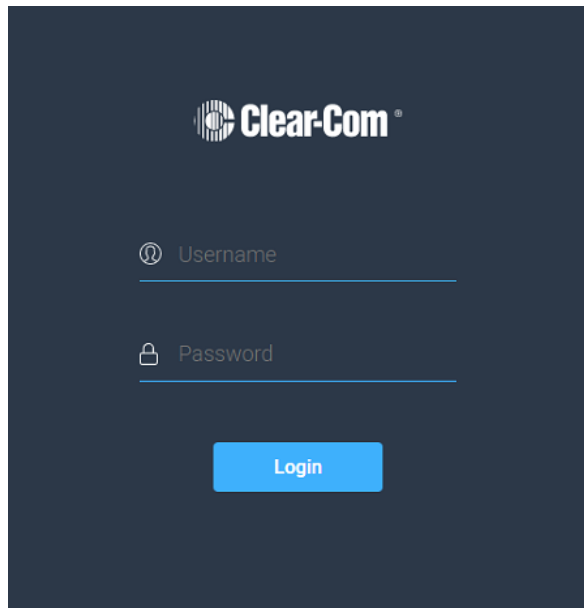
## 6.1.2 Compatible Internet Browsers

You can access the CCM using the following internet browsers:

- Chrome
- Safari
- Firefox
- Microsoft Edge

### 6.1.3 Accessing the CCM

1. Make sure that the Avalon is connected to a network using the LAN connector that is configured for management (Default LAN 1) on the rear panel of the device
2. Open a supported internet browser on a desktop that is connected to the same network as the Avalon.
3. In the browser address field, enter the IP address of the Avalon. You can find this from the front panel menus. The login screen appears:



If you enter an incorrect user name or password, an error message appears and you are prompted to re-enter your user credentials.

4. Enter the username and password, and then click **Login**.

The default values are:

- username: **admin**
- password: find the default password in the front panel menu system

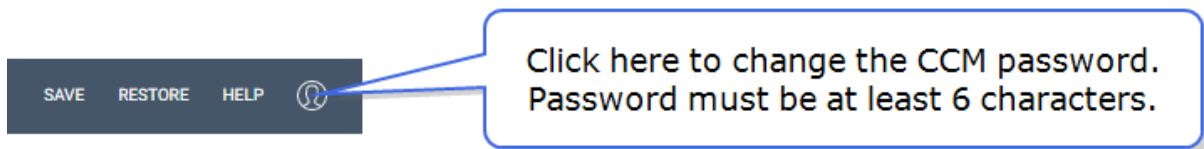
**Note:** *The username and password are case sensitive.*

The CCM **Hardware** page opens.

**Note:** *On first opening the CCM, the **Hardware** page opens. On subsequent occasions, the **Status** page opens.*

## 6.2 Changing the CCM Password

Change the password to one of your own choosing in the top right corner of the navigation bar.

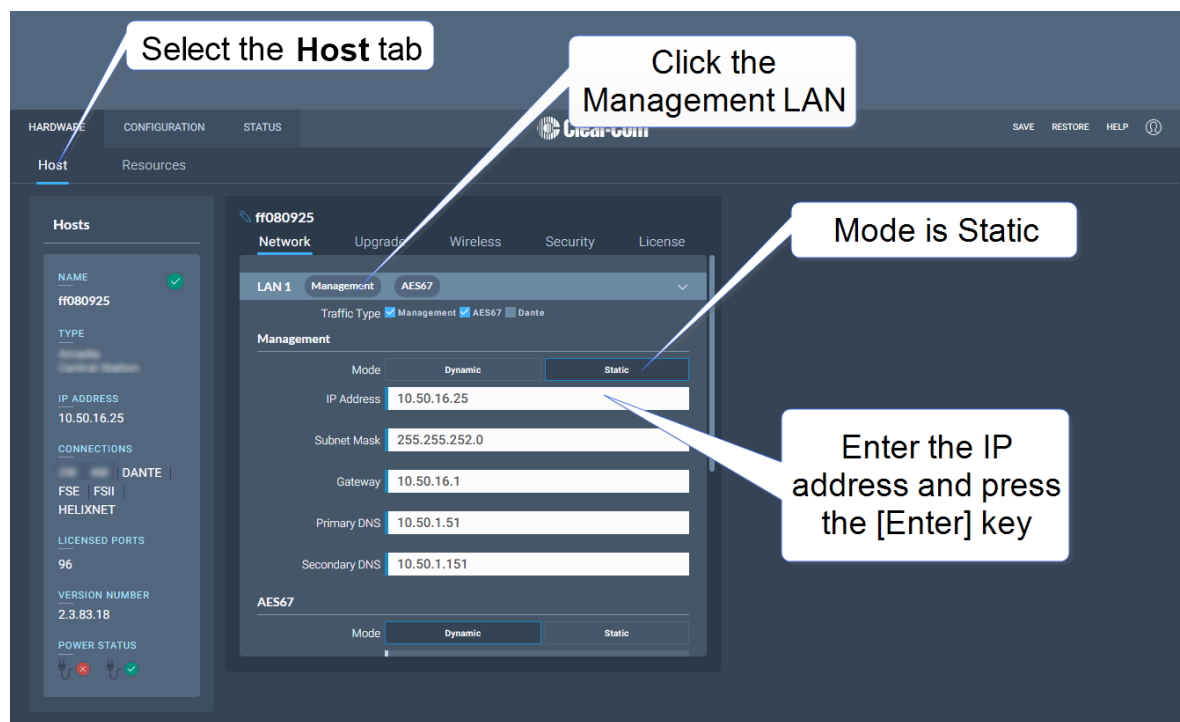


**Note:** You can reset your password to the default at any time from the Avalon front panel menus.

## 6.3 Setting the Management IP from the CCM

To access the CCM, input the Management IP address into a browser. Find the management IP address of the Avalon in the front panel menu system: **Menu>Networking>Management**.

1. In the CCM, navigate to **Hardware >Host**.
2. In the Network tab, click **Management**.
3. Select **Static**.
4. Enter the required IP address and press the [Enter] key.



5. For more information, see: [LAN Configuration Rules on page 30](#).

## 6.4 Saving and Restoring System Configuration

Clear-Com recommends that you make a backup of your system configuration using the Save option that is available in the CCM and the front panel menu system.

## 6.4.1 Saving System Configuration in the CCM

The **Save** and **Restore** options are available in the CCM top navigation bar.



When you click **Save**, all system configuration; channels, roles and network details are saved to a file (.cca) on your computer.

## 6.4.2 Restoring System Configuration

Your system configuration can be restored to the Avalon at any time using the **Restore** button in the CCM and also from the front panel menu system.

On restore, the saved configuration is reapplied to the Avalon. The following aspects of the configuration are optionally restored:

- Network settings (IP addresses)
- Over The Air system ID.

You do not get these options when restoring by USB directly to the Avalon. If you want to restore system settings taken from different Stations, you must use the CCM Restore option, as restoring directly from the Avalon in this situation would restore network and OTA system ID and IP and could cause wireless ID conflicts.

## 6.5 Resetting to Default

Your Avalon can be reset to default settings either from the front panel menus or from the Core Configuration Manager (CCM).

**Note:** *When you use a pin reset on front the front of the Avalon the device power cycles (reboots).*

### 6.5.1 Resetting to Default from the CCM

1. In the CCM, navigate to **Status > Overview > Host Device**.
2. Select **Reset to Default**.
3. From the confirmation dialog box, click **Reset to Default**.
4. The device will reset to factory defaults and reboot.

When resetting to default from the CCM, network settings are not reset, and the password is also not reset. This is not the case when resetting to default from the front panel menus.

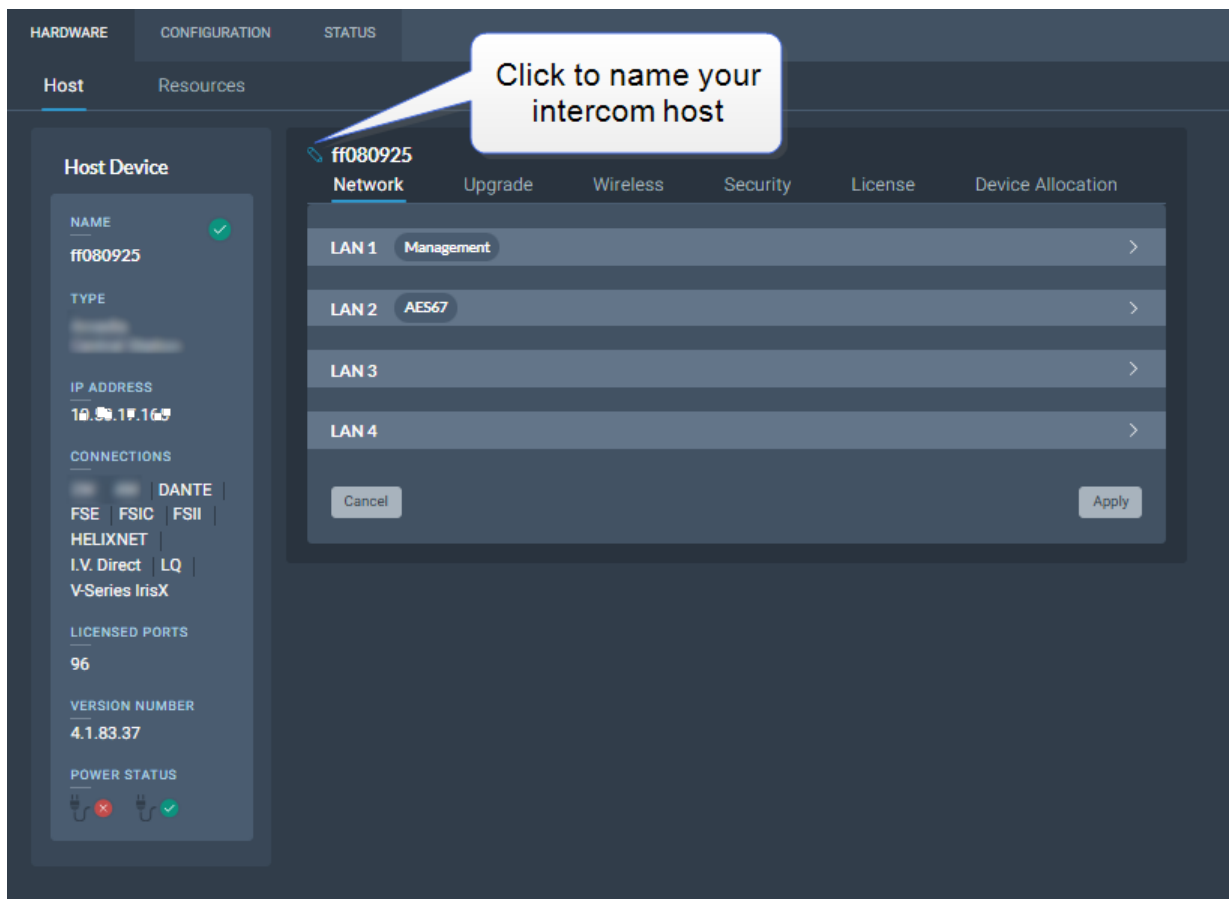
## 6.6 Hardware Page Overview

The Hardware page of the CCM is where you set up your system. It has two pages:

- The Hosts page where you can set up your Avalon Central Station settings. See [Host Page on page 28](#)
- The Resources page where you can set up and configure the intercom resources that are connected to your central station. See [Resources on page 37](#)

## 6.7 Host Page

To configure the Avalon, settings, navigate to **Hardware > Host**.



Here you can:

- Configure the network
- Upgrade the Avalon and connected resources



- Change the following wireless beltpack system settings:
  - Beltpack administration pin numbers
  - FS Edge wireless region (important for system compliance)
  - FSII battery type, if you are not using the supplied Li-ion batteries you may use Alkaline or NiMH type batteries
- Configure security settings

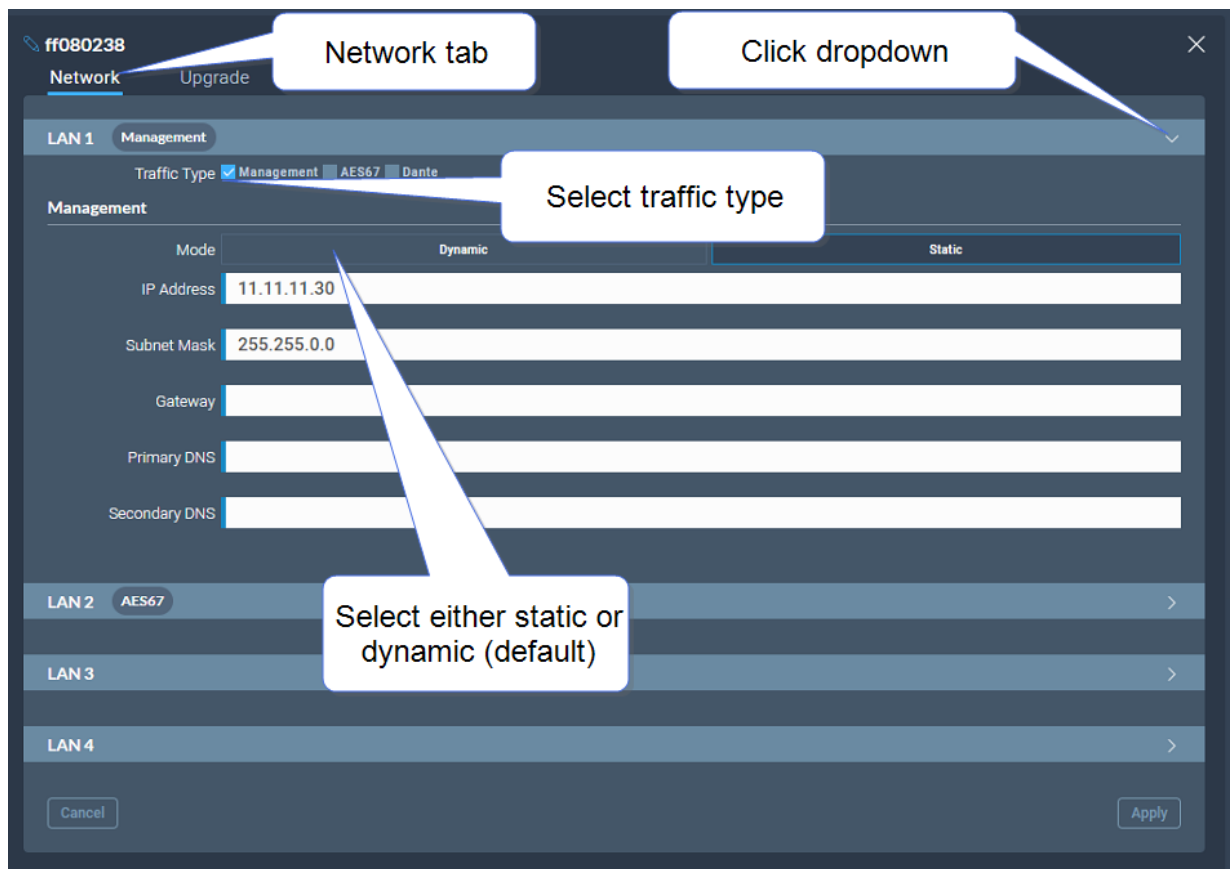
Click the pencil icon  to name your Avalon .

## 6.8 Configuring the Network

Your Avalon Station has 4 LAN ports. Click on a dropdown arrow to configure network traffic and details for each port.

After changing the network configuration, you must click **Apply** or [Enter] key.

For information see: [LAN Configuration Rules on page 30](#).



The screenshot shows the 'Network' configuration window for device 'ff080238'. The 'Network' tab is selected, and the 'LAN 1' configuration is active. Callouts highlight the following elements:

- Network tab:** Points to the 'Network' tab in the top navigation bar.
- Click dropdown:** Points to a dropdown arrow in the top right corner of the configuration window.
- Select traffic type:** Points to the 'Traffic Type' section, which includes checkboxes for 'Management' (selected), 'AES67', and 'Dante'.
- Select either static or dynamic (default):** Points to the 'Mode' section, which has radio buttons for 'Dynamic' (selected) and 'Static'.

Below the mode selection, there are input fields for IP Address (11.11.11.30), Subnet Mask (255.255.0.0), Gateway, Primary DNS, and Secondary DNS. At the bottom, there are 'Cancel' and 'Apply' buttons.

## 6.8.1 LAN Configuration Rules

**Note:** *Do not plug any two LAN ports into the same LAN or VLAN. This can create a network loop affecting IP stability.*

**Note:** *Configuring/changing the AES67 IP address will cause the Avalon to reboot.*

### AES67 Rules

- AES67 should not be on the same subnet as Management unless on the same LAN port
- AES67 cannot be on the same LAN port as DANTE primary or secondary

**Note:** *Clear-Com recommends that you configure AES67 port on the Station to a Static IP address if there is no third-party DHCP server on the network.*

### IP Rules

- The IP addresses cannot be in the reserved range: 10.0.0.0-10.0.0.7
  - The subnet mask may cause an overlap with the reserved range
- The IP addresses cannot be in the LQ tunnel range 172.23.xxx.xxx
- The IP addresses cannot be in the localhost range 127.xxx.xxx.xxx
- The IP addresses cannot be in the multicast range 224.xxx.xxx.xxx-239.xxx.xxx.xxx

### Static IP Rules

- The static IP addresses cannot be in link local range: 169.254.xxx.xxx

**Note:** *Clear-Com recommends that you configure AES67 port on the Station to a Static IP address if there is no third-party DHCP server on the network.*

### Dante Rules

- Dante primary and secondary cannot be on the same LAN port (rear connector)

### Management Rules

- You cannot disable the Management LAN.

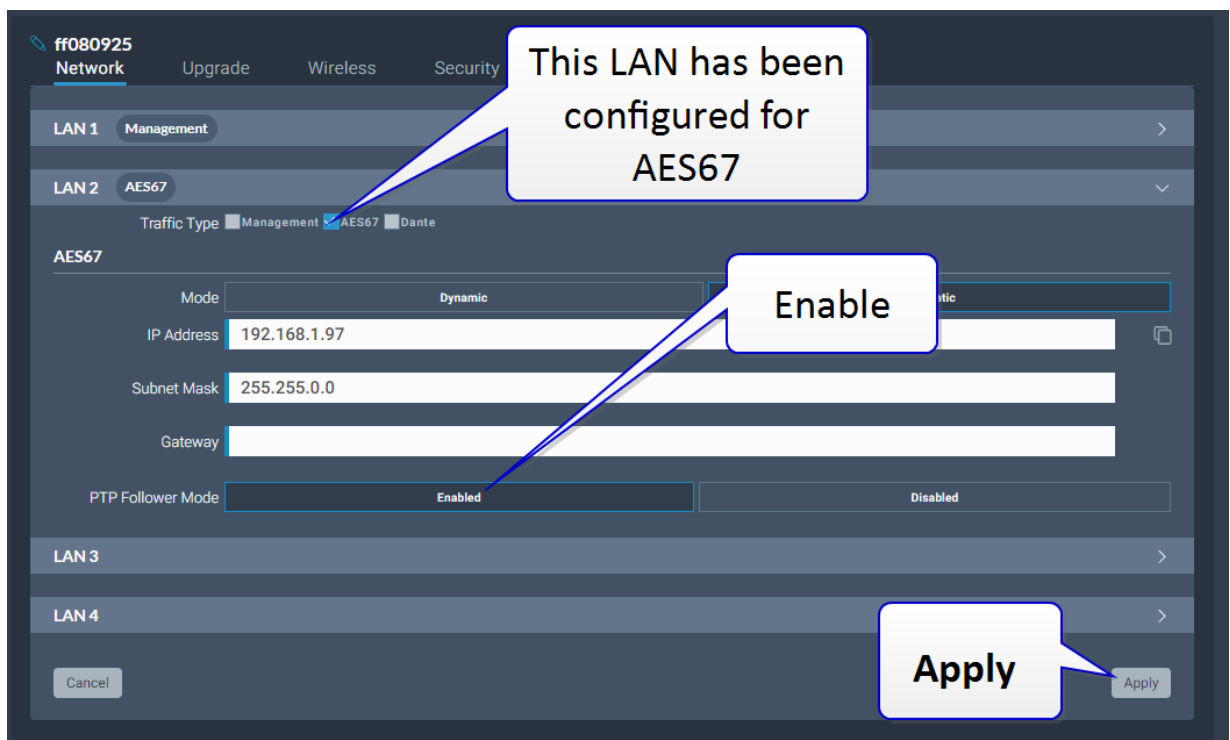
## 6.8.2 AES67 Network - PTP Follower Configuration

### PTP Follower Mode

- **Enabled:** The intercom station is set as PTP Follower
- **Disabled** (default setting): The intercom station is set as PTP Reference, unless there is a PTP Reference on the network with a priority higher than 127

Setting the PTP clocking status of your intercom stations

1. In the CCM, navigate to : **Hardware > Host > Network**[select the LAN that has been configured for AES67] > **PTP Follower Mode**
2. Select **Enabled**
3. Click **Apply**



The system will warn you that there must be a Reference clock on your network. While the clock is synchronizing (or if there is no PTP Reference clock on your network) you will see **Status FREERUN** in the device **Stats** tab. When the clocks are synchronized, you will see **Status LOCKED**.

In the CCM navigate to : **Status > Overview > Host Device > Stats:**

For information and history, also look in the event log: **Status > Event Log.**

## 6.8.3 Avalon PTP Settings

QoS tags

- Clock: DSCP=46, Expedited Forwarding (EF)
- Media: DSCP=41, Assured Forwarding (AF)
- Management : DSCP=0, Best Effort (DF)

#### PTP parameters

- PTP domain: 0
- Clock Priority 1 & 2: 127
- Announce interval: 1/2s
- Sync rate: 8/s

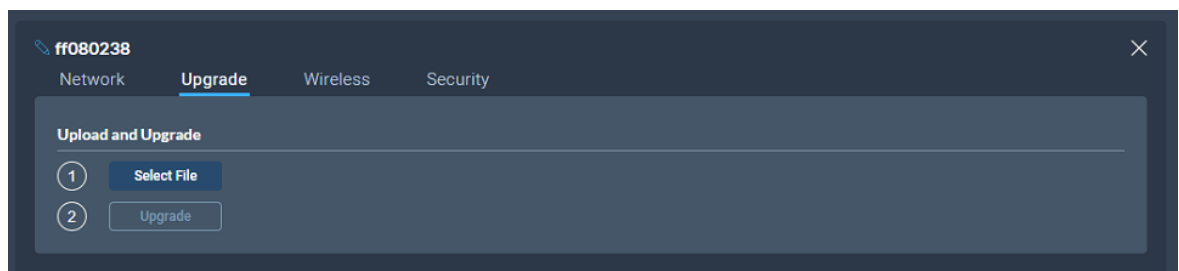
#### Media Profile

- AES67 Media Profile

## 6.9 Upgrading

To upgrade the Avalon and connected resources:

1. Select the **Upgrade** tab.
2. **Select File** then navigate to where the upgrade file is stored on your computer.
3. Select the file and when the **Upgrade** button lights, click it. This begins the upgrade process.



**Note:** *Avalon validates firmware versions to internal hardware. In some instances, Avalon and its components cannot be downgraded. In these instances use a newer firmware version.*

### 6.9.1 Upgrading using the CCM

1. In the CCM, navigate to **Hardware > Hosts > Upgrade**.
2. Press **Select File** and select the file containing the updated firmware.
3. When the file is uploaded, the **Upgrade** button will be enabled.
4. Press the **Upgrade** button.

5. The upgrade process will start and the Avalon will reboot before being available again.
6. The new version of the firmware will be displayed in the **Hosts** panel.

## 6.10 Setting Up the Wireless Beltpack System

Select the **Wireless** tab.

**ff080925**

Network Upgrade **Wireless** Security License Device Allocation

**General**

Administration PIN **1111**

System ID **925**

BP Role List Sorting **Role Number** ▼

**FreeSpeak Edge**

Edge Wireless Region **US** ▼

Excluded Channel(s) **Unassigned** ▼

**FreeSpeak Icon & FreeSpeak II**

Splitter/Transceiver 1 **RJ45** ▼

Splitter/Transceiver 2 **RJ45** ▼

Audio RF Filter **Enabled** **Disabled**

AA Battery Type **Alkaline** ▼

Over The Air (OTA) PIN **0000**

From the Wireless tab, you can set or view the following System and Station settings.

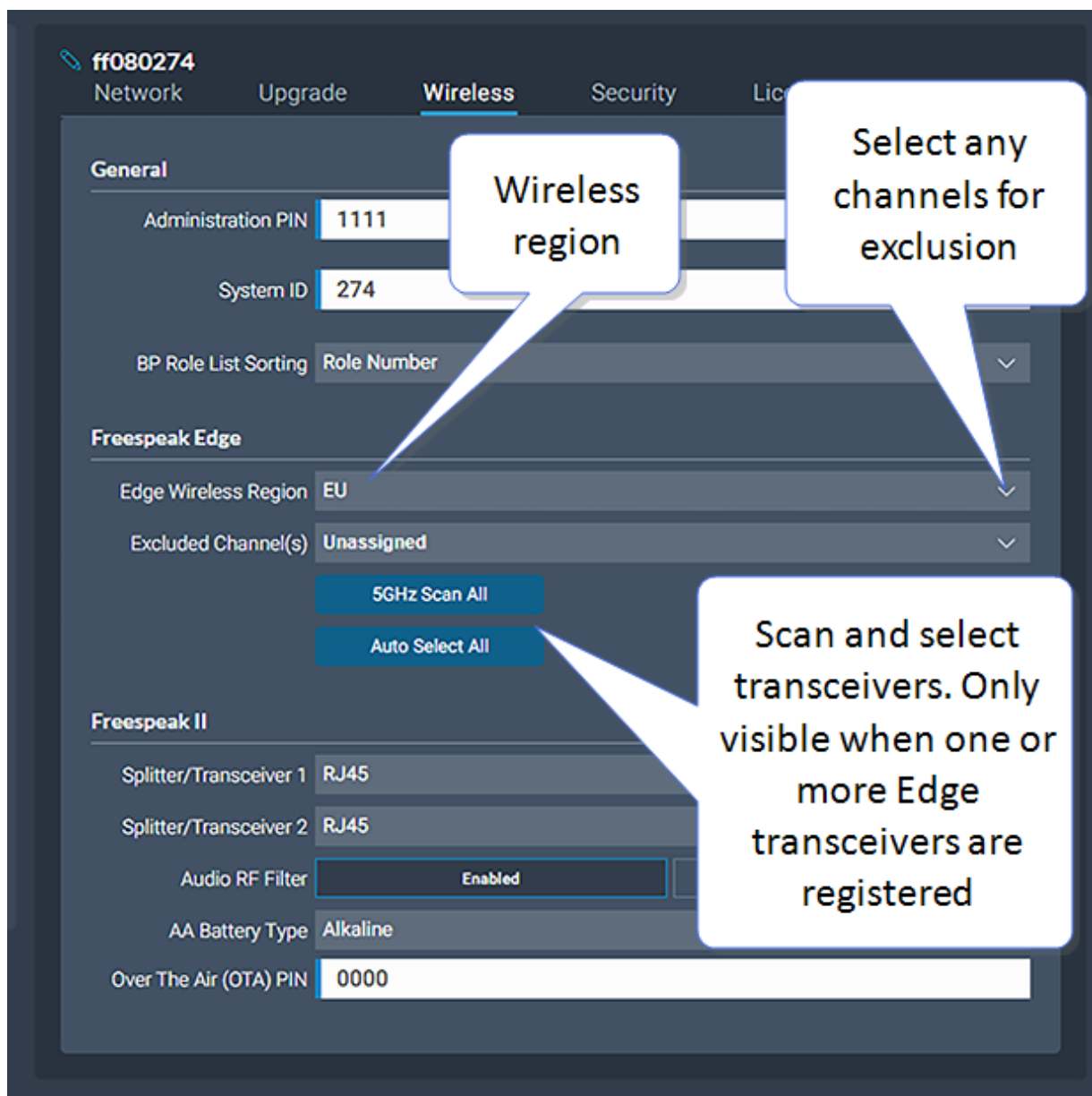
### 6.10.1 System

- The administration pin for local admin to access locked configuration menus on wireless beltpacks and keypanels
- System ID. This is used to differentiate this system's RF signals from those of other systems

- Beltpack role list sorting:
  - Role number
  - Alphabetical

## 6.10.2 FreeSpeak Edge

- The wireless region for your FreeSpeak Edge beltpacks. The region set here **MUST** match the hard-coded setting on your Edge transceiver or the system will not work. You will see an error flag in the **Status** page if the regions do not match. Please contact your Clear-Com representative if you have any difficulties with this.
- Select from a list of 5 GHz channels that you can exclude and prevent transceivers from using
- Scan all transceivers. Use this feature to scan the local 5 GHz RF space. All available channels will be scanned, and traffic reported. Each transceiver will be scanned and the system will report on the RF performance of selected channels. To view results of the scan and adjust channels, navigate to: **Hardware > Resources > Transceivers > [select a transceiver to view] > Wireless Channels**



### 6.10.3 FreeSpeak II and FreeSpeak Icon

- AA Battery type. You can choose not to use the Li-ion batteries supplied with the belt packs, in which case you must specify battery type here. Choose between:
  - Alkaline (AA) batteries (default setting)
  - NiMH batteries for use in settings where air pressure is an issue (for instance on an underwater site).
- The OTA pin you need for over-the-air (OTA) registration of your FreeSpeak II and FreeSpeak Icon belt packs.

## 6.11 Configuring Device Allocation

The screenshot shows the Clear-Com web interface. The top navigation bar includes 'HARDWARE', 'CONFIGURATION', and 'STATUS' with a warning icon. The 'CONFIGURATION' tab is active, and the 'Host' sub-tab is selected. On the left, a sidebar for 'Host Device ff30451d' displays details: NAME (ff30451d), TYPE (Avalon), IP ADDRESS (10.50.17.178), CONNECTIONS (DANTE, FSE, FSIC, FSII, HELIXNET, I.V. Direct, LQ, V-Series IrisX), LICENSED PORTS (64), VERSION NUMBER (4.4.83.1), and POWER STATUS (plugged in). The main area shows the 'Device Allocation' tab for host ff30451d. It includes a description: 'Provides the ability to redeploy the device hardware resources for Licensed Port use. Changes require a reboot.' Below this is a table with four columns: Active, Label, HelixNet Channels, and I.V. Panels/Directs. The table lists four allocations, with the first one being active (checked). An 'Apply' button is in the bottom right corner of the table area.

| Active | Label        | HelixNet Channels | I.V. Panels/Directs |
|--------|--------------|-------------------|---------------------|
| ✓      | Allocation 1 | 24                | 40                  |
|        | Allocation 2 | 12                | 48                  |
|        | Allocation 3 | 6                 | 56                  |
|        | Allocation 4 | 0                 | 64                  |

For explanation see: [Device Allocation on page 13](#)

### Configuring Device Allocation

1. Navigate to **Hardware > Host > Device Allocation**
2. The **Device Allocation** tab will display the current allocation with a check mark
3. To change the allocation, click on the desired row. This will highlight the row and enable the **Apply** button in the bottom right corner
4. Click **Apply**
5. Clicking **Continue** will apply the new allocation and reboot the device

**Note:** *There can be a delay in showing the reboot pop-up after clicking **Apply** if a large number of HelixNet/I.V.Ports are being removed*



## Decreasing HelixNet Channels

- If you decrease the number of HelixNet Channels, all HelixNet Channels will be disabled. You can re-enable HelixNet capabilities in the necessary channels after reboot, provided you have enough licenses and the allocation limit is not reached

## Decreasing I.V.Ports

- The system will delete the most recently created I.V.Panel/Direct ports.

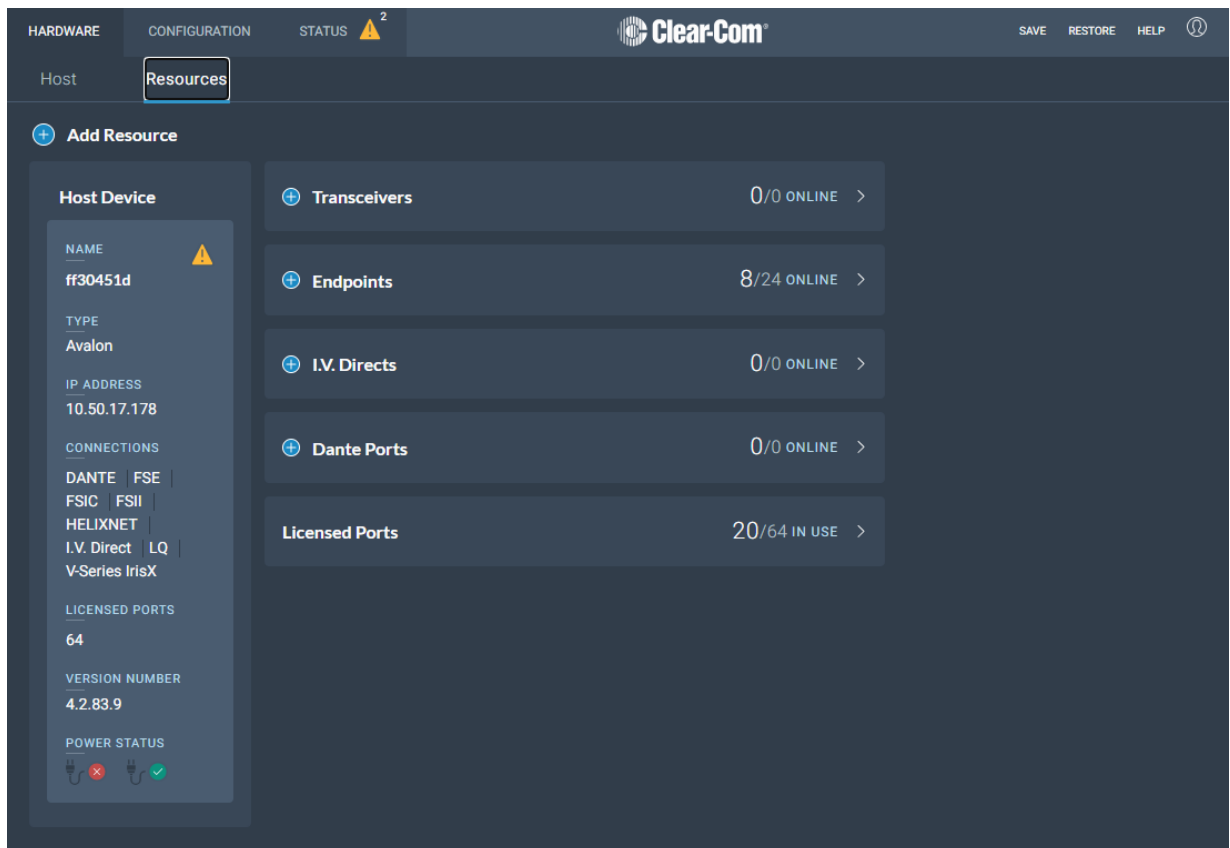
## 6.12 Resources

Click the **Resources** tab to see the resources page. This gives an overview of the hardware and ports that are present. From this page, you can use the **Add Resource** button to:

- View a list of both discovered and registered IP transceivers
- Add/remove any discovered IP transceivers to/from the system
- Register beltpacks to the system
- Edit network settings for any AES67 connected devices
- View a list of both discovered and paired HelixNet devices
- Add/remove any discovered HelixNet devices to/from the system
- View a list of V-Series keypanels with connection status
- Add/remove keypanels
- Enable/disable licensed ports (keypanels and I.V. Directs). If a port license is disabled, the port will remain in your configuration but you will not be able to connect to it and it will not consume one of your licensed port capacity. Port licenses are disabled to conserve license capacity.
- View a list of configured I.V. Directs, with connection status
- Add/remove I.V. Directs
- Create Dante ports
- Allocate **Licensed Ports** for use with different connection types: **Any, Dante, Wireless, I.V. Ports, AES67 Keypanels, HelixNet**. This allows you to keep track of how you are using the licensed port capacity that you have, and avoid being unable to connect due to lack of available port capacity.

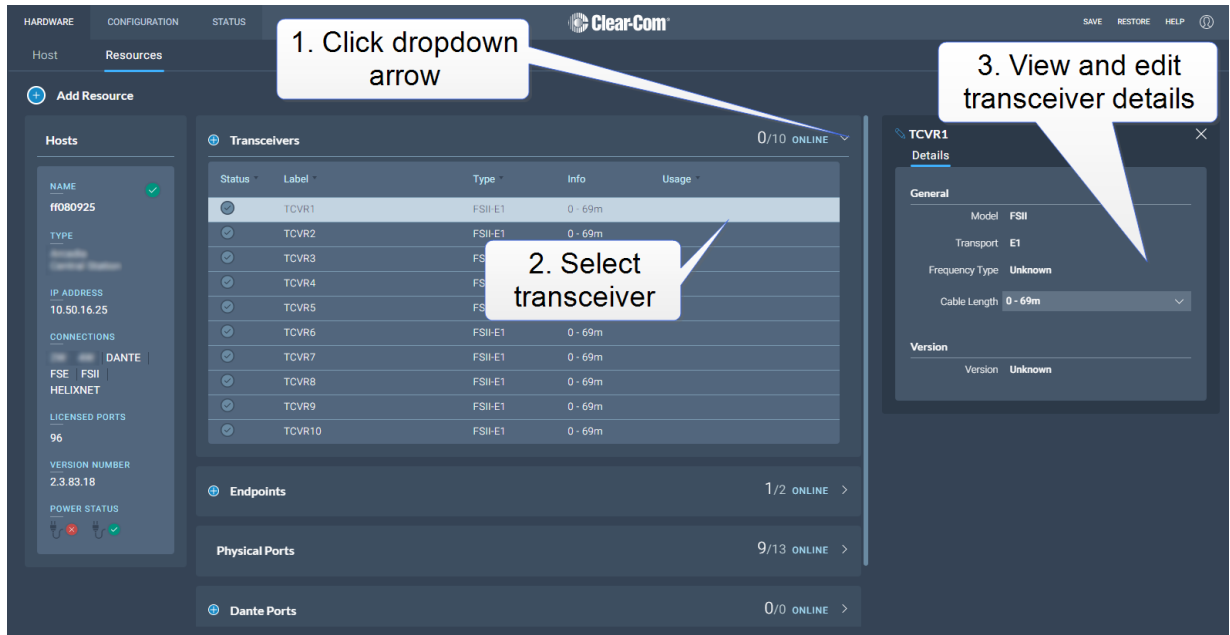
## 6.12.1 Configuring System Resources

- Transceivers
- Endpoints
- I.V. Ports
- Dante ports
- Licensed ports



### Transceivers

Click the dropdown arrow to see transceivers connected to your system. Select a transceiver to configure it or view details.

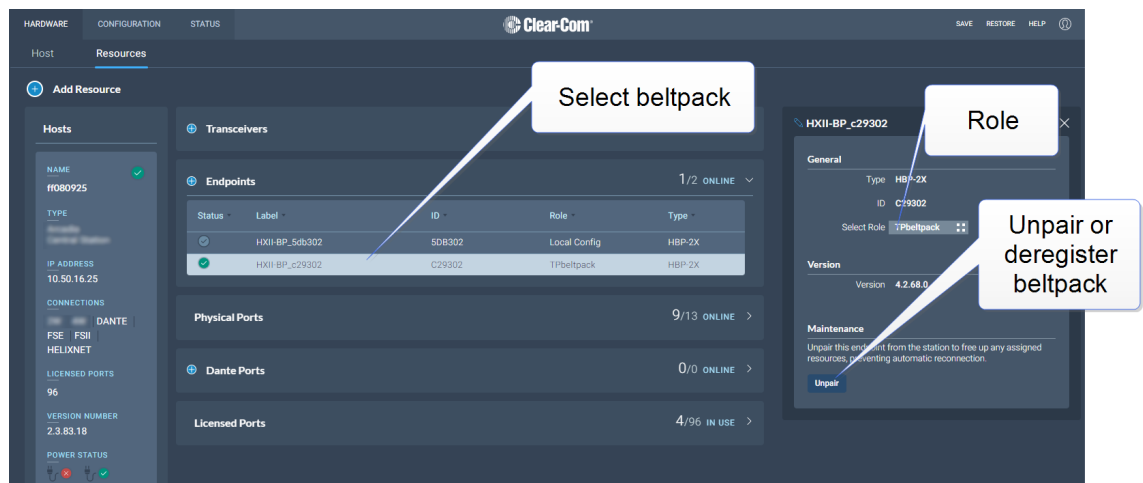


For IP transceivers you will also set networks details in this page. For Edge transceivers you will configure channels and conduct a local area RF scan and set channels automatically for each transceiver.

## Endpoints

If you click the down arrow in the **Endpoints** section of the screen you will see a list of connected Endpoints (FreeSpeak and HelixNet beltpacks, HelixNet remote and speaker stations, V-Series keypanels). Select an Endpoint to show configuration details such as:

- Fix/unfix a role. If a role is fixed to a beltpack, the user cannot select from a list of roles on powering on the beltpack.
- Reboot some devices.
- Unregister (FreeSpeak) or unpair (HelixNet) a beltpack from the system.



## I.V. Ports

Physical ports shown on this image are not available on Avalon.

Click the dropdown to see I.V. connections (Directs or keypanels) configured on your Avalon. Select a port to configure it or view details.

The screenshot shows the Clear-Com Avalon interface. On the left is a sidebar with 'Host Device' information. The main panel has sections for 'Transceivers', 'Endpoints', 'Physical Ports', 'I.V. Ports', 'Dante Ports', and 'Licensed Ports'. The 'I.V. Ports' section is expanded, showing a table with columns: Status, Label, User ID, Function, Associated Endpoint, and Channel Assignment. A dropdown arrow is visible next to the 'I.V. Ports' section header. A callout '1. Click dropdown arrow' points to this arrow. Another callout '2. Select port' points to a row in the table. A 'Matrix Settings' dialog box is open on the right, with tabs for 'Matrix Settings' and 'Credentials'. Callouts 'Settings' and 'Connection Credentials' point to these tabs respectively.

For more information, see [Configure I.V. Direct in the Avalon CCM on page 130](#) or [Adding an I.V. Keypanel in the CCM on page 116](#)

## Error messages - I.V. Ports

Click or hover on the red cross to see error messages

The screenshot shows the 'I.V. Direct' configuration table. The table has columns: Status, Label, User ID, Password, Signaling, and Channel Assignment. There are three rows. The first two rows have a red cross icon in the Status column. A callout 'Click or hover' points to the first red cross. A tooltip message 'Local endpoint application cleared call' is displayed over the second row. The third row has a checkmark in the Status column.

In the event of a connection failure you will see the following error messages:

| Message                                                                                        | Reasons for closing the connection                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Local endpoint application cleared call</i><br>The local device has closed a connection     | The License was removed on the local side (Avalon) for an active I.V. Direct connection<br>The username and password were changed on the local side (Avalon) for an active I.V. Direct connection<br>There are no free licenses for I.V. Direct ports on the local side                                                                                           |
| <i>Remote endpoint application cleared call</i><br>The remote device has closed the connection | The username and password were changed on the remote side (LQ/Avalon/EHX) for an active connection<br>The License was removed on the remote side (LQ/Avalon/EHX) for an active connection<br>The I.V. Direct port was disabled on the remote side (LQ/Avalon/EHX) for an active connection<br>There are no free licenses for I.V. Direct ports on the remote side |
| <i>Call failed a security check and was ended</i>                                              | The username or password is wrong                                                                                                                                                                                                                                                                                                                                 |

## Dante Ports

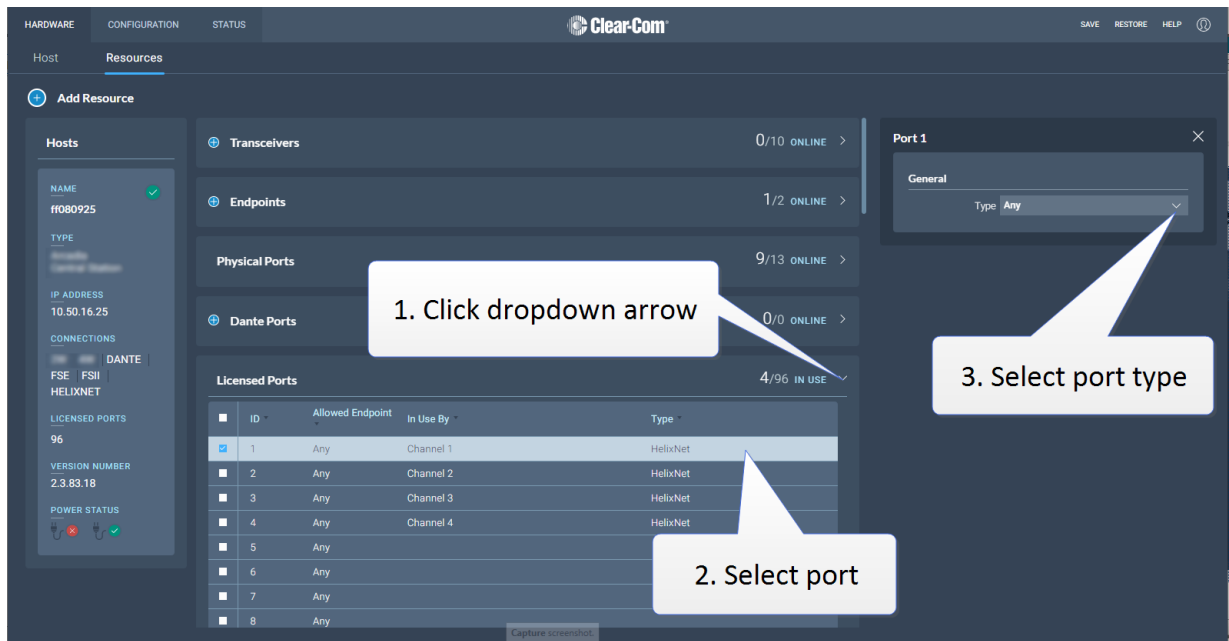
Click the dropdown arrow to see the Dante connections on your Avalon. Select a port to configure it or view details.

## Licensed ports

This section allows you to see and keep track of port licenses and how you are using them in your system. For example, if you know that you must have 14 wireless backpacks connected, you can allocate 14 ports as 'Wireless' here. If you try to connect a device that you do not have a port type allocated for, the connection will be refused. Select use type for ports:

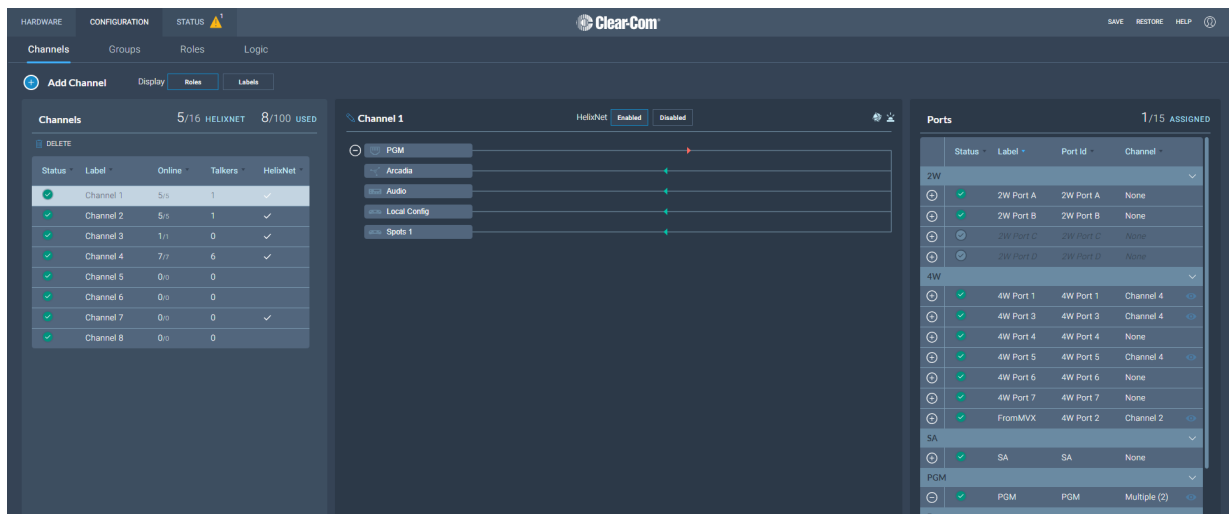
- Any (**default setting**) - in this case, any connection type is possible
- Dante
- Wireless
- I.V. Port
- AES67 Keypanel Port
- HelixNet

**Note:** Physical ports, shown on this image, are not available on Avalon.



## 6.13 Configuration Overview

**Note:** 2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.



The **Configuration** page of the CCM is where you configure the intercom routing aspects of your system (add audio to channels and set up talk and call keys for beltacks). It consists of four areas:

- Channels
- Roles

- Groups
- Logic (GPIOs)

The **Configuration** page enables you to:

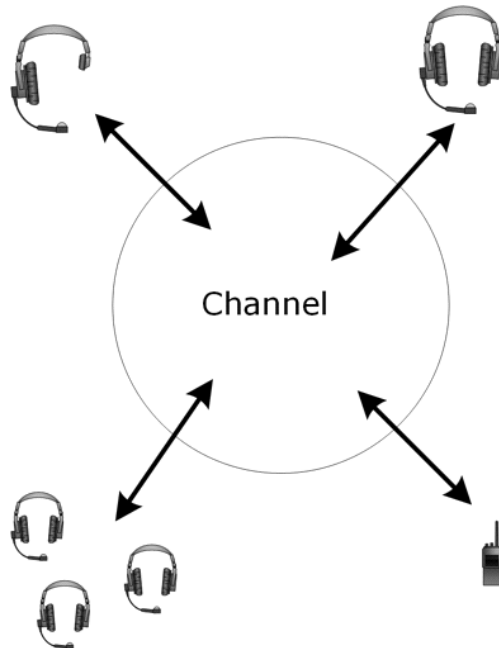
- View existing channels and add new channels
- Add ports to channels
- View existing groups and add new groups
- View and edit roles for user stations
- View and edit General Purpose Inputs (GPIs) and General Purpose Outputs (GPOs)

## 6.14 Channels and Groups

Channels and groups are both essentially digital containers for audio sources, allowing communication between members.

### 6.14.1 Channels

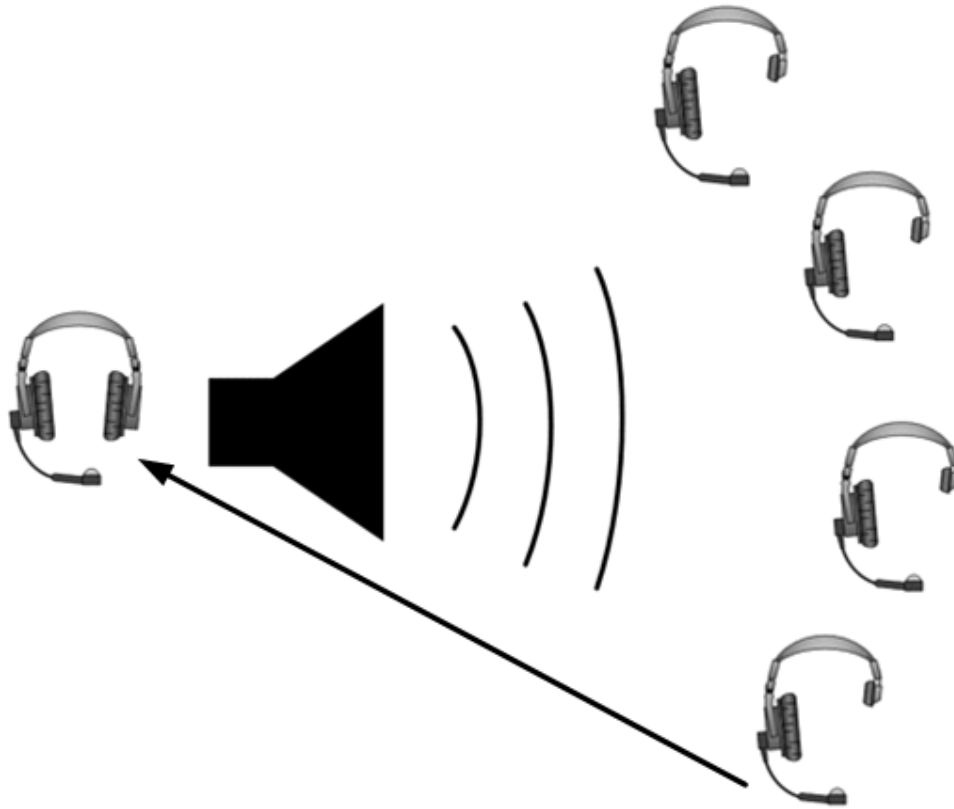
A Channel operates as an intercom Partyline or conference. All members can talk to and listen to all other members, as long as they have keys to do so.



The default key behavior setting for a wireless beltpack in a Channel is **Talk and Forced Listen**. For more information, see **Key Behavior**.

## 6.14.2 Groups

A Group configuration enables an announcement or broadcast to a number of members at the same time.



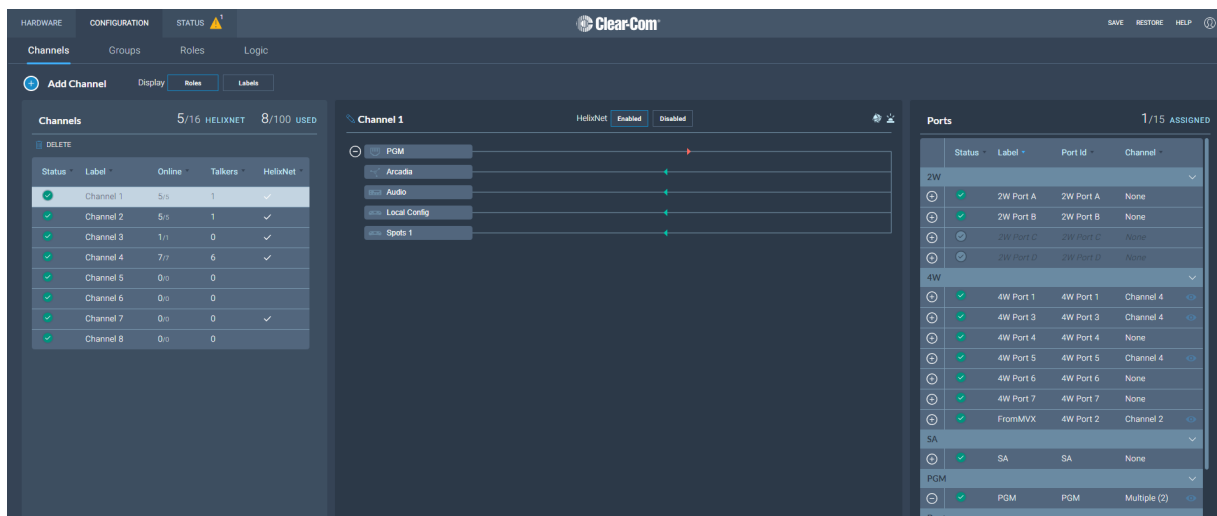
A group member can reply directly to the announcer using the **Reply** key. The other group members will not hear this.

To set up a group, you must first put the members in the Group. Then, when the members are in the Group, you can set up a key or keys to talk to it.

## 6.15 Channels

**Note:** *2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.*





The Channels page enables you to view channels and add ports to channels. Audio keys are added to channels in the **Roles** page. The center panel on this screen shows the live state of audio routing.

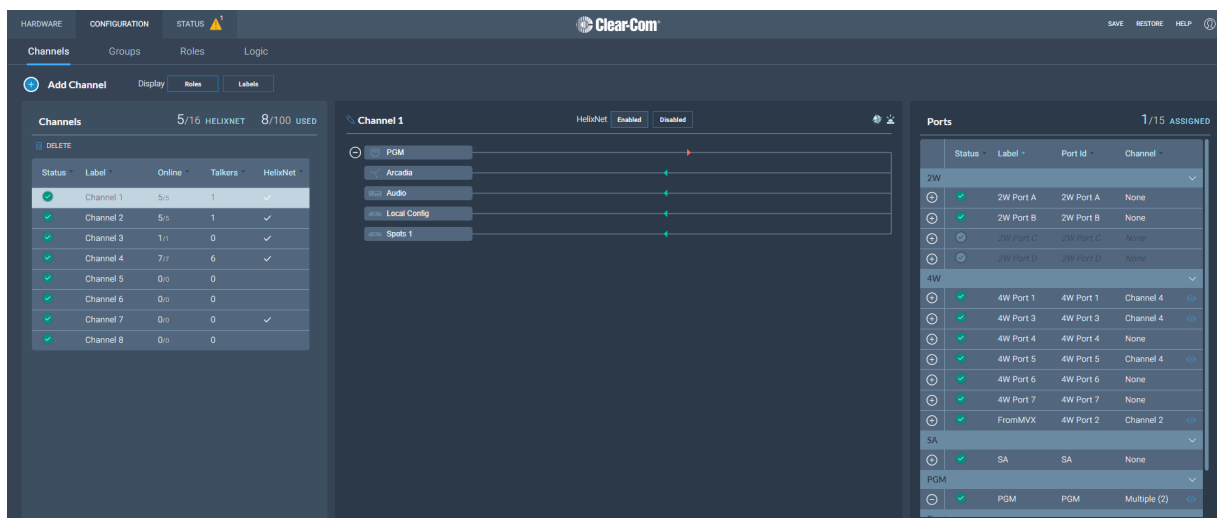
## 6.15.1 Managing Channels

From the **Channels** tab, you can:

- View existing channels and add or remove new channels.
- View existing ports, and add or remove ports from the channel.

To access the **Channels** screen, navigate to **Configuration > Channels**. The Channels screen appears.

**Note:** *2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.*



## Viewing Information About a Channel

When you open the **Channels** screen, the left-hand panel displays a list of all the channels that are currently present. The following information is displayed for each channel.

The screenshot shows the 'Channels' screen with a table of channels. Callouts provide the following information:

- Click this icon to delete a channel:** Points to the three-dot menu icon in the top left of the table.
- A green tick mark indicates that all configured ports are connected:** Points to the green checkmark in the 'Status' column for Channel 1.
- This indicates how many users are talking on this channel:** Points to the 'Talkers' column for Channel 1.
- The channel count indicates that eight out of a maximum of 100 channels:** Points to the '8/100 USED' text in the top right.
- This is a label for the channel:** Points to the 'Name' column for Channel 1.
- This indicates how many configured ports are connected:** Points to the 'Online' column for Channel 1.

| Status | Id | Name      | Online | Talkers |
|--------|----|-----------|--------|---------|
| ✓      | 1  | Channel 1 | 2/2    | 1       |
| ✓      | 2  | Channel 2 | 0/0    | 0       |
| ✓      | 3  | Channel 3 | 0/0    | 0       |
| ✓      | 4  | Channel 4 | 0/0    | 0       |
| ✓      | 5  | Channel 5 | 0/0    | 0       |
| ✓      | 6  | Channel 6 | 0/0    | 0       |
| ✓      | 7  | Channel 7 | 0/0    | 0       |

### Status

A green tick mark indicates that all the ports that are configured for the channel are connected. Otherwise, a warning triangle is shown.

### Name

This field contains a label that enables you to identify the channel.

**Note:** A label can contain up to 10 characters. You can edit this label from the center panel.

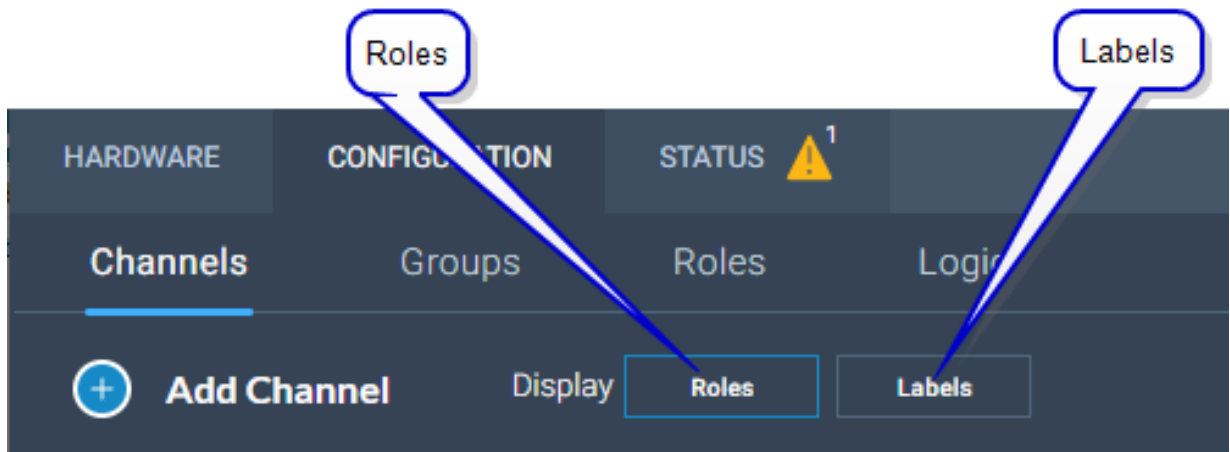
### Online

This indicates how many of the total channel members are online.

### Talkers

This indicates how many members have active talk routes on this channel.

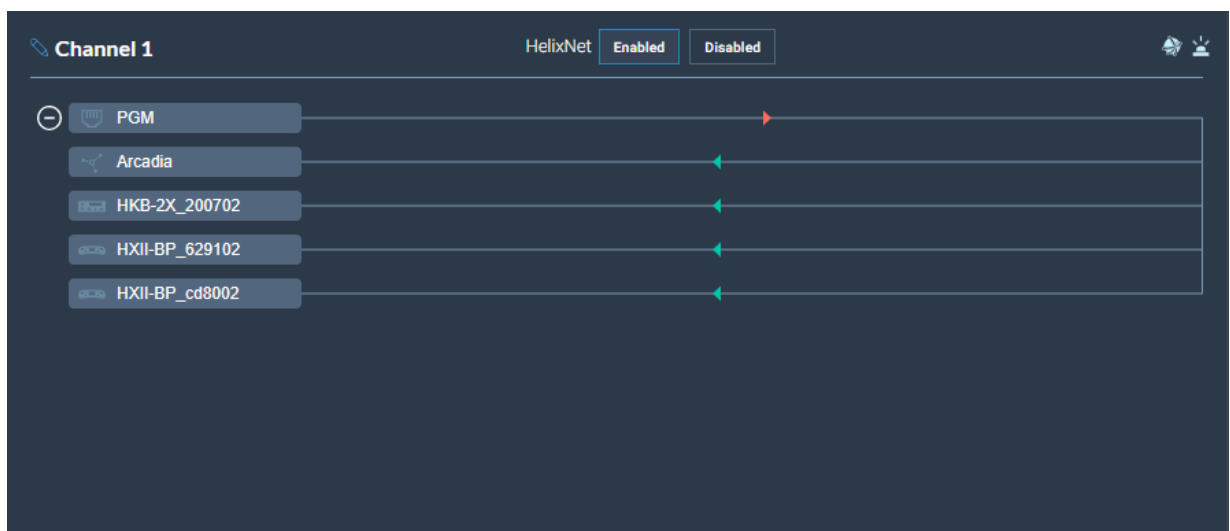
## Display Roles or Labels



## Display Roles



## Display Labels



## Adding a New Channel

To add a new channel:

1. Click the new channel icon . A new entry appears in the list of added channels.

**Note:** *You can only add new channels up to a maximum number (100).*

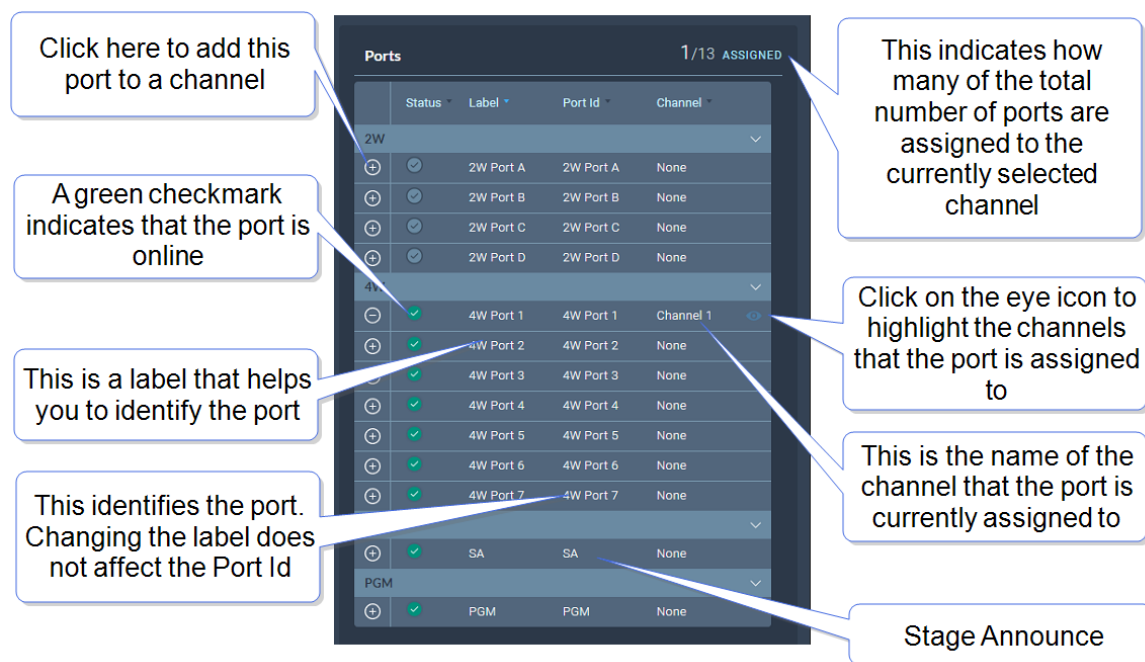
2. Add any required ports to the channel.

## Adding Ports to a Channel

To add ports to a channel:

1. From the **Channel** panel, select the channel in which the port is to be added.
2. From the **Ports** panel, click the add port icon  of the port that you require.

**Note:** 2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.



The port is now added to the channel, and appears in the list of ports in the center panel.

**Note:** 2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.



## Removing Ports From a Channel

To remove a port from a channel:

1. From the **Channels** panel, select the required channel.

2. Click the remove icon  of the port that you want to remove.

The port is removed.

## Deleting a Channel

To delete a channel:

1. From the **Channels** panel, select the channel that you want to delete.
2. Remove all the ports from the channel

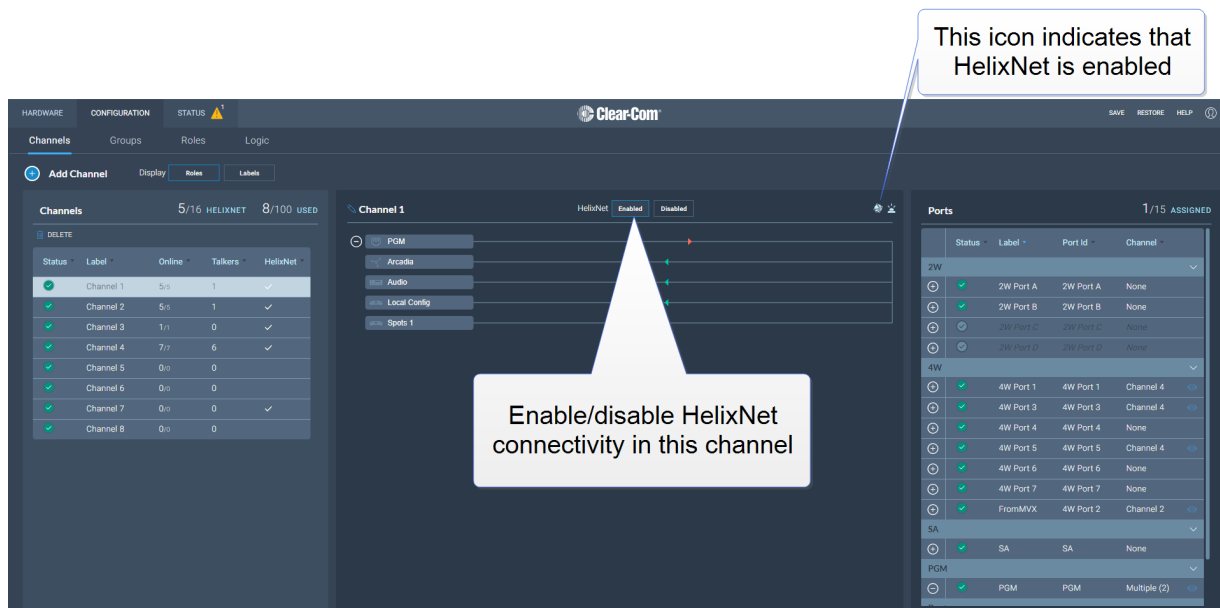
**Note:** If you do not remove the ports, you will be prompted to do so in step 3.

3. Click the **More Actions** icon , and select **Delete**.

## Enabling Channels for HelixNet

If you wish to use HelixNet in a channel, that channel must be enabled for HelixNet. By default, channel 1, 2, 3 and 4 are enabled for use with HelixNet products.

**Note:** 2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.



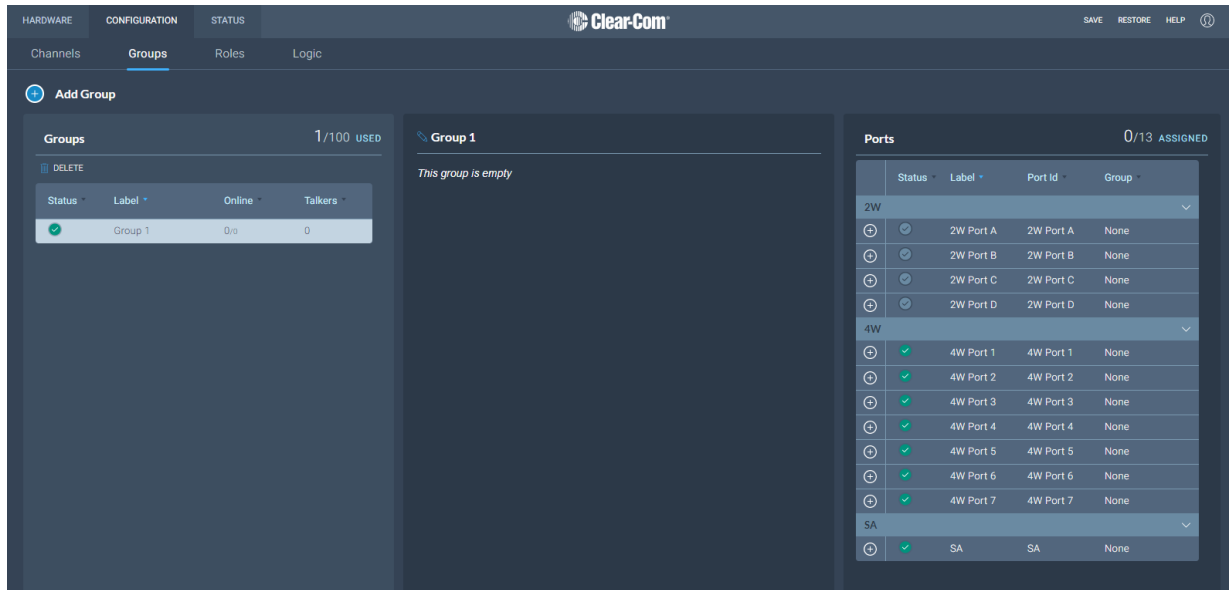
The screenshot shows the Clear-Com interface. On the left, the **Channels** panel lists 8 channels. Channel 1 is selected. In the center, the **Channel 1** configuration panel shows the **HelixNet** status as **Enabled**. A callout points to this status with the text: "Enable/disable HelixNet connectivity in this channel". On the right, the **Ports** panel shows a list of ports assigned to Channel 1. A callout points to a small icon in the top right corner of the Ports panel with the text: "This icon indicates that HelixNet is enabled".

| Status   | Label     | Port Id   | Channel      |
|----------|-----------|-----------|--------------|
| 2W       | 2W Port A | 2W Port A | None         |
| 2W       | 2W Port B | 2W Port B | None         |
| 2W       | 2W Port C | 2W Port C | None         |
| 2W       | 2W Port D | 2W Port D | None         |
| 4W       | 4W Port 1 | 4W Port 1 | Channel 4    |
| 4W       | 4W Port 3 | 4W Port 3 | Channel 4    |
| 4W       | 4W Port 4 | 4W Port 4 | None         |
| 4W       | 4W Port 5 | 4W Port 5 | Channel 4    |
| 4W       | 4W Port 6 | 4W Port 6 | None         |
| 4W       | 4W Port 7 | 4W Port 7 | None         |
| From/MIX | 4W Port 2 | Channel 2 |              |
| SA       | SA        | SA        | None         |
| PGM      | PGM       | PGM       | Multiple (2) |

**Note:** A HelixNet enabled channel will consume one of your licensed ports.

## 6.16 Groups

**Note:** *2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.*



**Note:** *2W and 4W ports, as shown on this image, are not available on Avalon.*

The Groups Page allows you to view Groups and add ports to Groups. Roles are added to Groups in the **Roles** page.

### 6.16.1 Managing Groups

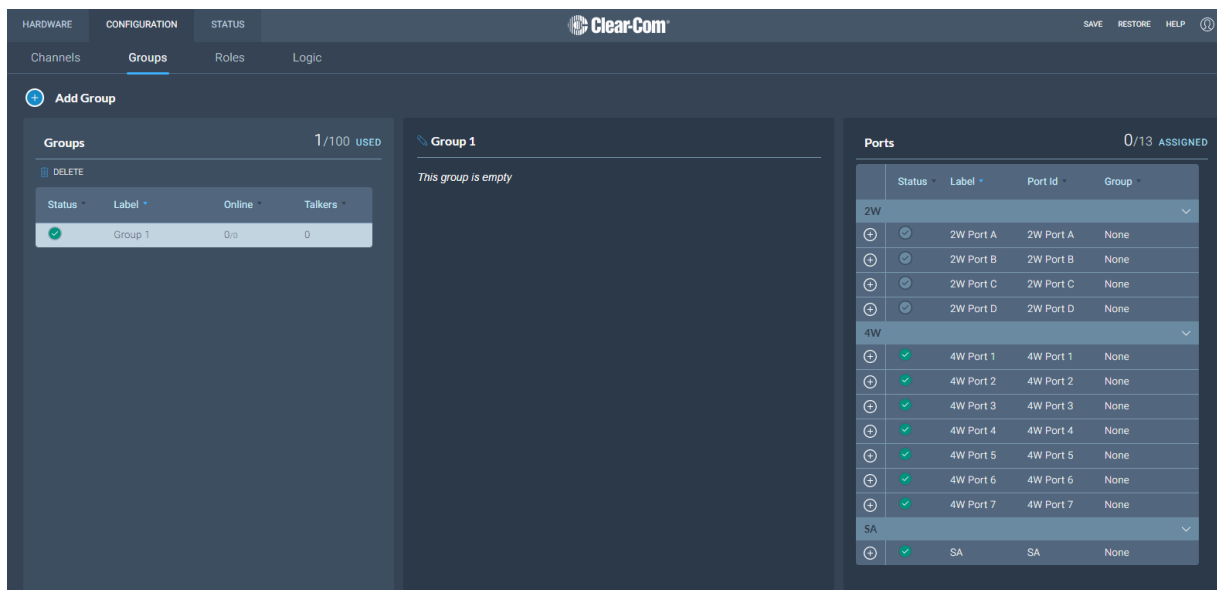
From the **Groups** tab, you can:

- View existing groups and add or remove new groups.
- View existing ports, and add or remove ports from the groups.

**Note:** *Wireless beltpacks and keypanels are added to Groups in the Roles page.*

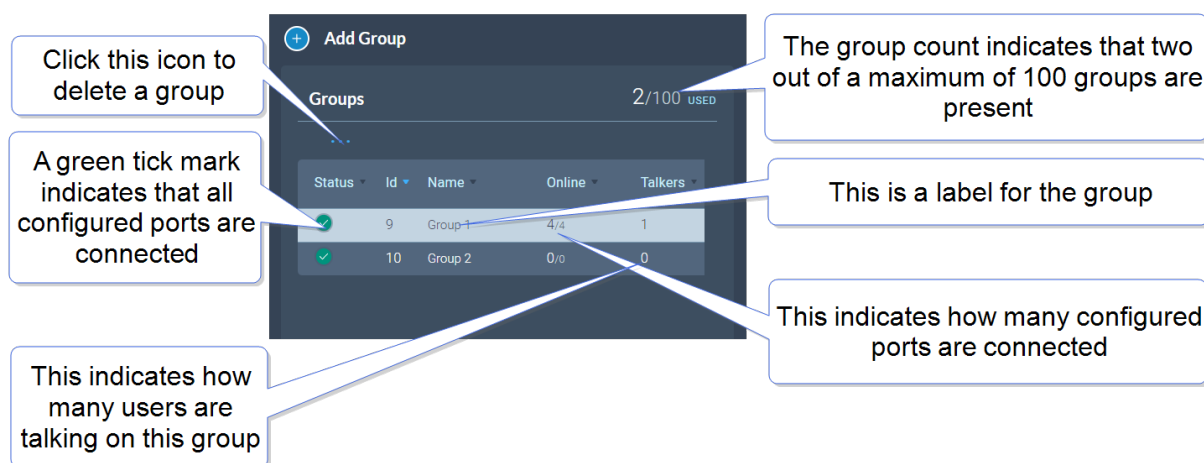
To access the **Groups** screen, navigate to **Configuration > Groups**. The Groups screen appears:

**Note:** *2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.*



## Viewing Information About a Group

When you open the **Groups** screen, the left-hand panel displays a list of all the groups that have been created. The following information is displayed for each group.



### Status

A green tick mark indicates that all the ports that are configured for group are connected. Otherwise, a warning triangle is shown.

### Name

This field contains a label that enables you to identify the group.

**Note:** A label can contain up to 10 characters. You can edit this label from the center panel.

### Online

This indicates how many of the total group members are online.

### Talkers



This indicates how many FreeSpeak beltpacks, V-Series keypanels or logic-routed ports have active talk routes on this group.

### Adding a New Group

To add a new group:

1. Click the new group icon . A new entry appears in the list of added groups.

**Note:** *You can only add new groups up to a maximum number (100).*

2. You can now add any required ports and members to the group.

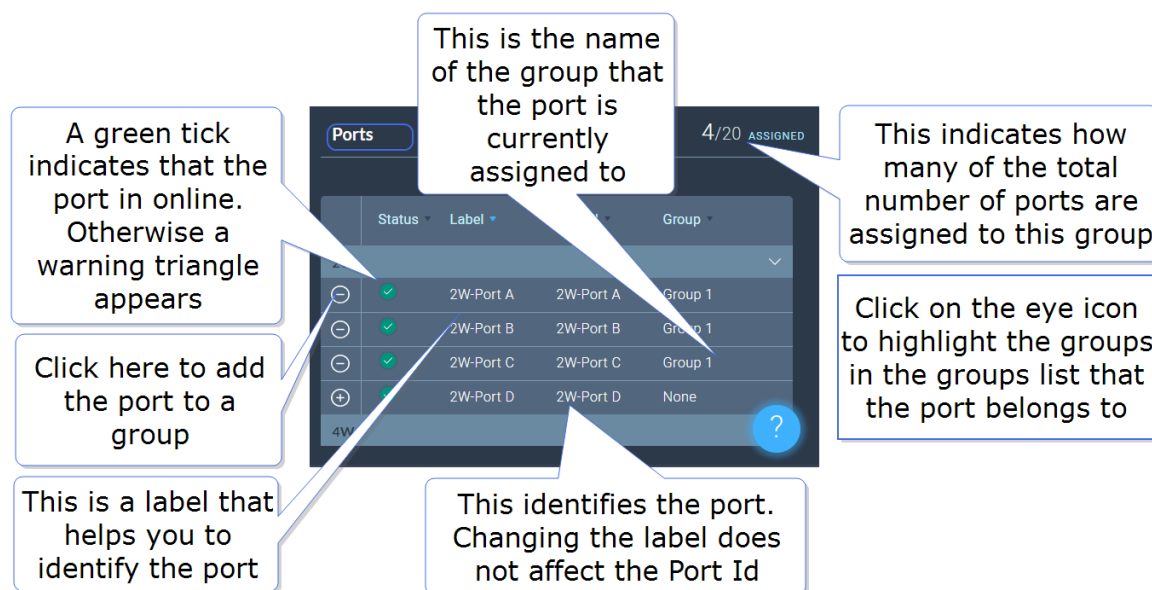
## Adding Ports and Roles to a Group

To configure a group you must first put the members in the group. These can be ports and/or roles. When you have done this you will configure a talk key to the group (group administrator).

### Adding Ports to a Group

1. From the **Group** panel, select the group in which the port is to be added.
2. From the **Ports** panel, click the add port icon  of the port that you require.

**Note:** *2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.*



The port is now added to the group, and appears in the list of ports in the center panel.

### Adding Roles to a Group

1. In the **Roles** page, select the role you wish to add to the group.
2. On the left side of the screen, select **Group Membership**.

## Group Membership

Group Membership

Unassigned



Add role to a group

## Headset

Limiter

0 dB



Sidetone Gain

-12 dB



Sidetone Control

Tracking

Non-Tracking

Disabled

Headphone Detect

Enabled

Disabled

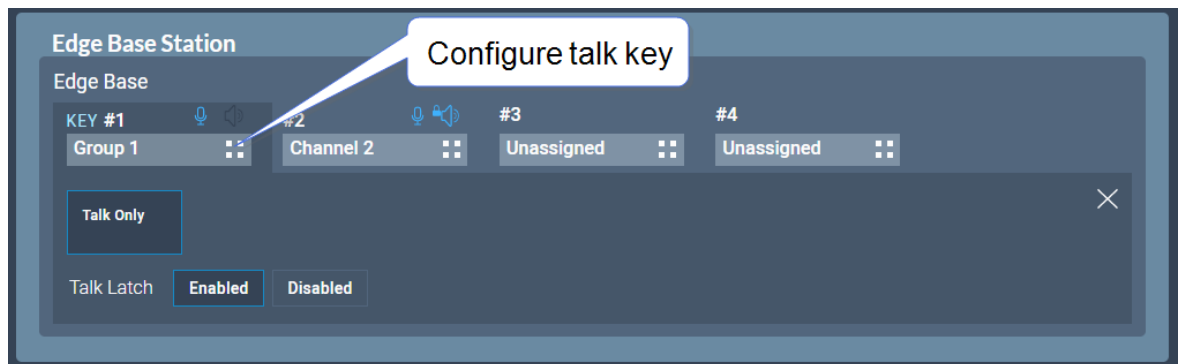
Headset Mic Type

Dynamic

Electret

## Configuring a Talk Key to the Group

1. In the **Roles** page, select the role you want to talk to the group.
2. Configure a talk key to the group (Talk Only)

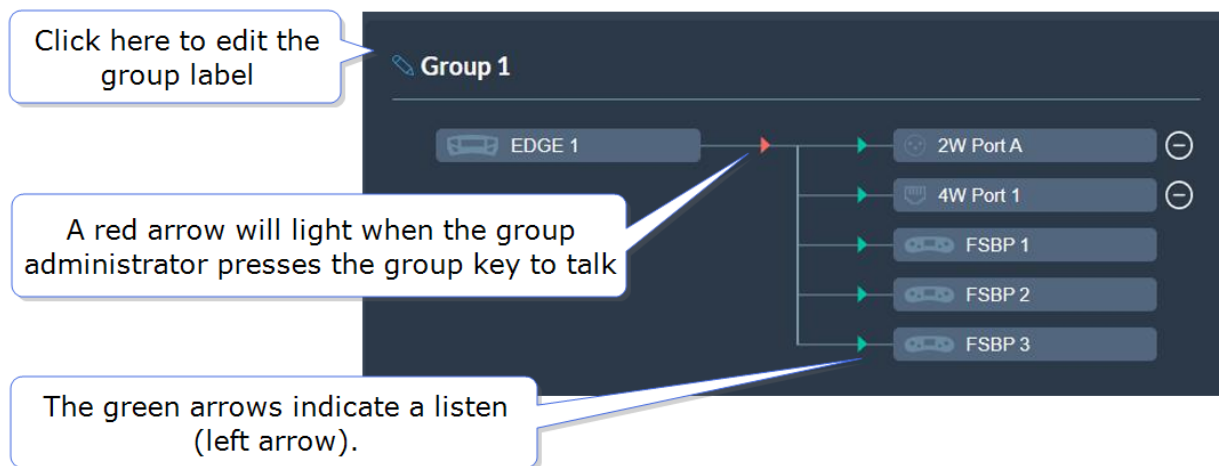


3.

When you have configured members and a talk key to a group, you will see the group by selecting it in the **Groups** page. The group administrator will talk to the whole group. The group members can talk directly back to the group administrator using the **Reply** key. This communication will not be broadcast to the group, only the administrator will hear.

### Note:

2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.



## Removing Ports from a Group

To remove a port from a group:

1. From the **Groups** panel, select the required group.

2. Click the remove icon  of the port that you want to remove.

The port is removed.

## Deleting a Group

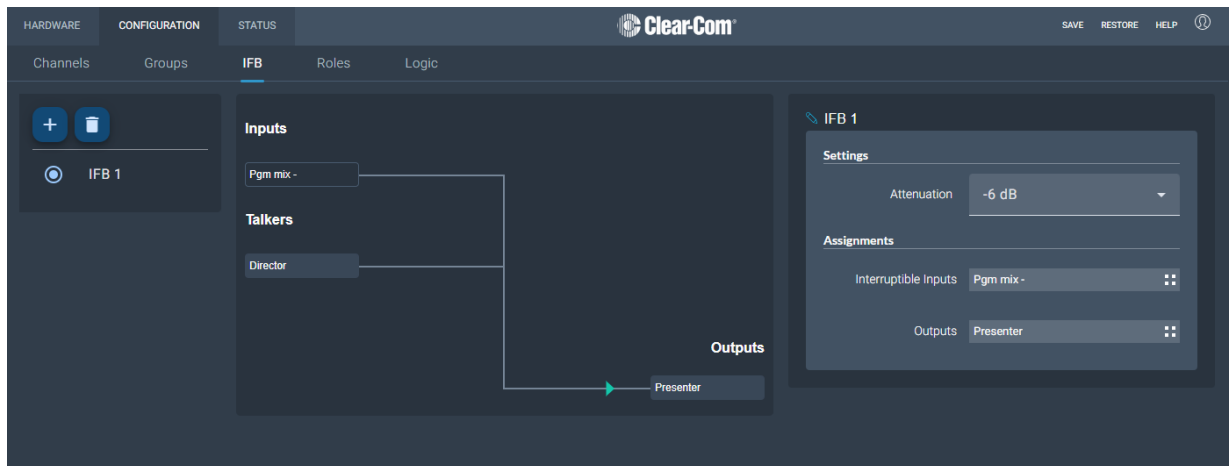
To delete a group:

1. From the **Groups** panel, select the group that you want to delete.
2. Remove all the ports from the group

**Note:** *If you do not remove the ports, you will be prompted to do so in step 3.*

3. Click the trash can icon. The group is deleted.

## 6.17 IFB



Avalon's IFB (Interruptible Foldback) page allows you to configure and monitor IFB within the system. When using an IFB, audio is routed from the interruptible input to the output and when a talker talks on the IFB, the interruptible input audio level is attenuated (lowered/ducked) by the specified amount.

IFB are commonly used for one way communication to an on-air talent in broadcast application and paging to areas such as backstage dressing rooms in performing arts facilities.

Avalon IFB can be used with any interface port and FreeSpeak, V-Series and Avalon Front Panel.

To access the IFB page, navigate to: **Configuration > IFB**.

**Note:** *At the time of writing, HelixNet cannot be used with IFBs. This is due in a future release.*

### 6.17.1 Configuring IFB

#### IFB Overview

From the IFB tab you can:

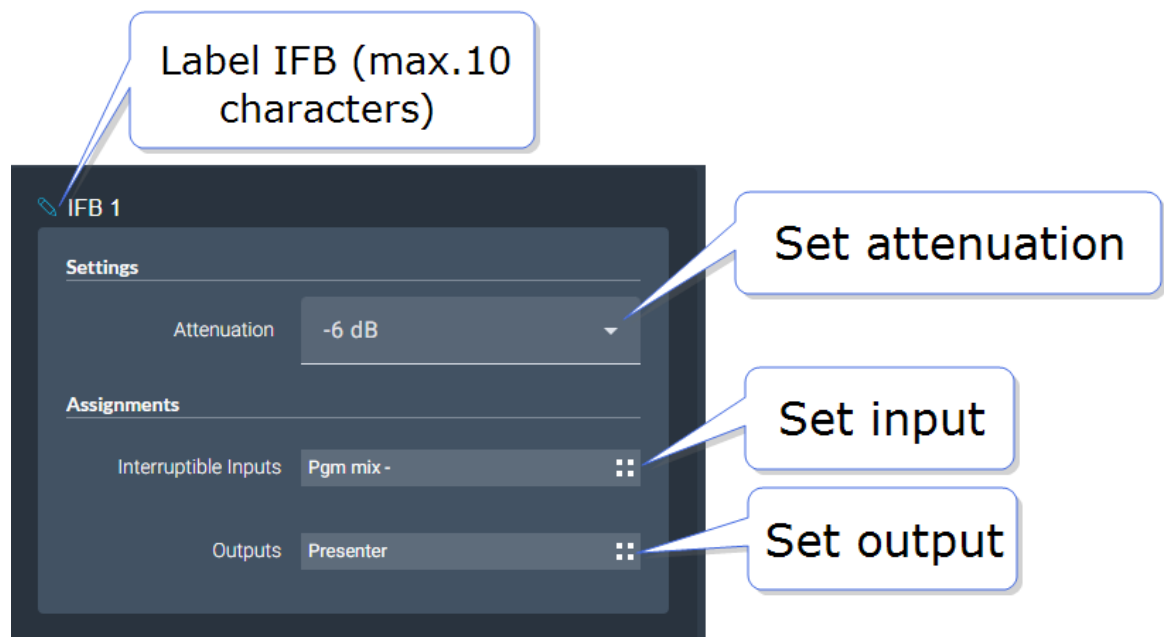
- Create IFB (max. 100)
- Add interface ports (input) to an IFB (max. 6)
- Add interface ports and/or roles (output) to an IFB (max. 6)

Talkers are added to the IFB IFB by assigning them to a role keyset with a Talk activation.(max. 6)

**Note:** *HelixNet role keysets cannot be assigned to IFB.*

### Adding a New IFB

1. In the CCM, navigate to **Configuration > IFB**.
2. Click the blue + sign to add a new IFB.
3. You will see the new IFB appear in the list on the left side of the page, and an overlay on the right side where you can configure the IFB. Add **Interruptible Inputs**, **Outputs**, and set **Attenuation** level here.

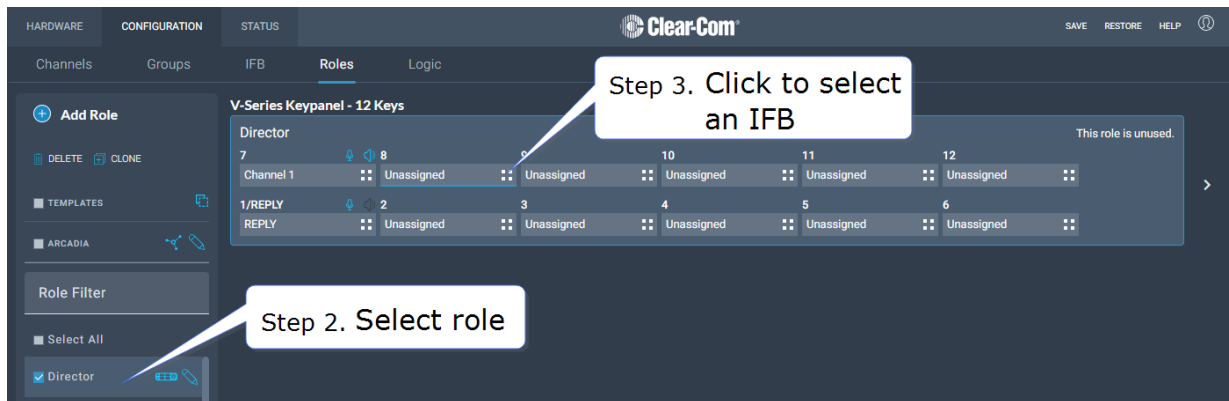


4. Set input.
5. Set output.
6. Set the attenuation level on the input (how much the input volume is attenuated (lowered/ducked) when the talker talks).
7. Once you have set input and output, the input can be heard at the output.

### Adding Talkers to IFB

When you have added inputs and outputs, you can add a talker.

1. In the CCM, navigate to **Configuration > Roles**.
2. Select the role you wish to configure with a talk key to the IFB.
3. Add the IFB to a key.



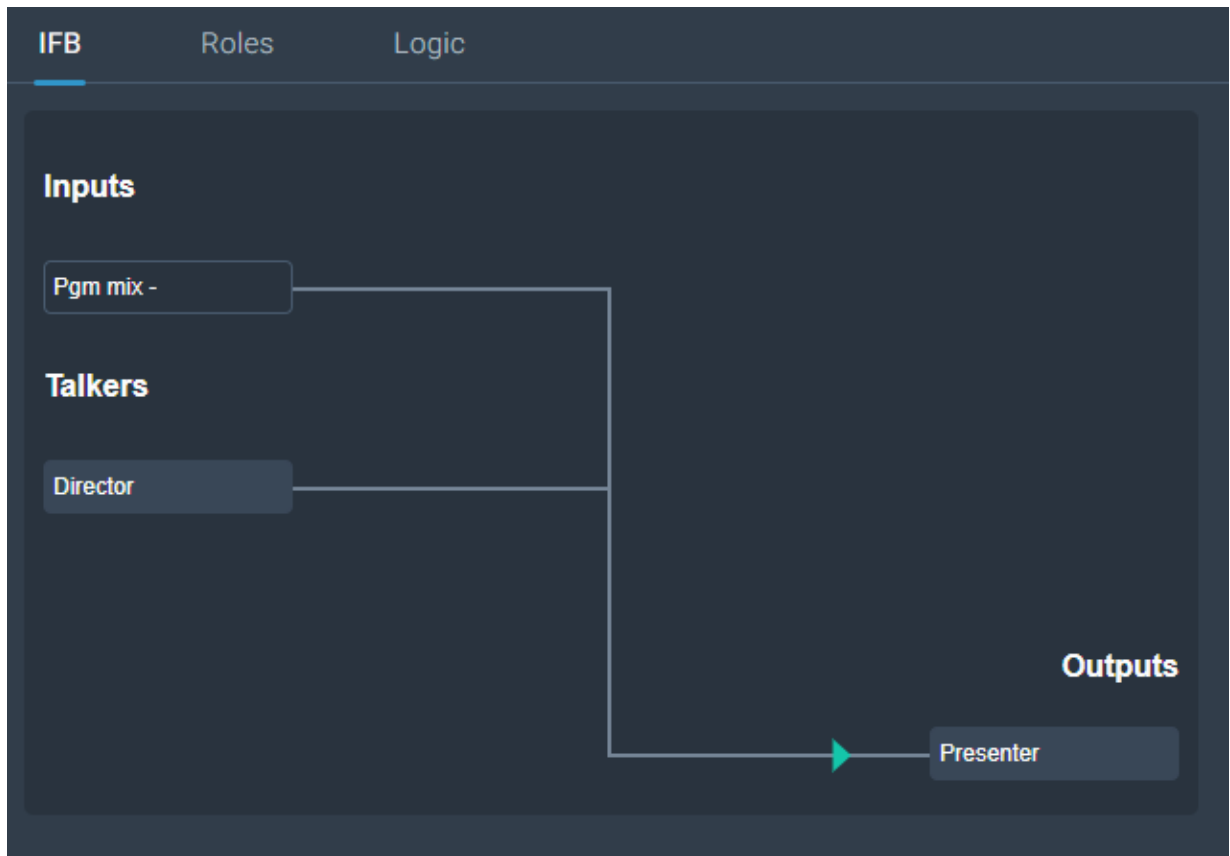
**Note:** 2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.



**Note:** 2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.

**Note:** A role keyset assigned to an IFB with any type of listen activation will provide the role with ability to listen to the IFB output.

4. When you have selected a talk key to the IFB, and the configuration has been actioned by the system, you will see the live IFB configuration in the center panel.



**Note:** The IFB page will only display interfaces and Roles that are online with the system.

**Note:** In this example, **Pgm mix -** is offline. This is indicated by a box that is not colored grey.

**Note:** Green (listen) and red (talk) arrows indicate the routing of audio in the system.

Once this example is configured; when the **Talker** (in this case, Director) presses the IFB key on the panel, a talk is routed to the **Output** (Presenter) and the **Input** volume (Pgm mix -) is lowered while the Director's talk is active.

**Note:** At the time of writing, HelixNet cannot be used with IFBs. This is due in a future release.



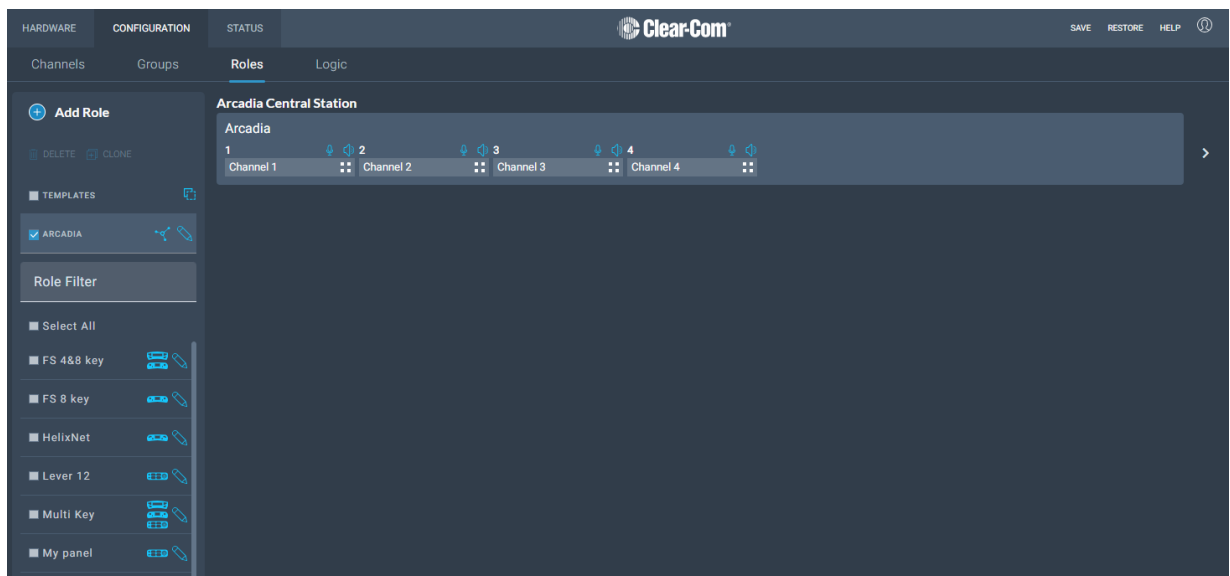
## 6.18 Roles

The **Roles** page enables you to create roles for the devices in your intercom system. These roles are used to control the audio configuration and other settings for beltpacks and other devices.

Roles are made for:

- The Avalon
- FreeSpeak 4 key beltpacks (FreeSpeak II)
- FreeSpeak 8 key beltpacks (FreeSpeak Edge and FreeSpeak Icon)
- V-Series Panels
- HelixNet beltpacks (2 & 4 key)
- HelixNet remote stations
- HelixNet speaker stations

**Note:** *FreeSpeak and V-Series roles work on a 1:1 basis, each beltpack or keypanel must use a single role. HelixNet roles work on a 1: many basis, a HelixNet role can be used by many user stations. Therefore, HelixNet role types cannot be mixed with FreeSpeak and V-Series.*



The **Roles** page of the CCM enables you to:

- View, add, clone, edit and delete roles
- To edit role settings, click the arrow at the right side of the role

## 6.18.1 Managing Roles

From the **Roles** page, you can view, add, clone, edit and delete roles.

When creating roles, roles can be:

- Added (role is based on the template role)
- Cloned (role is based on any selected role)
- Edited (change audio assignment and settings)

**Note:** *HelixNet roles do not work in the same way as FreeSpeak and V-Series roles.*

### FreeSpeak and V-Series Roles

When working with FreeSpeak beltpack (4 key or 8 key) and V-Series keypanels, a role must be created for each user station that you use. This relationship is 1:1.

- An 8 key role can be used on either a FreeSpeak Edge or a FreeSpeak Icon beltpack (only one beltpack at a time)
- You can create a role that can be used on any of the following user stations: V-Series keypanel, FreeSpeak 4 key beltpack, FreeSpeak 8 key beltpack. In this case, you will configure separate role configurations, one for each user station type. This role can only be in use on one user station type at a time
- If you wish to use the same configuration on multiple user stations, clone an existing role
- V-Series keypanel roles are created for 12, 24 and 32 key panels, but any panel can use any role. If a 12 key panel takes a 32 key role, only the first 12 keys are displayed, serially starting from keyset 1 in the lower left hand corner of the panel
- V-Series desktop panels should use a 12 key role. The keyset layout on a desktop keypanel is as follows:

| CCM Panel Keyset | Desktop Panel (Row 1 = bottom row) |
|------------------|------------------------------------|
| 1-3              | Row 1                              |
| 4 - 6            | Row 2                              |
| 7 - 9            | Row 3                              |
| 10 - 12          | Row 4                              |

**Note:** *You can create a multi-use role that can be used on a beltpack and a keypanel (not at the same time). This could be used, for example, by a director that needs to use a panel in a viewing*

*lounge, and also pick up a beltpack to move around. See Role Based Sessions in the V-Series Iris User Guides, available from the Clear-Com Knowledge Center for information.*

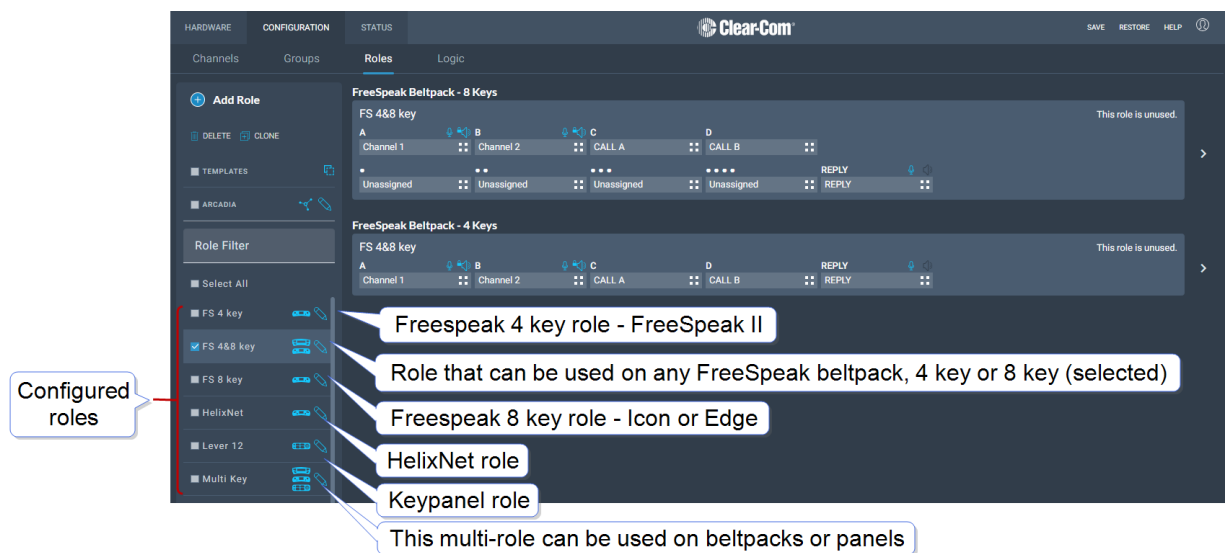
## HelixNet Roles

When working with HelixNet, a role can be used many times. This relationship is 1:many. In HelixNet, roles are available for beltpacks, remote stations, speaker stations. When using HelixNet, role types cannot be mixed. For example, a remote station role cannot be used on a beltpack or speaker station.

- HelixNet beltpacks (2 & 4 key) use the same role, but only two keys need to be configured for a 2 key beltpack
- There is no need to clone a role for individual user stations when using HelixNet

## Viewing Roles

To view roles, navigate to **Configuration > Roles**. The following screen appears.



A list of roles appears on the left-hand side of the screen.

## Role Templates

When you add roles, a new role is always created from a template role. Template roles are editable. If you edit a template role, any new roles created from it have the edited settings.

The screenshot shows the 'Clear-Com' software interface. On the left, a sidebar contains 'HARDWARE', 'CONFIGURATION', and 'STATUS' tabs. Under 'CONFIGURATION', there are 'Channels', 'Groups', and 'Roles' sub-tabs. The 'Roles' tab is active, showing an 'Add Role' button and a 'TEMPLATES' button. A callout box points to the 'TEMPLATES' button with the text 'View and edit role templates'. The main area displays a list of role templates. Each template card has a title, a 'Template' section, and a list of channels and functions. A callout box points to a right-pointing arrow on a template card with the text 'Click arrow for properties'. Another callout box points to the scrollable list of templates with the text 'Scroll to see more templates'.

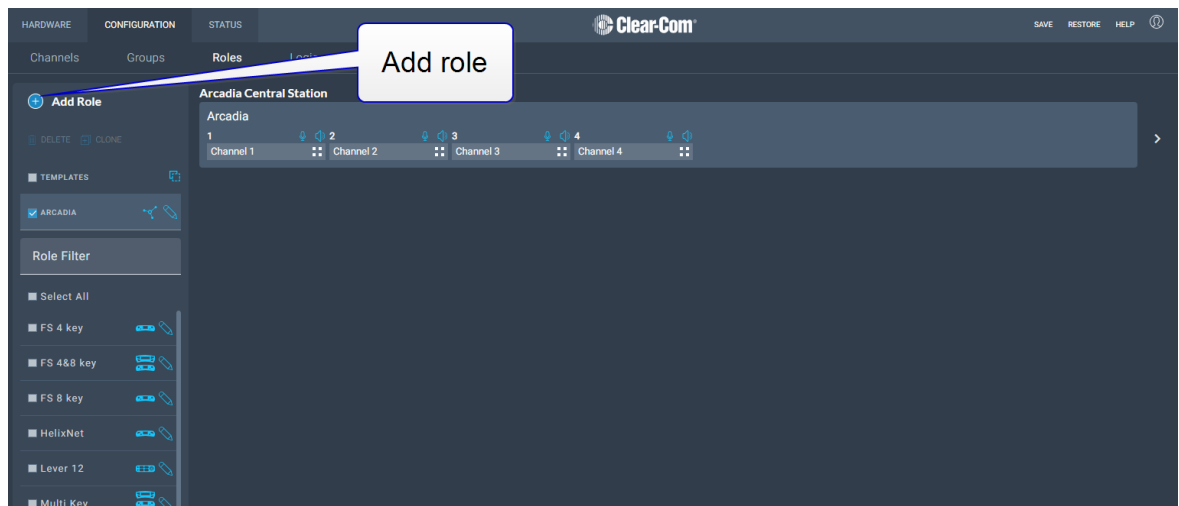
Select a role template to edit the settings.

To reset template roles to default settings, reset the Avalon to factory defaults.

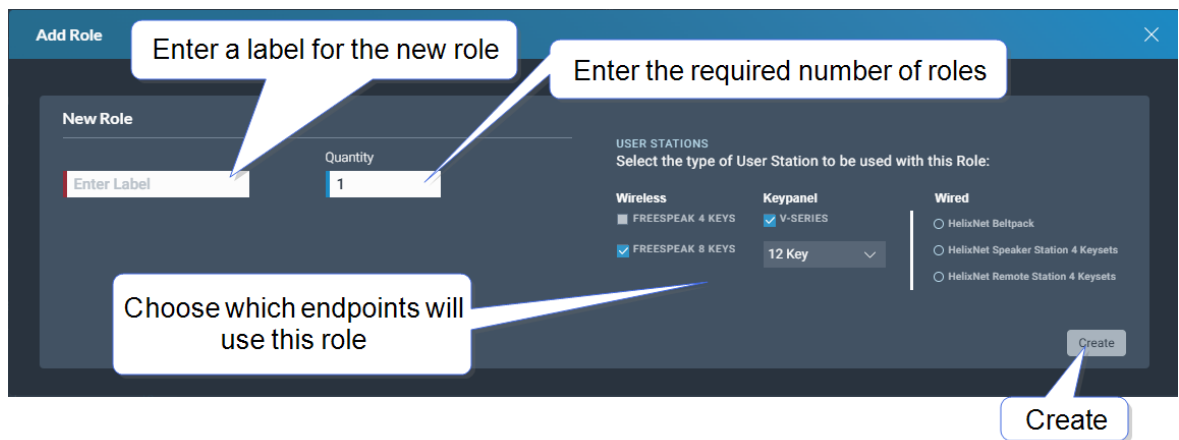
## Adding Roles

To add roles:

1. Navigate to **Configuration > Roles**.



2. Click **Add Roles**. The following screen appears.



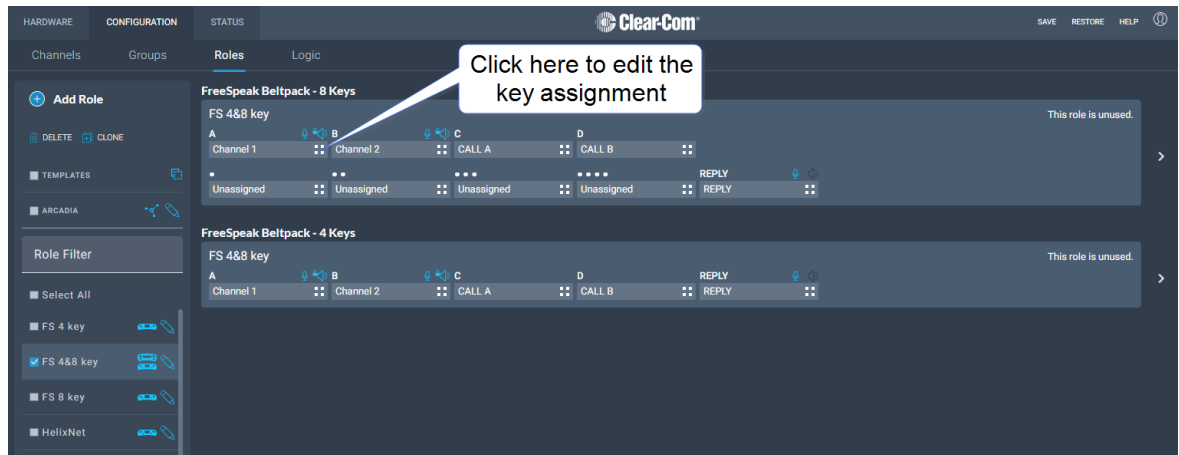
3. Click **Create**. The new role appears in the list of roles in the left-hand side of the **Roles** screen.

**Note:** You can edit the label from the icons that appear beside each role in the left-hand side of the screen.



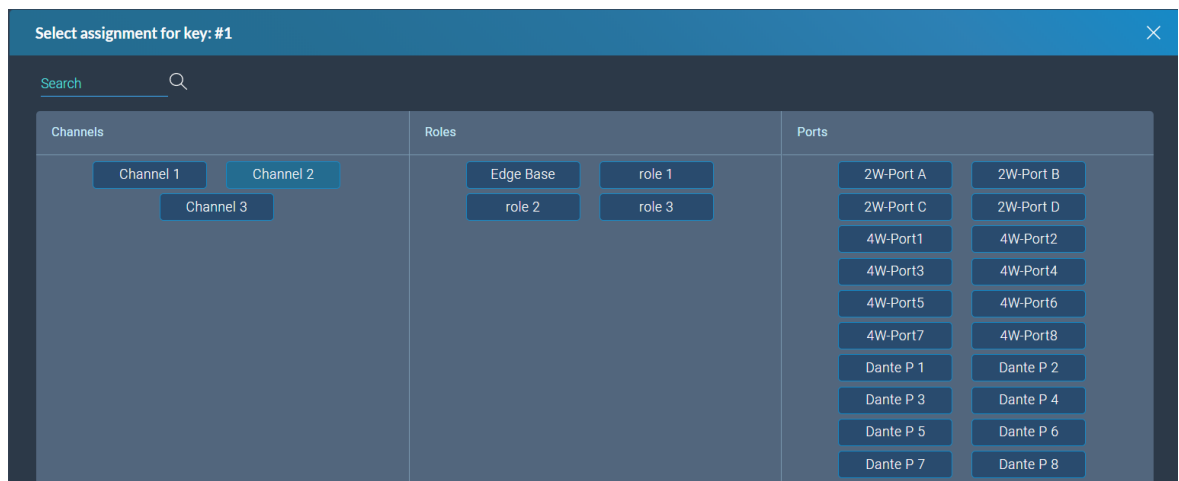
## Editing Role Key Assignment

1. Navigate to **Configuration > Roles** and select required role on the left of the screen.
2. Click on the small white squares.



The key assignment screen appears.

**Note:** 2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.



3. Click to select the required audio source.

## Configuring Role Settings

To configure the settings for a role:

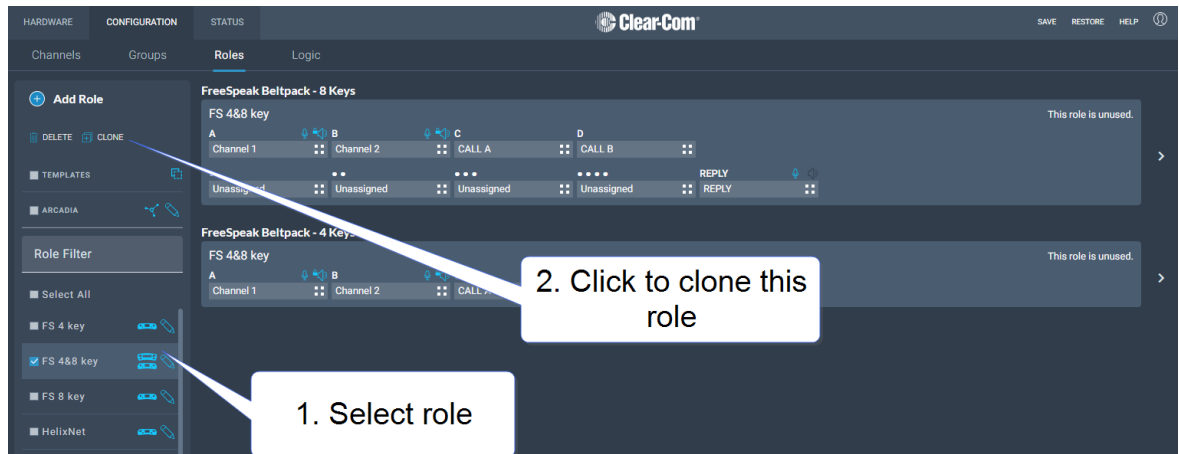
1. Navigate to **Configuration > Roles**, and select the required role from the list of roles in the left-hand side of the screen.
2. From the **Settings** panel on the right-hand side of the screen, scroll to the required setting.
3. Edit the setting as required.



## Cloning Roles

To clone roles:

1. Navigate to **Configuration > Roles**, and select the role that you wish to clone from the list of roles in the left-hand side of the screen.
2. Click **CLONE**.

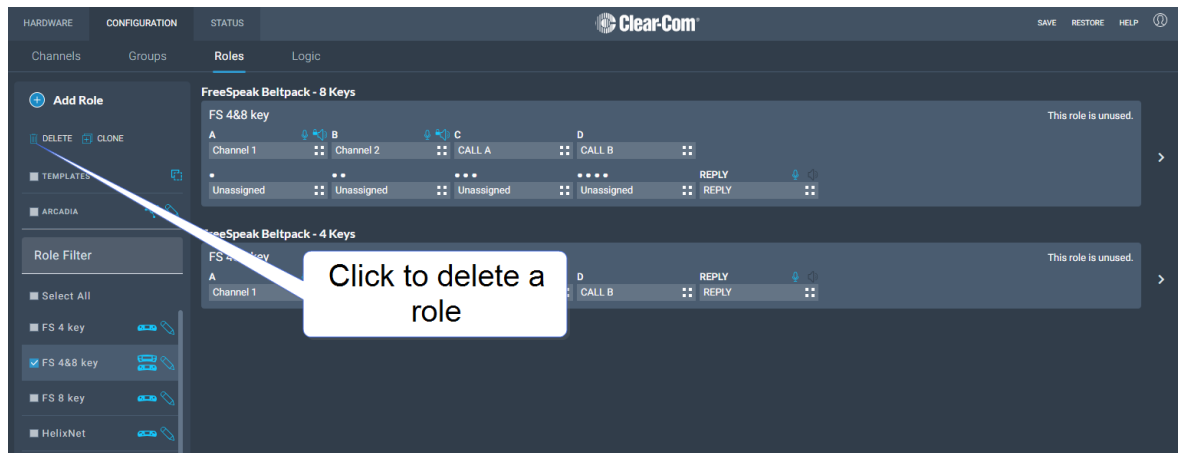


The role is cloned and added to the list of roles in the left-hand side of the screen.

## Deleting Roles

To delete roles:

1. Navigate to **Configuration > Roles**, and select the role that you wish to delete from the list of roles in the left-hand side of the screen.
2. Click **DELETE**.



The role is deleted and removed from the list of roles in the left-hand side of the screen.

## 6.18.2 Setting Key Behavior

Audio keys can be set to different Talk and Listen states. These key behavior states apply to the keys on the Avalon and beltpacks. Key behavior is configured in the **Roles** tab in the CCM.

| Key Behavior Options                         | Resulting Audio Behavior                                                                                                                                |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Talk-Only                                    | Press key to talk. Key only controls talk.                                                                                                              |
| Listen-Only                                  | Press key to listen. Key only controls listen.                                                                                                          |
| Talk and Listen                              |                                                                                                                                                         |
| Dual Talk and Listen<br>( <b>FreeSpeak</b> ) | Press key to talk and listen. Listen latches on or off according to preference (quick tap to latch). The user can push and hold (PTT) to activate talk. |
| Force Listen                                 | Permanent listen.                                                                                                                                       |
| Talk and Forced Listen                       | Permanent listen, push key to talk.                                                                                                                     |
| Force Talk and Force Listen                  | Permanent listen and talk.                                                                                                                              |
| Talk Latch                                   | <b>Enabled</b> (default setting)/Disabled                                                                                                               |
| In-Use Tally                                 | Enabled/ <b>Disabled</b> (default setting)                                                                                                              |

## 6.18.3 Fixed Roles

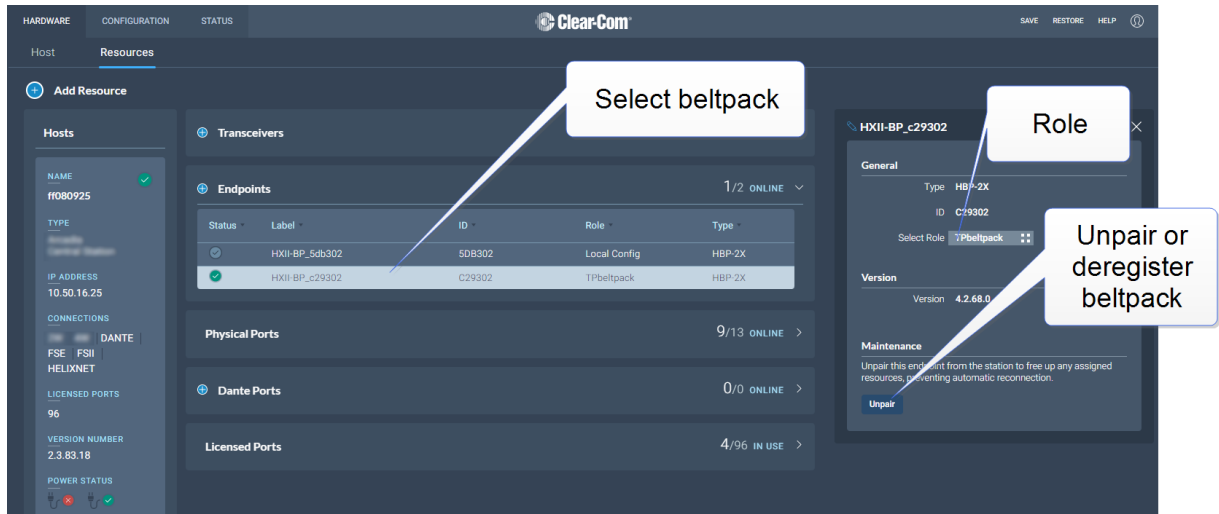
When a role is fixed to a beltpack, a beltpack user is forced to use that role. If a role is not fixed to a beltpack, the user can choose from any available roles.

When you register beltpacks via USB cable to the Station, an editable fixed role is created and applied to the beltpack.

Roles can be fixed/unfixed in the CCM.

Navigate to: **Hardware > Resources > Endpoints** (select the down arrow to see all connected Endpoints). Select an Endpoint (beltpack) by clicking it. Click to fix/unfix or change the role for this beltpack.

Physical ports shown on this image are not available on Avalon.



## 6.19 Logic

**Note:** *There are no 2W, 4W or GPIO connectors on the Avalon, so these are not available locally.*

The Avalon Logic module facilitates external control and conditional configuration.

GPI: V-Series keypanel GPI 1 (in parallel with PTT on X7 variants), and virtual via I.V. Direct can be configured to control up to 10 audio crosspoints / call signals.

These can be used for:

- Footswitches controlling audio
- Automating Program Audio routing
- Call signaling
- 2-Way Radio Input Routing

GPO: V-Series keypanel GPO 1 Panel Aux Relay), and virtual via I.V. Direct can be configured to activated from up to 10 audio crosspoints/call signals.

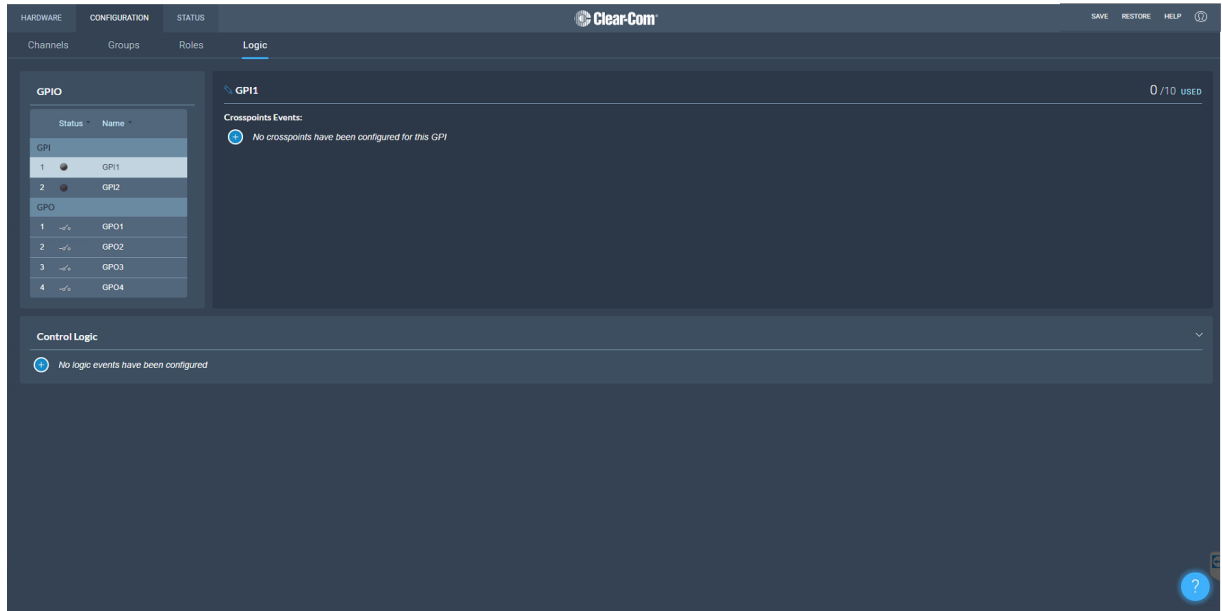
These can be used for:

- Call signaling
- On-Air or warning signals
- 2-Way Radio Transmit Trigger

The **Control Logic** section facilitates conditional (if->then) logic using audio crosspoints, call signals and GPIO.

Hardware GPIO, V-Series keypanel GPIO 1, and I.V. Direct virtual GPIO are configured in the **Configuration > Logic** page of the Core Configuration Manager (CCM) and can be viewed and tested on the **Status > Logic** page.

Avalon does not have local GPIO connectors, so you only will see networked and panel GPIOs.



### 6.19.1 Setting up GPIOs and Control Logic Events

- Each GPI/GPO hosts up to 10 different events or actions. These actions can be overridden for testing or to bypass the logic in the **Status > Logic** page of the CCM
- Control Logic Events allow crosspoint conditional activation of crosspoints, GPO, and Call signals
- 2 x DB 9F connectors on the rear of the Avalon

#### Examples of GPI actions

On an input from an external device, an audio route can be established.

- If an on-air light comes on, the program feed (**PGM**) can be routed to a Channel or beltpack
- Use a footswitch to allow the station user to open an audio route to a Channel
- On an input from a two-way radio, an audio route can be established to a channel (the radio talks to the channel)
- Initiate a Call signal.

#### Examples of GPO triggers

GPOs are triggered when **Talk**, **Talk & Listen** user station buttons are pressed or a Call signal is active.

- When someone talks to stage announce, an output relay (GPO) is sent to the external stage announce speaker
- When someone talks to a channel labeled Radio, an output is sent to a 2-way radio
- When a call signal (**Call**) comes into a channel, and output is sent to turn on an on-air light

## Examples of Control Logic Events

- When a crosspoint is active then another crosspoint can be activated as well for the same duration
- When a crosspoint is active then a call signal can be activated as well for the same duration
- When a crosspoint is active then a GPO can be activated as well for the same duration

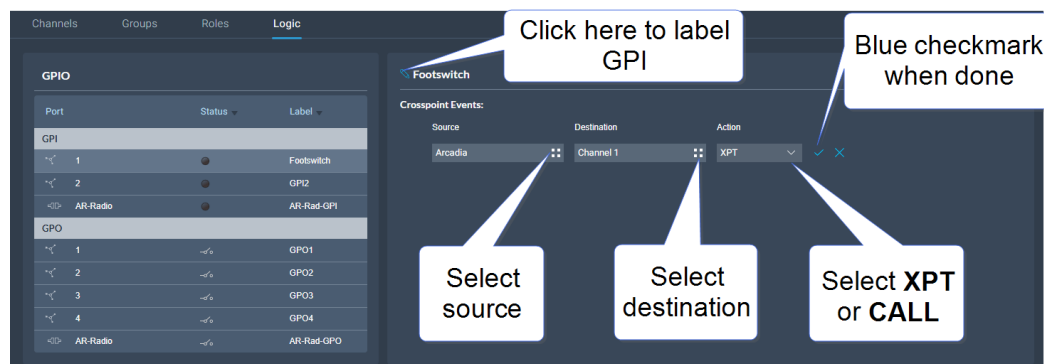
## Configuring GPIs

This example opens a talk route from the Avalon to a Channel when an input occurs on GPI1 (for instance, from a footswitch).

Navigate to **Configuration > Logic**.

1. On the left panel, click GPI1 to select it.

Avalon does not have local GPIO connectors, so you only will see networked and panel GPIOs.



2. Click the Add button  in the center panel.

3. Click the Options button  to select a **Source**. Select

4. Click the Options button  to select a **Destination**. Select the required Channel.

5. Select **Action** (crosspoint or call signal). In this case choose crosspoint (**XPT**).

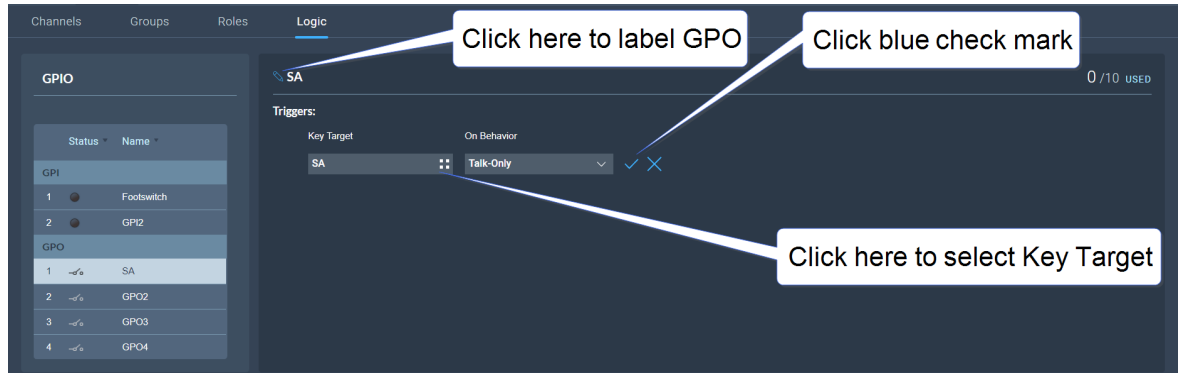
6. Click the blue check mark.
7. To label the GPI, click the pencil icon.
8. To test the GPI, or turn it on and off, navigate to **Status > Logic**. See:  
[Logic on page 71](#).

## Configuring GPOs

In this example you send an output trigger (for example to an external stage announce speaker) on GPO1 when a beltpack **Talk** is activated on the stage announce (**SA**) 4-wire port.

1. Navigate to **Configuration > Logic**.

Avalon does not have local GPIO connectors, so you only will see networked and panel GPIOs.



2. On the left panel, click GPO1 to select it.

3. Click the Add button  in the center panel.

4. Click the Options button  to select a **Key Target**. Select stage announce (SA).

5. In this case, the **On Behavior** field defaults to **Talk Only**.

6. Click the blue check mark.

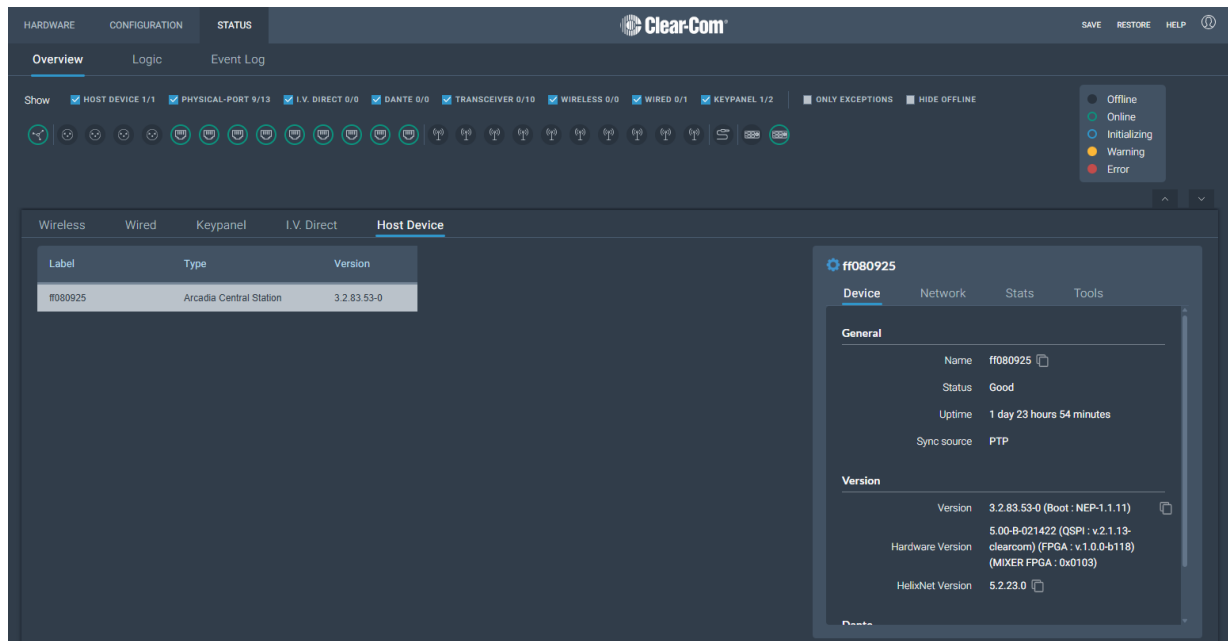
7. To label the GPO, click the pencil icon.

8. To test the GPO, navigate to **Status > Logic**. See [Logic on page 71](#).

**Note:** *GPO **Talk & Listen** behavior is only for use with FreeSpeak and V-Series (**Talk & Listen** or **Dual Talk & Listen**) key activations on a single button. **Talk-Only** is for use with Avalon, FreeSpeak and HelixNet keys using all other types of Talk activations.*

## 6.20 Status Overview

**Note:** *2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.*



From the **Status** page of the CCM, you can view the status of all the resources that are connected to the Avalon. These include:

- Transceivers
- Wireless beltpacks
- Wired Intercom User Stations (Beltpacks, Speaker Stations, Remote Stations)
- Interface ports
- Dante connections

**Note:** *E1 transceivers are not available on the Avalon.*

Here you will see error and warning states.

**Note:** *Error states are used exclusively to indicate that audio via this resource is not working.*

You can quickly see if entities are:

- Offline
- Online
- Initializing



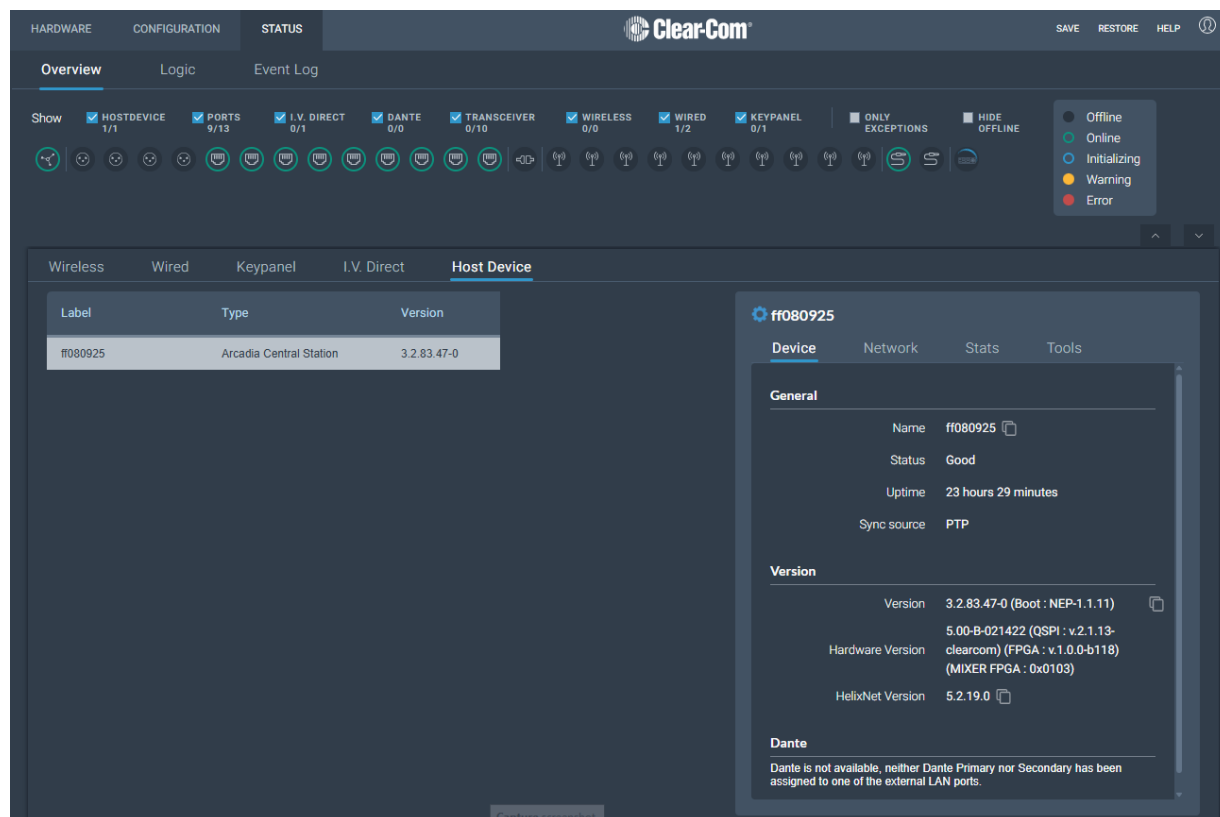
## 6.20.1 Monitoring System Status

You can monitor your system using the following features of the CCM:

- Overview
- Event Log
- Logic

### Overview

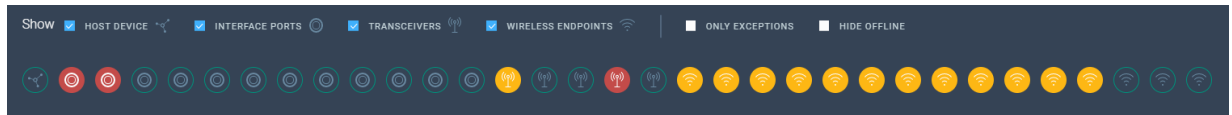
To see the **Overview** screen, navigate to **Status > Overview**. The following screen appears.



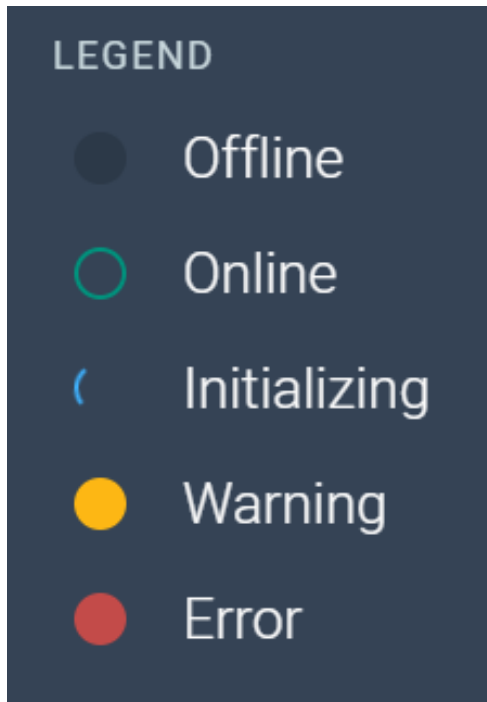
The **Overview** screen consists of two sections. There is an upper section that displays a list of system icons representing the ports, transceivers and endpoints and a lower section that gives detailed information about each connected device and about the Avalon.

## System Icons

Each icon is color-coded to give an easily accessible view of the status of each entity.



The following legend is used to indicate the status of each entity.



### 6.20.2 Monitoring Wireless Devices

Navigate to **Status > Overview > Wireless**. This section of the **Overview** screen lists all the wireless devices connected to your system, and gives the following information for each device:

- Associated role
- Type of transceiver
- Battery level
- Signal strength
- Volume setting
- Remote Microphone Kill (RMK) button to mute all microphones connected to your system
- Call button to send a text message to all connected beltpacks
- Network and PTP status of transceivers

## Transceiver details

Page 79

## Monitoring Beltpack Details

Select a beltpack to see details including battery type, signal strength (RSSI) and Frame Error Rate (FER).

Signal strength

### 6.20.3 Monitoring Wired Devices

Navigate to **Status > Overview > Wired**. This section of the **Overview** screen lists all the wired the HelixNet user stations (beltpacks, remote stations and speaker stations) in your system. It also shows the connection method, Ethernet or Powerline Device. Click on a device for information and network stats.

Click on the cog icon for configuration and procedures: reboot, unpair and reset to default.

RMK All

3 tabs: Device, Network, Stats

Click for Reboot

Select device

Click to see details (when connected)

Connected by Ethernet

Connected by Powerline

### 6.20.4 Monitoring Keypanels

Navigate to **Status > Overview > Keypanels**. This section of the **Overview** screen lists all the I.V. Direct ports connected to your system, and gives the following information for each device:

## Device

- Status (online/offline)
- GPI
- GPO

Click the cog  icon to configure GPIOs

- Firmware version

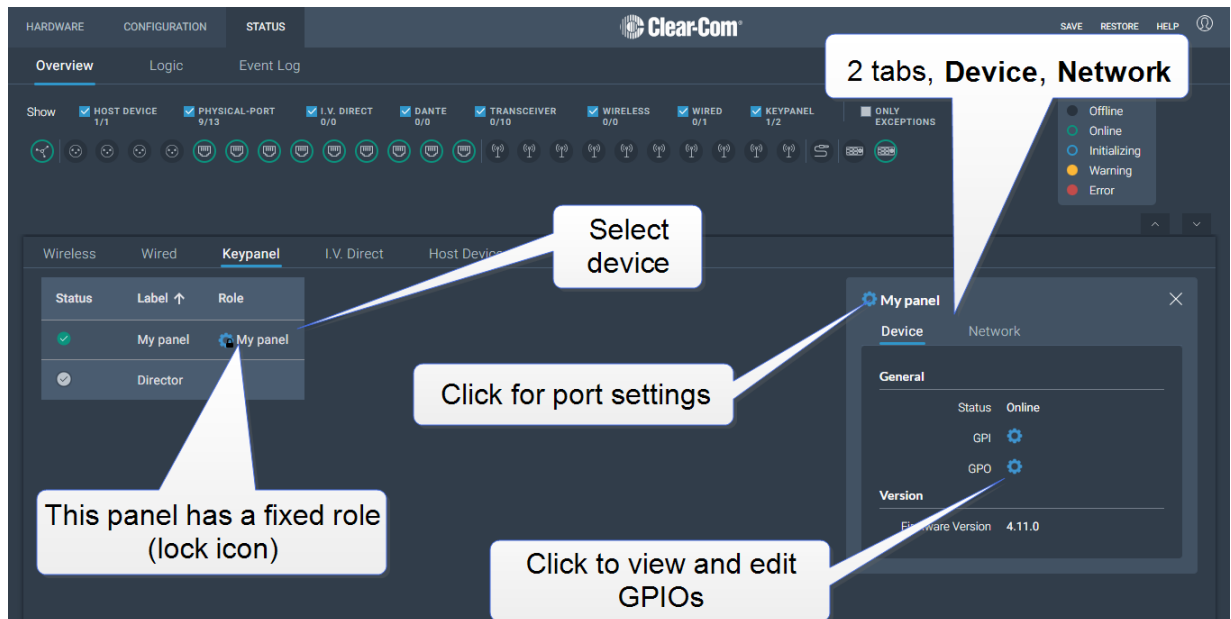
## Network

- Local IP address
- Network quality (LAN, WAN or Internet)

Click the cog  icon to configure settings and credentials

## Diagnostic information

- Connection time
- Average jitter
- Max jitter
- Rx packets
- Tx packets
- Rx drops



The screenshot shows the Clear-Com web interface. At the top, there are tabs for **HARDWARE**, **CONFIGURATION**, and **STATUS**. Below these are sub-tabs for **Overview**, **Logic**, and **Event Log**. A status bar shows various connection types: HOST DEVICE (1/1), PHYSICAL-PORT (9/13), I.V. DIRECT (0/0), DANTE (0/0), TRANSCIVER (0/10), WIRELESS (0/0), WIRED (0/1), and KEYPANEL (1/2). A legend on the right indicates status colors: Offline (grey), Online (green), Initializing (blue), Warning (yellow), and Error (red).

The main content area has tabs for **Wireless**, **Wired**, **Keypanel**, **I.V. Direct**, and **Host Device**. The **Keypanel** tab is active, showing a table with columns **Status**, **Label**, and **Role**. The table contains two entries: **My panel** (Status: Online, Role: My panel) and **Director** (Status: Offline, Role: Director). The **My panel** entry has a lock icon in the **Role** column.

Annotations with callouts point to specific features:

- 2 tabs, Device, Network**: Points to the **Device** and **Network** tabs in the configuration panel for **My panel**.
- Select device**: Points to the **My panel** entry in the Keypanel table.
- Click for port settings**: Points to the gear icon next to the **My panel** entry.
- This panel has a fixed role (lock icon)**: Points to the lock icon in the **Role** column for **My panel**.
- Click to view and edit GPIOs**: Points to the gear icon next to the **GPI** and **GPO** settings in the **Device** configuration panel.

The **Device** configuration panel shows **Status** as **Online**, **GPI** and **GPO** settings with gear icons, and **Version** as **4.11.0**.

## 6.20.5 Monitoring I.V. Direct

Navigate to **Status > Overview > I.V. Direct**. This section of the **Overview** screen lists all the I.V. Direct ports connected to your system, and gives the following information for each device:

### Interface

- Status (online/offline)
- User ID
- GPI
- GPO

Click the cog  icon to configure GPIOs

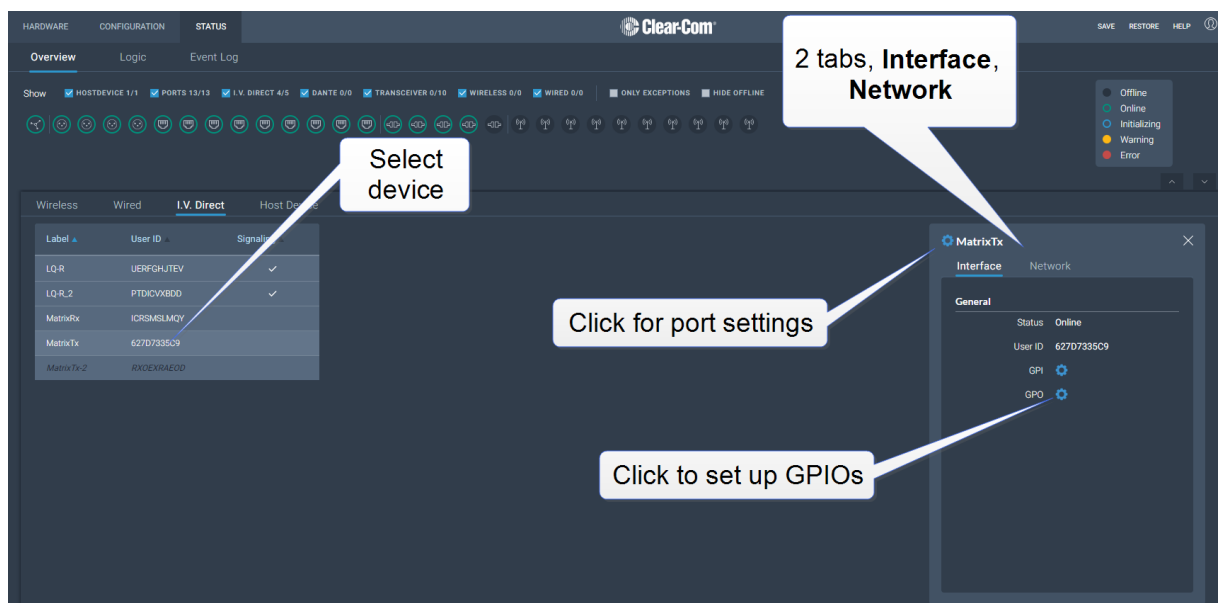
### Network

- Local IP address
- Local port
- Remote IP address (if this is the calling device)
- Network quality (LAN, WAN or Internet)

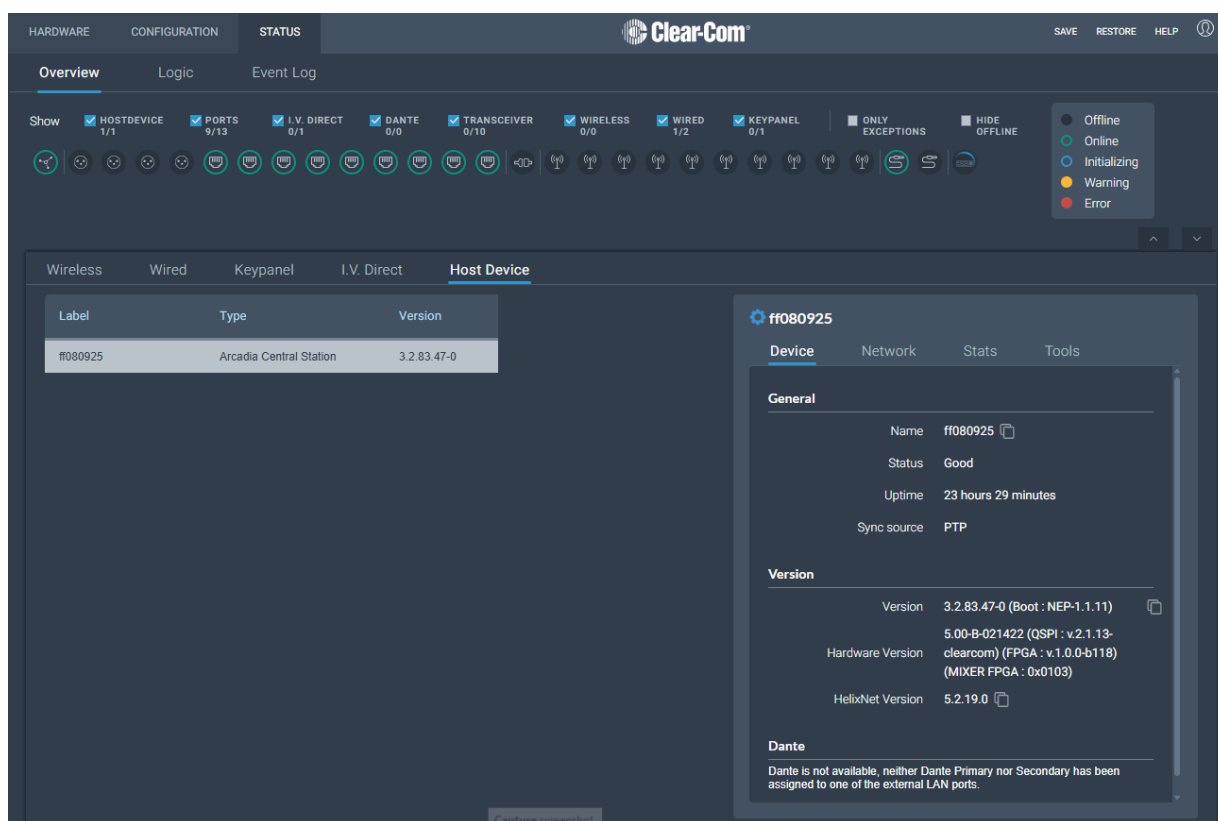
Click the cog  icon to configure settings and credentials

### Diagnostic information

- Connection time
- Average jitter
- Max jitter
- Rx packets
- Tx packets
- Rx drops



## 6.20.6 Monitoring the Host Device



### Caution: Support Info

In **Tools** there is an option to collect support information. When you collect support information, you are advised to clear the support file after you have downloaded it.

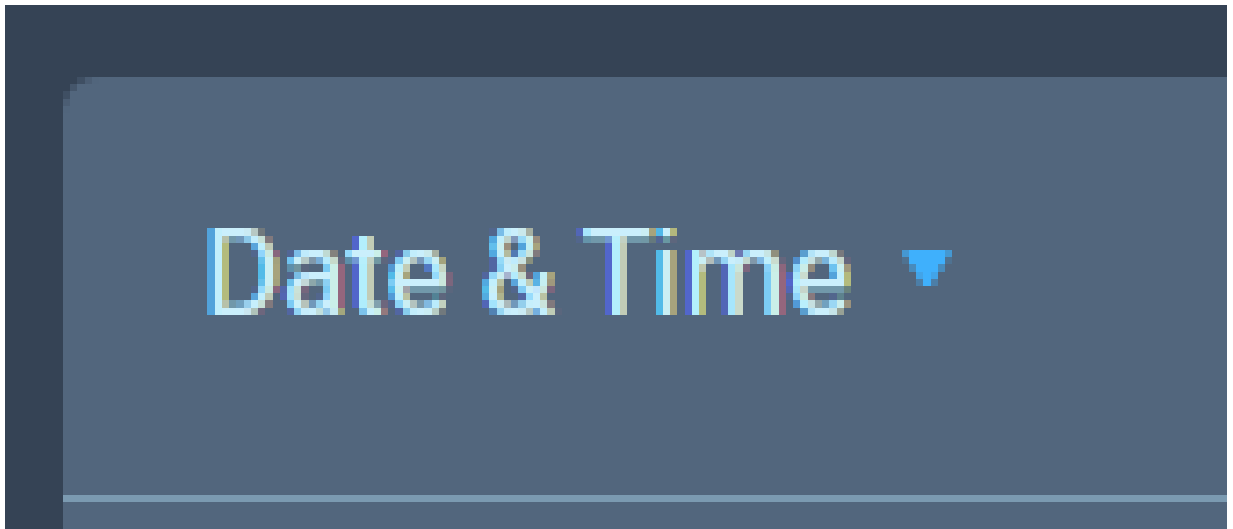
## 6.20.7 Monitoring the Event Log

The Event Log provides useful information about events that happen in the system.

The Event Log can be filtered on:

- Time: default is 1 month prior to the current date and time
- Exceptions (warnings and errors): default is unchecked.

Events are sorted by data. Clicking the small blue arrow changes date order:



The **Level** column shows the status of data:

- Yellow triangle: warning
- Red circle with white cross: error
- No icon shown: this data is informational.

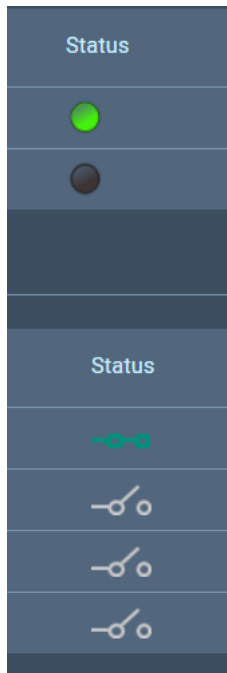
The following apply to the Event Log:

- The Event Log periodically refreshes but there is a **Refresh** button to pull the latest events
- The Event Log can be exported to a .csv file
- **Clear Event Log** clears current data. The data cannot be retrieved once it has been cleared
- Event logs are not stored permanently, only events since the last power or reboot cycle are available.



## 6.20.8 Monitoring the Logic Page

This page shows the GPIs and GPOs (relay) that you have set up in the **Configuration > Logic** page. You can see if these are currently active in the system under the **Status** column.



A green icon indicates a currently active input or relay.

### Forcing ON/OFF

The buttons under the FORCE column are toggle buttons that can be used to test the working of the GPIOs or to turn them permanently off or on. These override the operation of the configured GPIOs.

| Logic Inputs  |           |                      |                      |        |                                                                      |
|---------------|-----------|----------------------|----------------------|--------|----------------------------------------------------------------------|
|               | GPI Label | Route Source         | Route Destination    | Status | Force                                                                |
| 1             | GPI1      | No events assigned   | No events assigned   |        | <input type="button" value="OFF"/> <input type="button" value="ON"/> |
| 2             | GPI2      | No events assigned   | No events assigned   |        | <input type="button" value="OFF"/> <input type="button" value="ON"/> |
| Logic Outputs |           |                      |                      |        |                                                                      |
|               | GPO Label | Key Target           | On Behavior          | Status | Force                                                                |
| 1             | GPO1      | No triggers assigned | No triggers assigned |        | <input type="button" value="OFF"/> <input type="button" value="ON"/> |
| 2             | GPO2      | No triggers assigned | No triggers assigned |        | <input type="button" value="OFF"/> <input type="button" value="ON"/> |
| 3             | GPO3      | No triggers assigned | No triggers assigned |        | <input type="button" value="OFF"/> <input type="button" value="ON"/> |

In this example, GPI 1 and GPO 2 are forced ON for testing purposes. GPO 2 is permanently OFF (for example, if you want to ensure that a signal light never comes on at this time).

# 7 Using FreeSpeak Wireless Intercom

---

This chapter topic describes how to connect to E1 and IP transceivers. It contains the following sections:

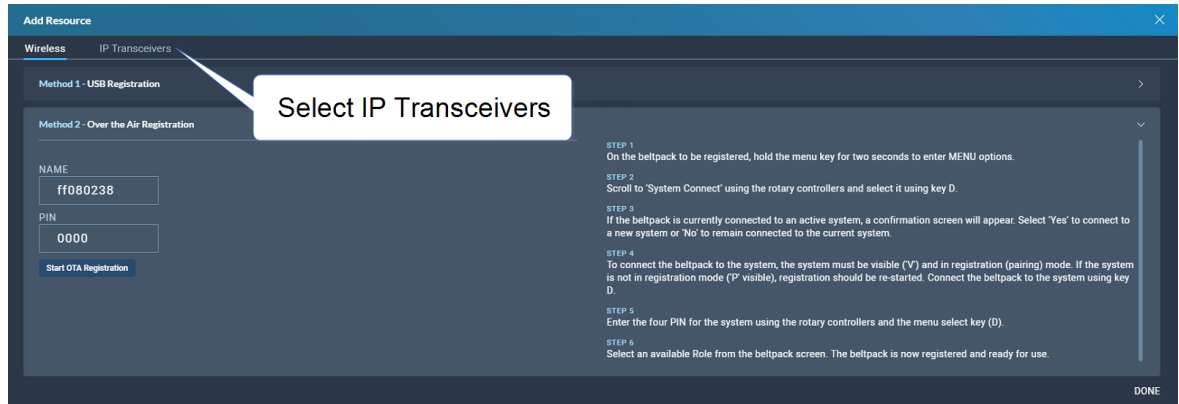
|                                             |    |
|---------------------------------------------|----|
| 7.1 Adding IP Transceivers .....            | 87 |
| 7.2 Network Setup for IP Transceivers ..... | 88 |
| 7.3 Registering FreeSpeak Beltpacks .....   | 92 |
| 7.4 FS Edge Transceivers .....              | 95 |

---

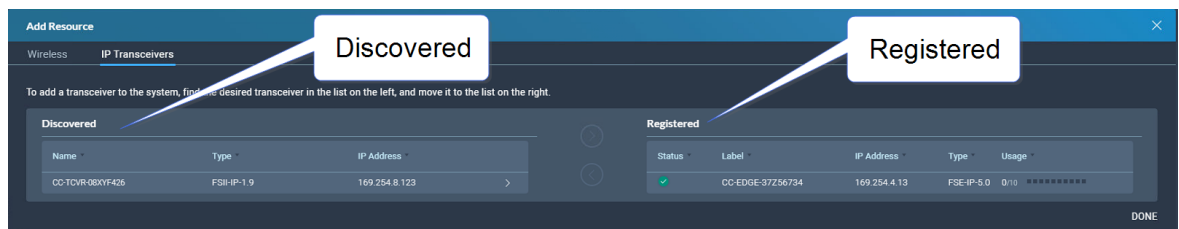
## 7.1 Adding IP Transceivers

To add IP transceivers:

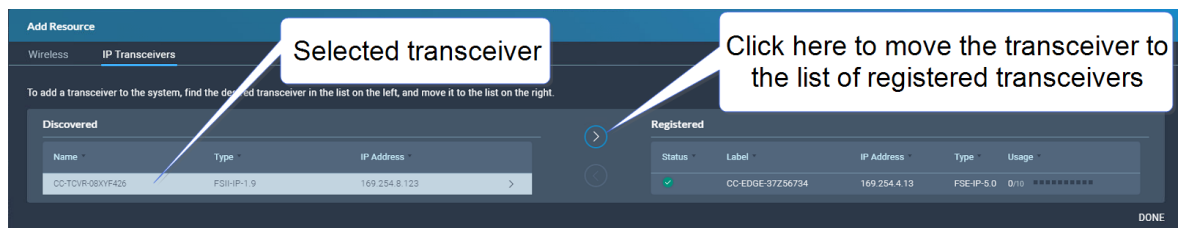
1. Navigate to **Hardware > Resources** and select **Add Resource**. The following screen appears.



2. Select **IP Transceivers**. The following screen appears:



3. Select the transceiver that you want to register from the left-hand area of the screen, and click the right-hand arrow.



The selected transceiver appears in the right-hand list of registered transceivers.

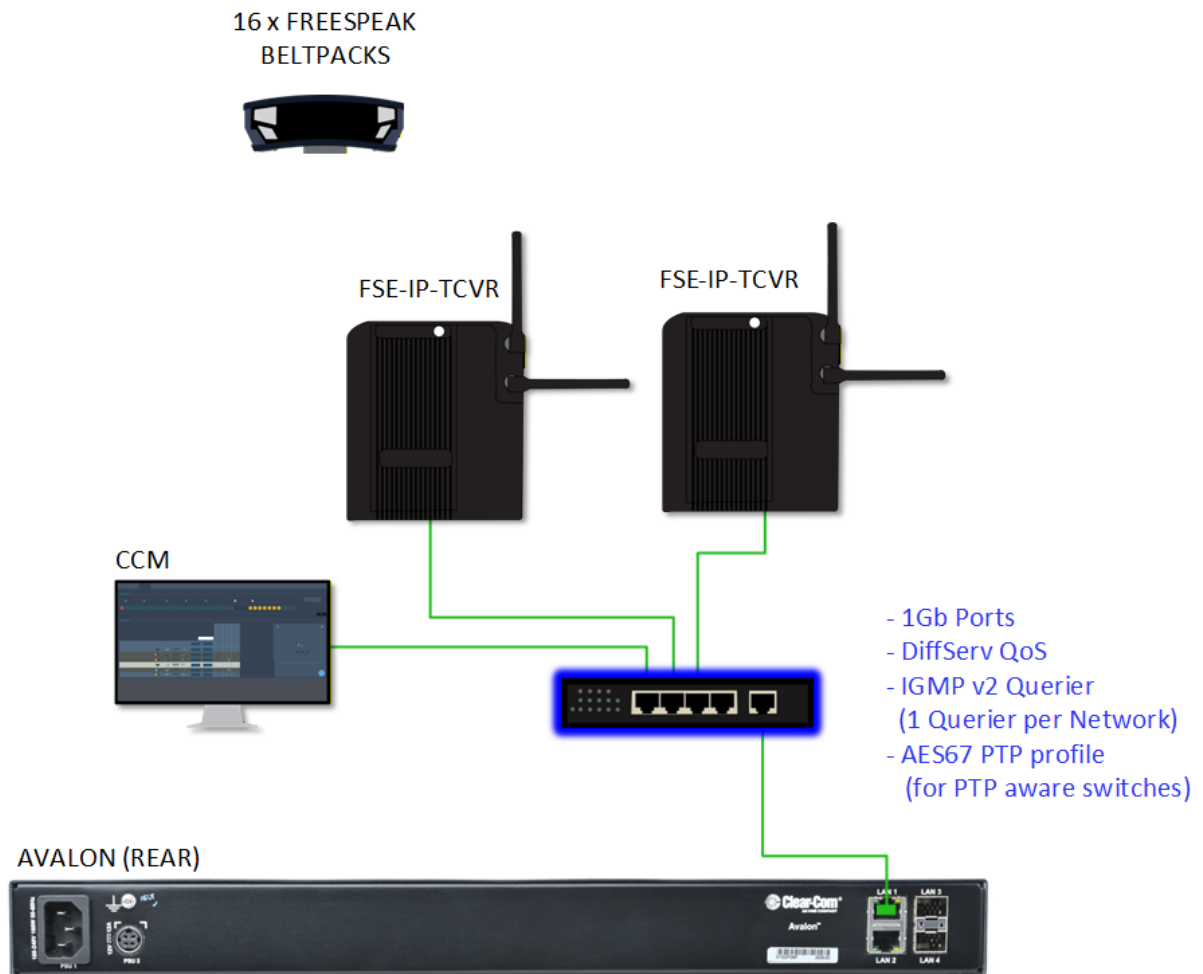
## 7.2 Network Setup for IP Transceivers

The Avalon has LAN connections assignable to different network traffic such as Management, AES67, Dante and so on.

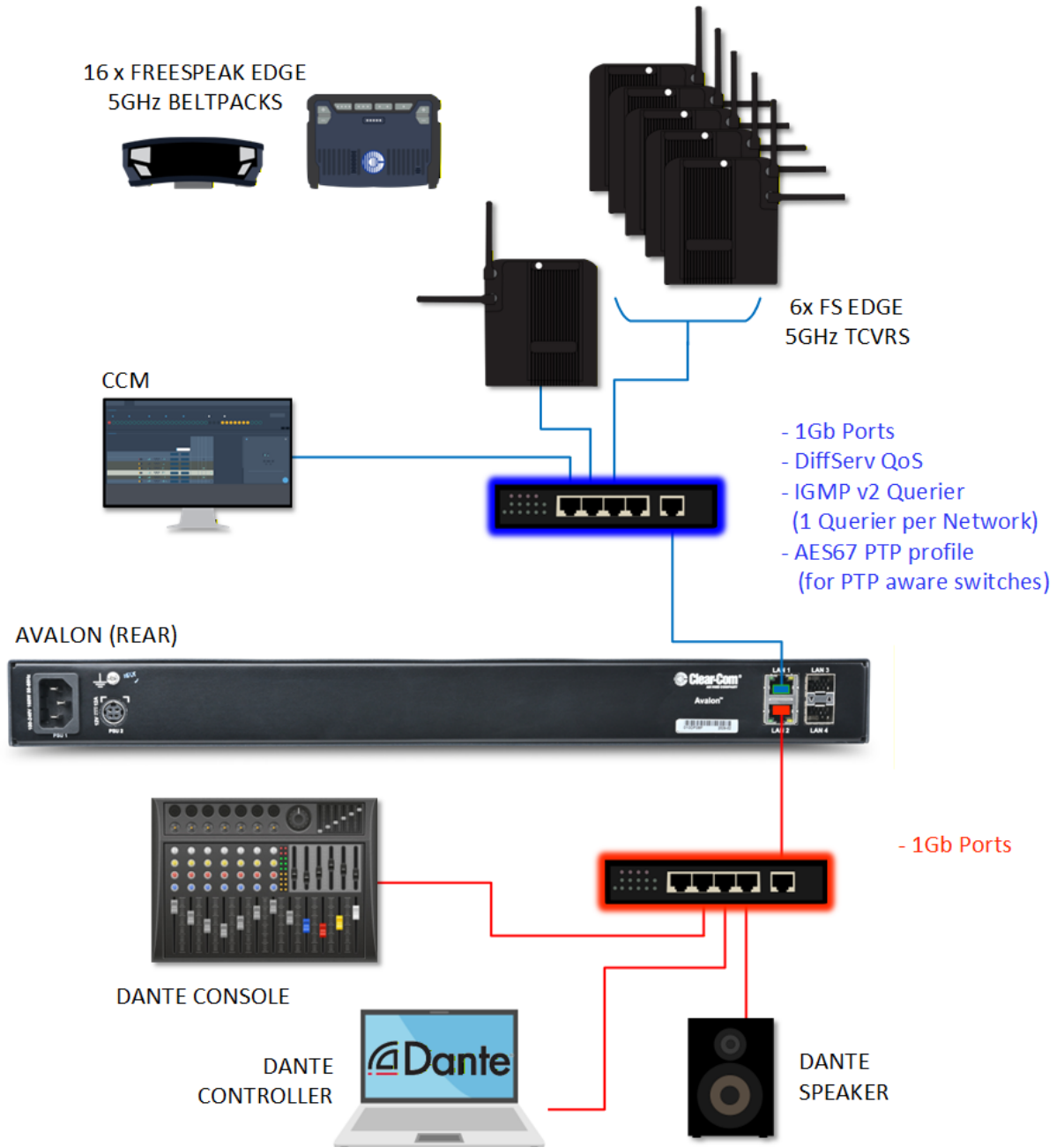
The LAN ports are fully user configurable but you can work with the following default settings:

- LAN 1: Management
- LAN 2: AES67 for FreeSpeak IP Transceivers
- LAN 3: Not configured (SFP)
- LAN 4: Not configured (SFP)

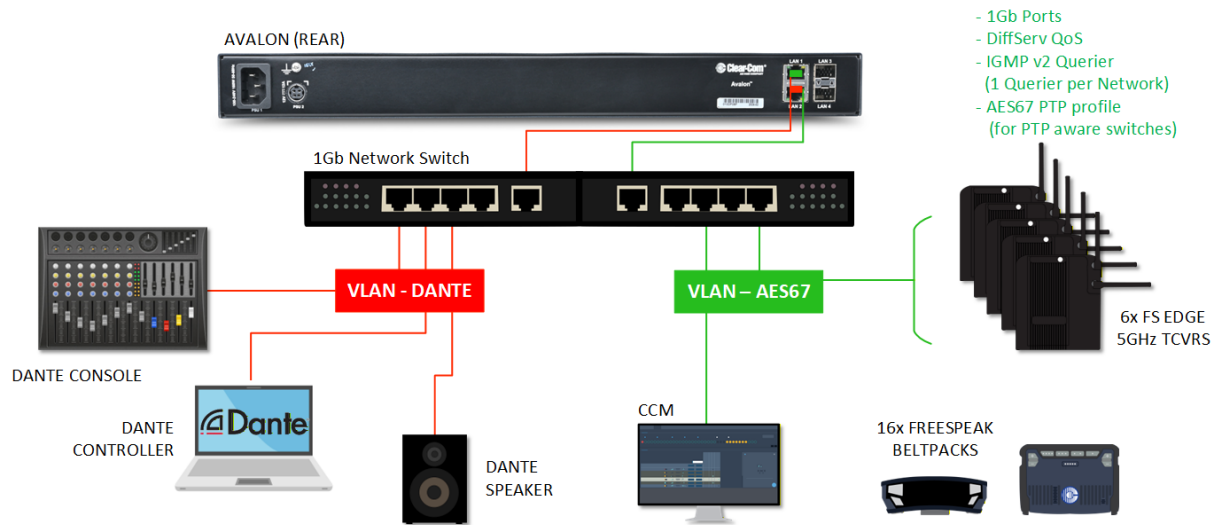
### 7.2.1 Connection to IP Transceivers, Example 1



## 7.2.2 Connection to IP Transceivers and Dante, Example 2

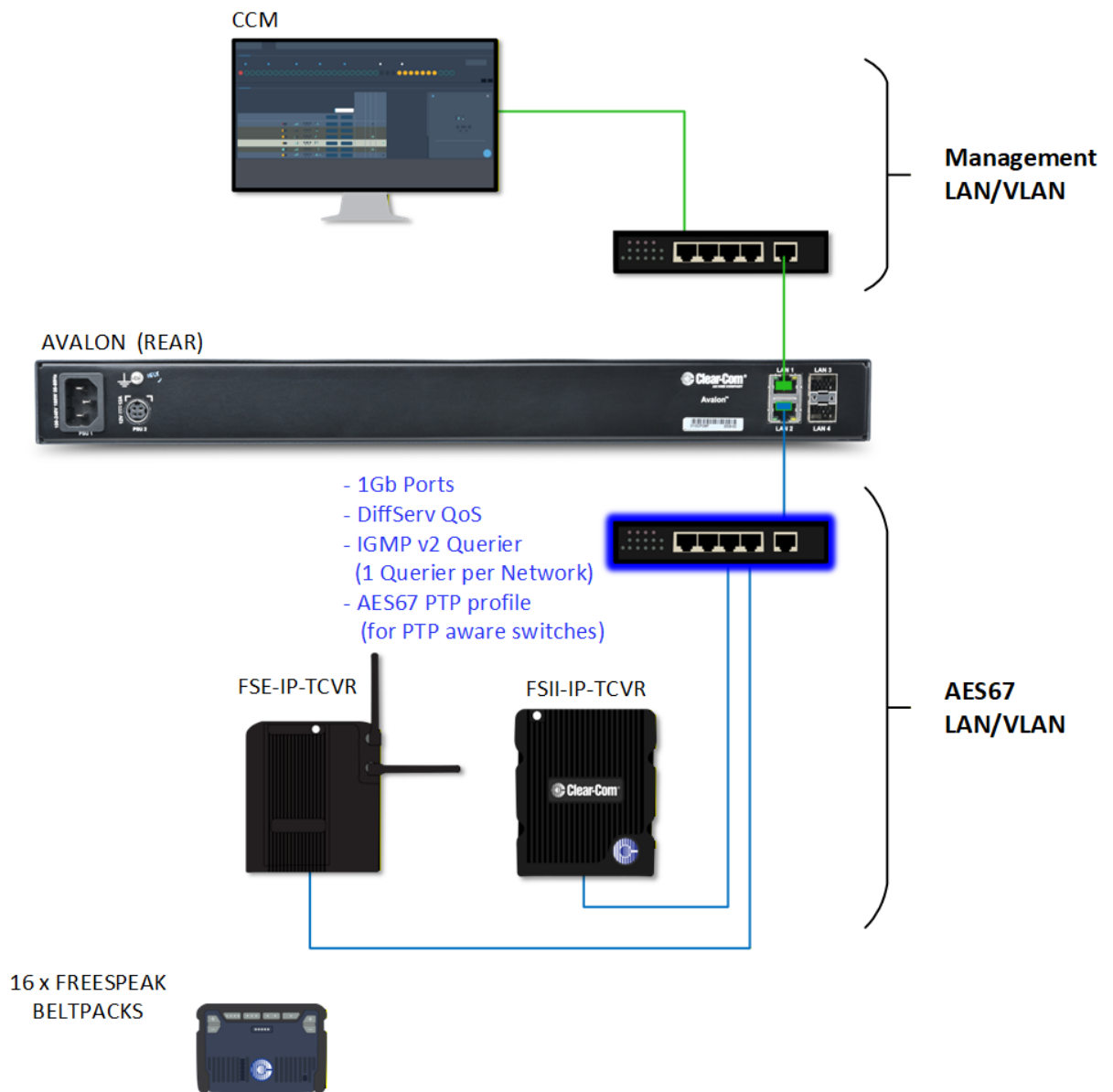


### 7.2.3 Connection to IP Transceivers and Dante, Example 3



## 7.2.4 Connection to IP Transceivers, Example 4

If you are connecting to a network set up with heavy traffic, Clear-Com recommends that you split AES67 traffic into its own segment.



## 7.2.5 Setup Rules

- The default setup, Management on LAN 1 and AES67 on LAN 2, allows your computer to be connected directly to the Avalon for configuration and a dedicated switch to LAN 2 for FreeSpeak IP transceivers. This is in order to accommodate the IP transceivers' need for high clocking accuracy. Heavy traffic on your network will degrade the performance of your IP transceivers.
- For the AoIP network, try to keep the number of layer 2 hops between PTP leader and follower as low as possible (no more than 3). If more are required, consider using a Boundary Clock or a Transparent Clock.
- For more information on achieving a well-regulated PTP network and recommendations for suitable switches, see *Clear-Com AoIP Network Recommendations* available from the [FreeSpeak II Knowledge Center](#).
- Use DHCP (the default setting) for fast and easy setup of the devices. If the device does not encounter a DHCP server on the network it will automatically allocate an address in the link-local range (169.254.xx.xx).
- IP addresses can be configured statically under **Hardware > Resources > Network** in the CCM.
- For information on the 5 GHz transceiver (status and connection indicators) see the *Edge Transceiver Quick Start Guide* available from the [FreeSpeak Edge Knowledge Center](#).
- Connection status indicators on the FreeSpeak II IP transceiver are the same as the Edge transceiver (no channel scan).
- For PoE to the transceivers you will need a PoE capable network switch or PoE injector.

## 7.3 Registering FreeSpeak Beltpacks

Before you can use a beltpack, you must register it. This enables the Avalon to associate the beltpack with roles and assigned keys.

You can register a beltpack in two ways:

- By USB cable. When registering a beltpack in this way, a role that assigns keys to the beltpack is automatically created for the beltpack. The role can be edited as required in the **Configuration > Roles** page of the CCM.
- Over The Air (OTA). When you register a beltpack in this way you must create a role for it manually in **Configuration > Roles** before the beltpack can connect.



### 7.3.1 Registering a beltpack by USB cable

This method of registering beltpacks is recommended for fast and easy set up.

To register a beltpack using a USB cable, connect a beltpack to Avalon using a USB A to micro USB B (FSII) / USB C (FSE, FSIC) cable. The beltpack can be powered on either before or after connection. The Avalon will show 'Beltpack [ID] is now registered' in the front menu screens.

**Note:** *When beltpacks are registered in this way, a role with two channels (1 and 2) is automatically generated and applied to the beltpack. Roles can be edited at any time in the **Configuration** page of the CCM.*

### 7.3.2 Registering a beltpack OTA

To register a beltpack using OTA:

1. Navigate to **Hardware > Resources** and click **Add Resource**. The following screen appears:

The screenshot shows the 'Add Resource' screen with the 'Wireless' tab selected. Under 'Method 2 - Over the Air Registration', the 'NAME' field contains 'ff445566' and the 'PIN' field contains '0000'. A 'Start OTA Registration' button is at the bottom. Two callout boxes are present: one pointing to 'Method 2 - Over the Air Registration' with the text 'Select Over the Air Registration', and another pointing to the 'Start OTA Registration' button with the text 'Select Start Over the Air Registration'.

2. Click **Start OTA Registration**.

**Note:** *A timer is started indicating how long the system is open for registration. You can close OTA registration on the system at any point.*

### 7.3.3 Unregistering a beltpack

To unregister a beltpack, navigate to **Hardware > Resources > Endpoints** (click the down arrow to see all connected Endpoints (beltpacks)). Select an Endpoint by clicking on it. Select **Unregister**.

 **EDGE-BP-524403** 

**General**

Model

FSE

Frequency Type

5.0 GHz

ID

524403

Fixed Role

Producer



**Version**

Version

4.6.79.0

**Unregister**

Free up any assigned resources and deauthorize endpoint from future connections to this system.

**Unregister**

## 7.4 FS Edge Transceivers

Wireless region and channel setup are important when using FS Edge transceivers.

### 7.4.1 Wireless Region

Your Edge transceiver has a wireless region pre-configured, in order to comply with regional regulations. The wireless region setting in the CCM MUST match that of your transceiver, or the system will not work. You will see an error message in the **Status** page if the regions do not match.

To set the wireless region in the CCM, navigate to: **Hardware > Host > Wireless > Wireless Region**.

The screenshot displays the Clear-Com CCM interface. The top navigation bar includes 'HARDWARE', 'CONFIGURATION', and 'STATUS' (with a warning icon and '1'). The 'Host' tab is selected under the 'Hardware' section. On the left, the 'Host Device' sidebar shows details for device 'ff080925', including its IP address (10.50.17.165), connections (DANTE, FSE, FSII, HELIXNET, I.V. Direct), licensed ports (96), version number (2.14.83.52), and power status (indicated by red and green icons). The main configuration area is for device 'ff080925' and the 'Wireless' tab is active. Under the 'General' section, 'Administration PIN' is 1111 and 'System ID' is 925. 'BP Role List Sorting' is set to 'Role Number'. The 'Freespeak Edge' section shows 'Edge Wireless Region' set to 'US' (highlighted by a callout bubble labeled 'Edge wireless region') and 'Excluded Channel(s)' set to 'Unassigned'. A 'Scan All EDGE Transceivers' button is present. The 'Freespeak II' section shows 'Splitter/Transceiver 1' and 'Splitter/Transceiver 2' both set to 'RJ45', 'Audio RF Filter' set to 'Enabled', 'AA Battery Type' set to 'Alkaline', and 'Over The Air (OTA) PIN' set to 0000.

## 7.4.2 Channel Scanning

**Note:** *Channel Scanning and auto channel selection are only available when at least one 5 GHz transceiver is registered to the system.*

The FreeSpeak Edge transceiver system automatically selects channel 1, 2 and a backup channel (if using DFS channels) on each transceiver when you set it up. For best performance, you must ensure that selected channels are clear of interference from other devices. You can use the channel scanning feature and auto select the best channels for each transceiver. Channel scanning will scan all the 5 GHz channels in your local RF space.

To conduct a channel scan, navigate to: **Hardware > Resources > Transceivers [select transceiver] > Wireless Channels** and select **Refresh Scan**.

After channel scanning, to auto select the optimum channels for each transceiver use **Auto Select**.



### 7.4.3 Channel Score

Channel **Score** is calculated using a weighted combination of:

- **RSSI** (Received Signal Strength Indicator)
- Channel activity (**Use**)
- Access points (**Ap**)

To scan all the transceivers in your network simultaneously, go to **Hardware > Host > Wireless > FS Edge > Scan All Edge Transceivers**.

For more detail on using FreeSpeak Edge transceivers, see the FreeSpeak Edge User Guide available online from the Clear-Com FreeSpeak Edge [Knowledge Center](#).

# 8 Using HelixNet Wired Partyline Intercom

---

This chapter topic describes how to connect to HelixNet Wired Partyline Intercom. It contains the following sections:

|                                                                 |     |
|-----------------------------------------------------------------|-----|
| 8.1 Introduction .....                                          | 99  |
| 8.2 HelixNet Connections - General Outline .....                | 100 |
| 8.3 Connecting HelixNet User Stations to the network .....      | 101 |
| 8.4 Connecting User Stations via Digital Powerline Device ..... | 102 |
| 8.5 Pairing HelixNet User Stations to Avalon .....              | 102 |
| 8.6 Digital Powerline Device Statistics and Messages .....      | 106 |

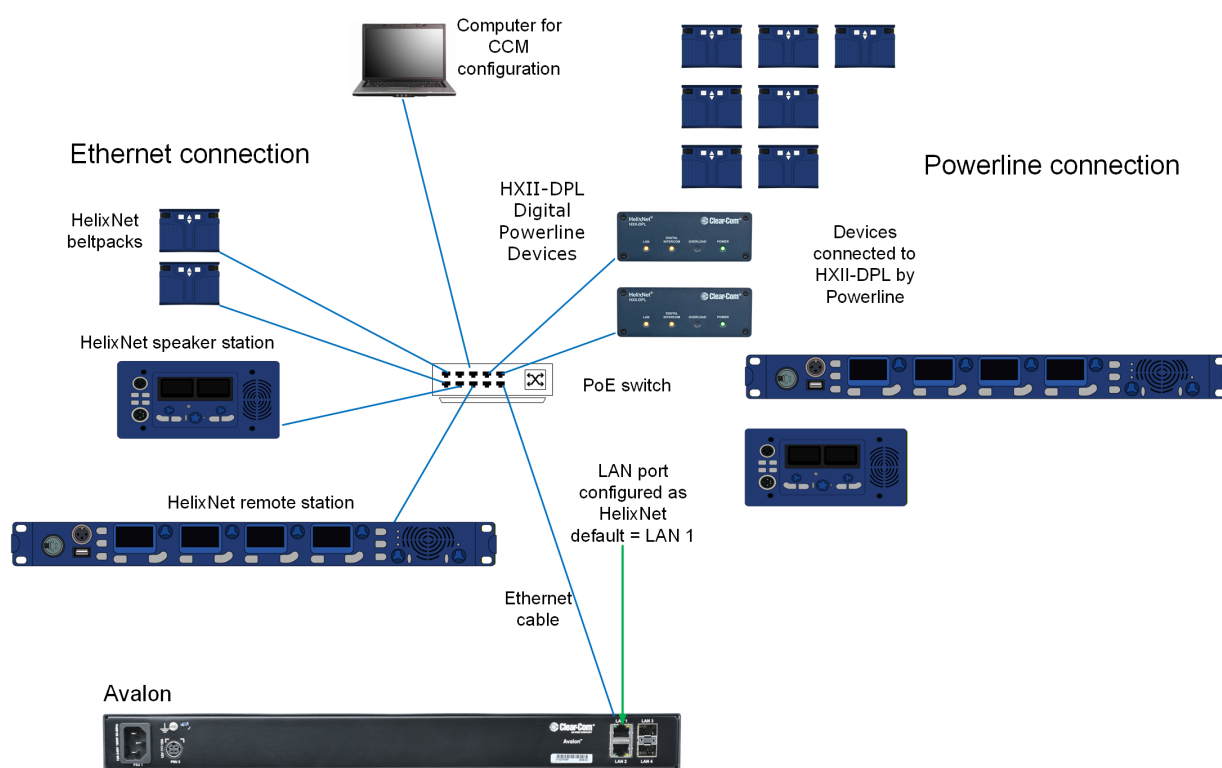
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## 8.1 Introduction

Avalon supports HelixNet wired partyline intercom, including the remote station, the speaker station and the beltpacks. HelixNet user stations connect to Avalon via an ethernet network and HelixNet keysets can be assigned to any HelixNet enabled channel in the Avalon system. Each HelixNet enabled channel requires an Avalon licensed port.

HelixNet beltpacks, remote stations and speaker stations are connected to the Avalon on the LAN port that is configured for the HelixNet network (default LAN 1) via an Ethernet network.

HelixNet user stations can also be connected to the Avalon via the HelixNet Powerline Device. HXII-DPL acts as a bridge between Ethernet and Powerline, enabling connection and powering of devices on the Powerline using standard XLR microphone cable and passive splits.



**Note:** Avalon's HelixNet network is combined with the Management network.

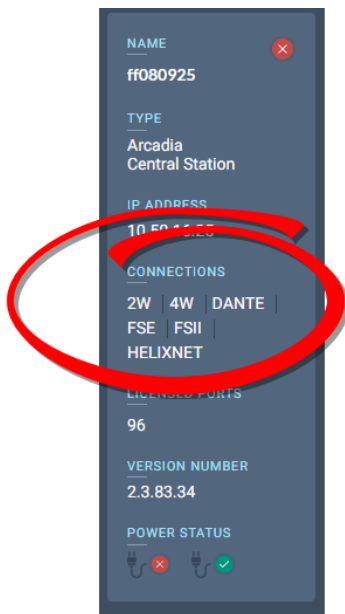
**Note:** When using an IEEE-802.3af compliant PoE switch, be sure to note the switch's power budget. Each HXII-BP requires 4 Watts of power. The HelixNet remote and speaker station each require 15.4 Watts of power from the switch. Do not exceed the power budget of the switch when attaching devices. For devices connected via Powerline see the HelixNet Powerline Calculator available from the HelixNet Knowledge Center.

**Note:** You can enable up to 24 channels for HelixNet. How many channels you use is limited by how many port licenses you have. One HelixNet enabled channel consumes one port license.

**Note:** User station keysets can be assigned to any HelixNet enabled channel.

**Note:** *HelixNet should be listed in the CCM under **Hardware>Host**. If it is not listed and your device is manufactured before June 1st 2022 it may require a HelixNet activation license. Please contact Clear-Com Sales for further information.*

**Note:** *2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.*



See the *HelixNet for Avalon User Guide*, available from the [HelixNet Knowledge Center](#) or more information on the HelixNet system and components.

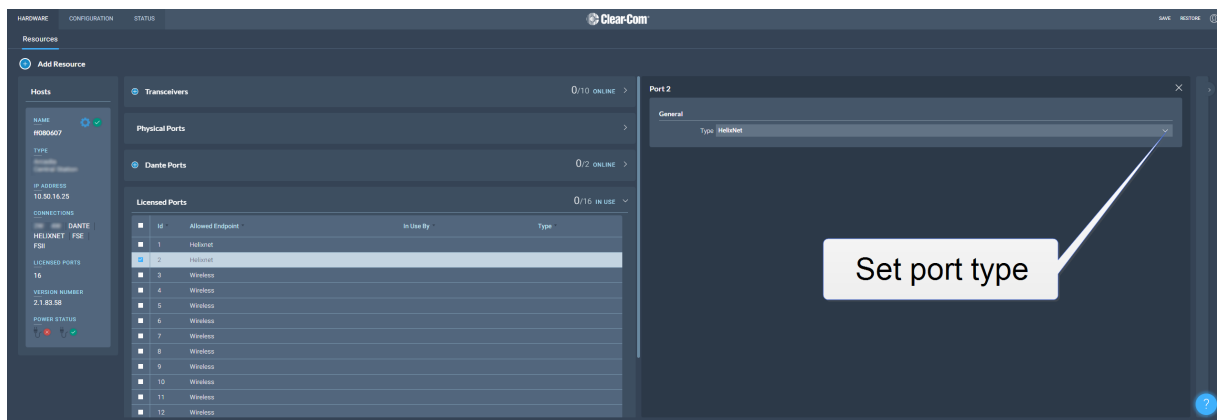
## 8.2 HelixNet Connections - General Outline

Before connecting HelixNet beltpacks you must have:

- At least 1 channel enabled for HelixNet (by default, channels 1 - 4 are enabled). See [Enabling Channels for HelixNet on page 50](#)
- Sufficient number of licensed ports for the HelixNet enabled channels (max 24)
- **Port Type** on at least 1 licensed port set to type **Any** (default) or **HelixNet**. If this is not done, HelixNet keysets cannot be assigned

Physical ports shown on this image are not available on Avalon.





For a quick test setup, you can work with the default settings which allow licensed ports to be used for any function and have 4 channels HelixNet enabled. For a full installation, you can enable channels and create roles for HelixNet beltpacks, remote stations and speaker stations.

## 8.3 Connecting HelixNet User Stations to the network

HelixNet wired devices are connected to Avalon's HelixNet network using the RJ45 ethernet connector on the back of each device.

HelixNet beltpack base connectors



Connect RJ45 Ethernet cable here

HelixNet remote station rear connectors



Connect power supply unit (PSU) here

Connect RJ45 Ethernet cable here

HelixNet speaker station enclosure (rear connectors) housing A speaker station



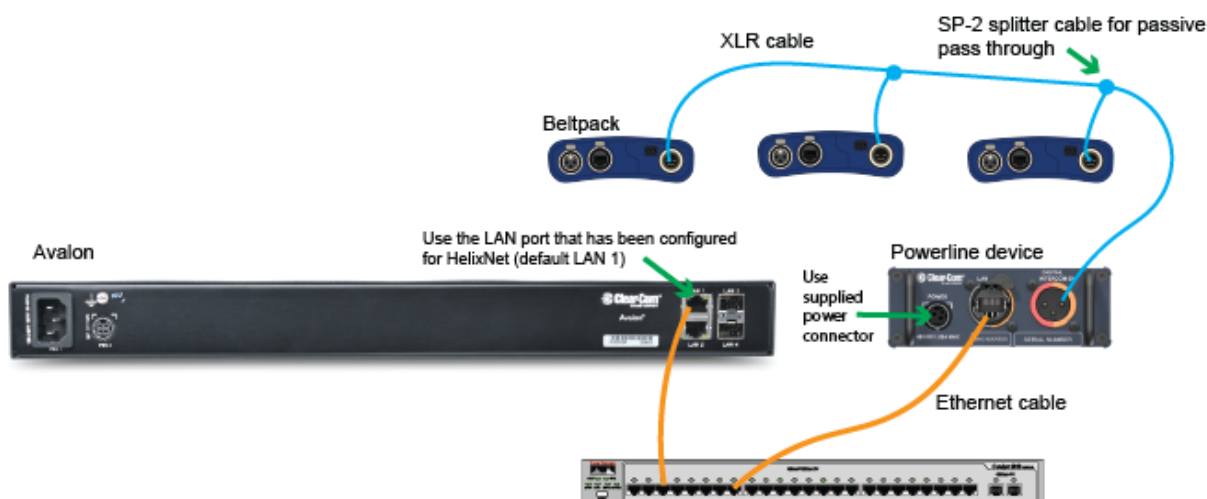
Connect RJ45 Ethernet cable here

Connect power supply unit (PSU) here

## 8.4 Connecting User Stations via Digital Powerline Device

HXII-DPL Powerline device connects to your Avalon via network and must be powered using the supplied power supply (PSU-EXT-005). Multiple HXII-DPL Powerline devices (24 max) can be added to a system either at a central location, or, for best performance, locally where connections to HelixNet user stations are needed.

HelixNet user stations must run HelixNet firmware v.4.5 (included with Avalon 2.11+) before use with the HXII-DPL Powerline device.



Connect the HXII-DPL Powerline device to HelixNet user stations using 3-pin XLR cabling, via passive splits or daisy chaining as appropriate.

Once physically connected and powered, the HelixNet user stations can be paired to the system.

HXII-DPL Powerline device does not need to be paired to the system. It is not visible in the CCM (**Status > Overview > Wired**) on first connection until a HelixNet endpoint is paired and connected via the device.

## 8.5 Pairing HelixNet User Stations to Avalon

Once connected to Avalon's HelixNet network and appropriately powered, HelixNet beltpacks, remote stations and speaker stations can be paired to the Avalon system:

- from the CCM
- from the HelixNet user station, using the front panel menu

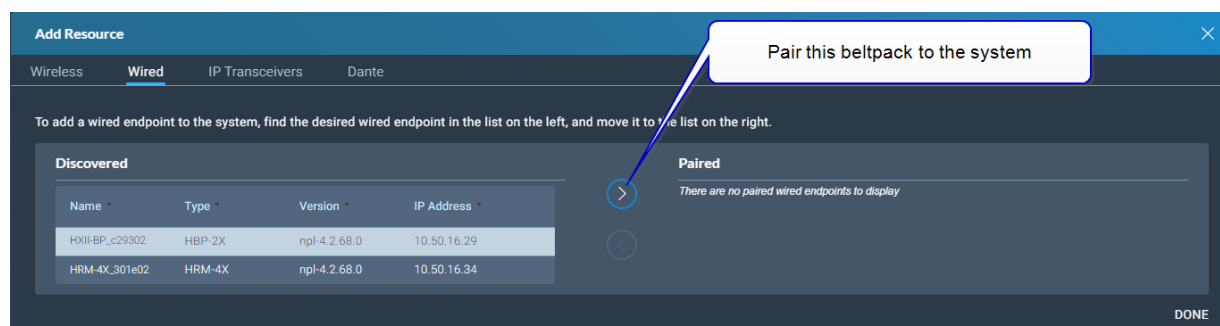
**Note:** *Troubleshooting: you may need to make sure that the connecting device is in the same IP range as the host system. To view and edit the device IP address, navigate to **Networking>Preferences>IP address** in the device menu system.*

**Note:** Pairing from the CCM is available for endpoints that were last used on a HelixNet HMS-4X based system version 4.4 and higher. Endpoints migrating from HMS-4X version 4.2 or earlier to an Avalon system must initially be paired from the front panel menu of the HelixNet user station.

## 8.5.1 Pairing/unpairing HelixNet User Stations in the CCM

When the user stations are connected to the Avalon HelixNet network and appropriately powered, they will appear as **Discovered** in the CCM.

1. In the CCM, navigate to **Hardware>Resources>Add Resource**  **>Wired** .
2. Select the device under **Discovered** and click the arrow to move it to **Paired**.
3. The device will work through its connection sequence.
4. The device is ready for use.



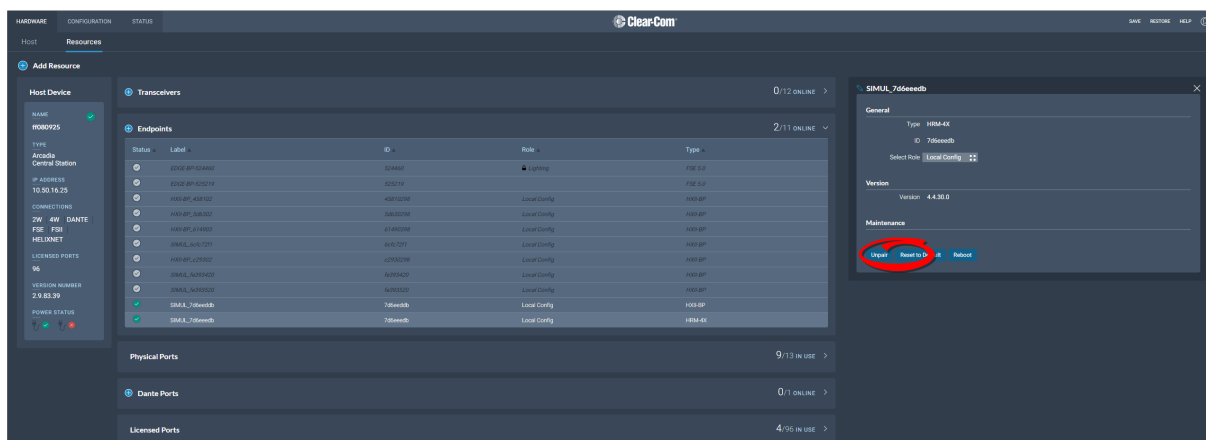
Repeat this step for each device.

**Note:** The device will automatically update on connection if a difference in firmware versions is detected between the Avalon and the HelixNet Endpoint.

**Note:** HelixNet Endpoints manufactured in January 2023 (serial number ends with C00 or higher letter/number) or later can only be used with Avalon version 2.8 or HMS-4X version 4.4. These endpoints cannot be used with older versions due to difference in hardware components.

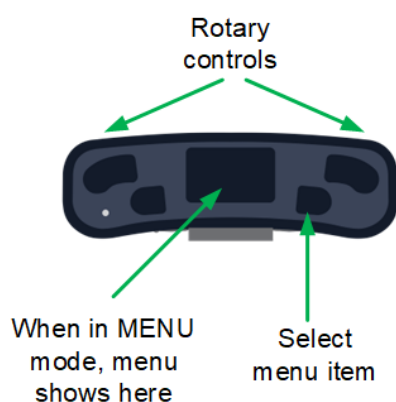
Once paired to a system, the device will automatically connect to that system whenever it is connected to the network. The devices can be unpaired from the system to prevent this from happening. To unpair a device from the system, navigate to **Hardware>Resources>Endpoints** [select device]>**Unpair**.

**Note:** 2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.



## 8.5.2 Pairing HelixNet user stations from the front panel menu

### Beltpacks



1. Press the **Menu** button on the front of the beltpack (short press) to enter menu mode.
2. Press the left call button on the beltpack (**back**). You will see the beltpack menu system.
3. Using the rotary controls and the right call button (**select/enter**), navigate to **Networking>Pair to Station**.
4. Select either;
  - **Pair by Name** and select the name of Avalon
  - **Pair by IP** and enter the IP address of Avalon's HelixNet LAN connector

**Note:** You need to **Save** the IP address (right call button).

### Remote stations and speaker stations

1. Press the **Menu** button to enter menu mode.
2. Using the rotary controls, navigate to **Networking>Pair to Station**.

3. Select either;

- **Pair by Name** and select the name of Avalon
- **Pair by IP** and enter the IP address of Avalon's HelixNet Network using the rotary controllers

**Note:** *All devices will automatically update on connection if a difference in firmware versions is detected.*

### 8.5.3 Using HelixNet user stations on Avalon

Once the HelixNet user station is connected to the Avalon and the firmware updated if necessary, the HelixNet user station can be configured.

Avalon's default configuration assigns the first channels of the system to the HelixNet user stations on connection.

HelixNet user stations can be operated in **Local Config**. In this case, the user station is fully configured from its front panel menu. Any of the connected Avalon's HelixNet enabled channels can be assigned to the keysets of the user station.

Where central management is required, **Roles** can be created in the Avalon's CCM and then assigned to the HelixNet user station, either from the CCM's **Hardware>[Endpoint]>Properties** or in the front panel menu of the user station. A role is a configuration of the keysets and settings of the user station. Multiple HelixNet devices can share a role and any role changes will be updated in real time.

- Create roles for your devices. See [Roles on page 61](#) in this User Guide.

For HelixNet manuals and other resources see:

[The HelixNet Knowledge Center](#) on the Clear-Com website.

## 8.6 Digital Powerline Device Statistics and Messages

You may see the following statistics and messages in the Avalon Central Station CCM:

| Powerline statistics |                                                                                                                 |
|----------------------|-----------------------------------------------------------------------------------------------------------------|
| Collision rate       | 25-35% - high<br>≥ 35% - very high                                                                              |
| Error rate           | 0-0.1% error - low data quality<br>≥ 0-0.1 % error - very low data quality                                      |
| Bandwidth            | 40 - 130 Mbps - working range<br>15 - 40 Mbps - low data rate<br>≤ 15 Mbps - very low data rate                 |
| Voltage              | < 18 V DC - very low power<br>< 24 V DC - low power<br>> 24 < 31 V DC - working range<br>> 31 V DC - high power |

| Condition                                                                                                                                             | Steps to take                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The Powerline data collisions are high or very high                                                                                                   | <ol style="list-style-type: none"> <li>1. Check if Powerline is overloaded</li> <li>2. Check cable shielding</li> <li>3. Check HelixNet user stations</li> </ol>                                                                                            |
| The Powerline data quality is low or very low<br><br>Note: can be caused by external interference or too many devices trying to use the same carriers | <ol style="list-style-type: none"> <li>1. Check if Powerline is overloaded</li> <li>2. Check for cross-connected Powerlines</li> <li>3. Check cable shielding</li> <li>4. Check HelixNet user stations</li> </ol>                                           |
| The Powerline voltage is low/very low                                                                                                                 | <ol style="list-style-type: none"> <li>1. Check if the Powerline is overloaded</li> </ol>                                                                                                                                                                   |
| The Powerline voltage is high                                                                                                                         | <ol style="list-style-type: none"> <li>1. Check the HelixNet user station and the cable that connects it</li> </ol>                                                                                                                                         |
| <i>The Powerline voltage at [name] endpoint is unbalanced.</i>                                                                                        | <ol style="list-style-type: none"> <li>1. Check cabling for continuity and resistance between pin 2 and 3</li> <li>2. Check the HelixNet user station</li> </ol>                                                                                            |
| <i>HXII-DPL Powerline device is not reachable.</i>                                                                                                    | <ol style="list-style-type: none"> <li>1. Power cycle the Powerline device and the connected user stations</li> <li>2. Contact Clear-Com if the problem persists</li> </ol>                                                                                 |
| <i>HXII-DPL Powerline device has a connection &gt;7.</i>                                                                                              | <ol style="list-style-type: none"> <li>1. Check the number of connected HelixNet user stations</li> <li>2. If the problem persists when the number of connected units is <math>\leq 7</math>, check the integrity of the Powerline cable shields</li> </ol> |

**Note:** To ensure good audio quality, consider adding more HXII-DPL Powerline devices to your system.

## 9

## Using V-Series Keypanels

---

This chapter topic describes how to connect to V-Series Panels. It contains the following sections:

|                                                |     |
|------------------------------------------------|-----|
| 9.1 Introduction .....                         | 109 |
| 9.2 Panel connection methods .....             | 109 |
| 9.3 Connecting Panels to the Network .....     | 110 |
| 9.4 Panel roles .....                          | 111 |
| 9.5 Panel menu controls .....                  | 114 |
| 9.6 Connecting Keypanels via I.V. Ports .....  | 116 |
| 9.7 Connecting Keypanels via AES67 Ports ..... | 119 |
| 9.8 Using the Panel .....                      | 121 |

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## 9.1 Introduction

V-Series panels connected via I.V. port: Avalon 4.0 and higher.

V-Series panels connected via AES67 port: Avalon 4.1 or higher.

V-Series keypanels provide intercom users on an Avalon system with high capacity user stations. V-Series keypanels provide a single page of 12, 24 or 32 keysets with lever, rotary, or push button keysets. The keysets can be assigned to a single Channel, Group, IFB, Role, and interface per keyset with the desired key activation.

**Note:** *V-Series Iris and IrisX keypanels support all Avalon features. Non-Iris panels are partially supported in Avalon with I.V. Port connectivity only. Non-Iris panels cannot be upgraded from the Avalon.*

**Note:** *V-Series expansion panels are not supported on Avalon.*

**Note:** *V-Series panel GPI inputs 1-4 can be configured for local control in the **Role** settings. GPI 1 and GPO 1 are additionally available for system action and trigger assignments in the **Logic** configuration.*

**Note:** *V-Series panel auxiliary audio inputs and outputs have the following functions when used with Avalon:*

- **Aux Output** provides a line level output of the panel's headset/speaker mix, controlled by the panel's Main level controller.
- **External Input 1 & 2** are routed to Headset 1 with level controlled by the panel's Aux level control.
- **Headset 2** is listen only and outputs the Main mix of the panel in addition to Gooseneck/Headset 1 input at -12dB relative level.
- **Hot Mic** provides a line-level output of the Gooseneck/Headset 1 microphone Input.

## 9.2 Panel connection methods

- I.V. port type - connect to the management LAN (default LAN 1)
- AES67 port type - connect to the AES67 LAN (default LAN 2)
  - Use device discovery
  - Use the mDNS name of the panel

**Note:** *An I.V. panel connection requires an I.V. port license.*

**Note:** *An AES67 panel connection requires an AES67 port license.*

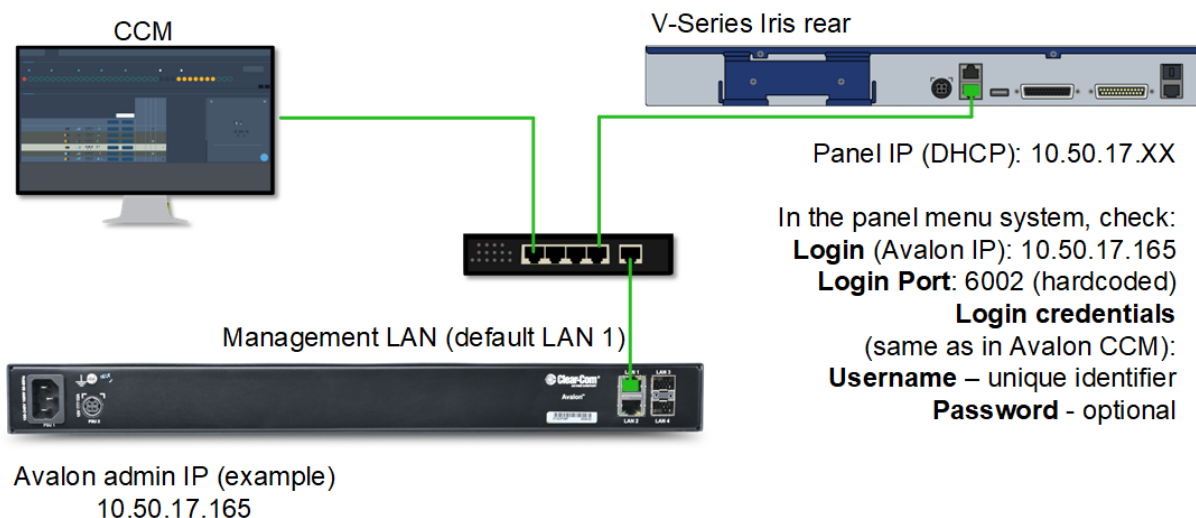
## 9.3 Connecting Panels to the Network

**Note:** Use Cat 5/6e cable.

**Note:** Connect to the port labeled 'Ethernet' or 'LAN' on the panel.

**Note:** The panels can use DHCP for fast and easy set up.

### 9.3.1 I.V. port type



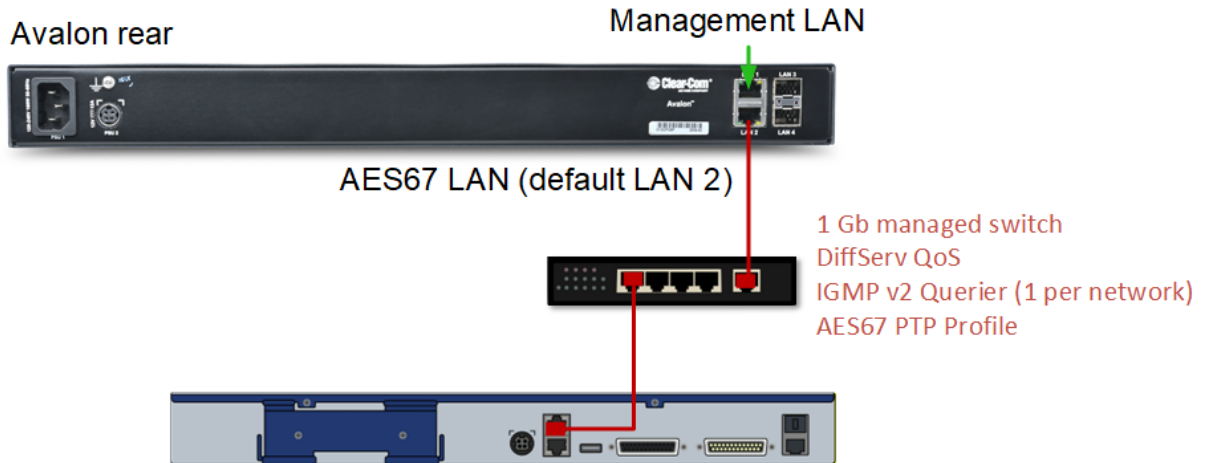
For the panel to connect to Avalon:

- The devices must be able to reach each other over the network
- The panel must have:
  - The Avalon IP address (Management LAN, default = LAN 1)
  - Login Port: 6002
  - Username and password, exactly as configured in the CCM

These details are viewed and edited in the panel menu system.

### 9.3.2 AES67 port type

The panel must be connected to a correctly configured AES67 network.



**Note:** If the panel does not have a static IP address and does not find a DHCP server on the network, it will connect in Link-Local. This is not recommended for ongoing use.

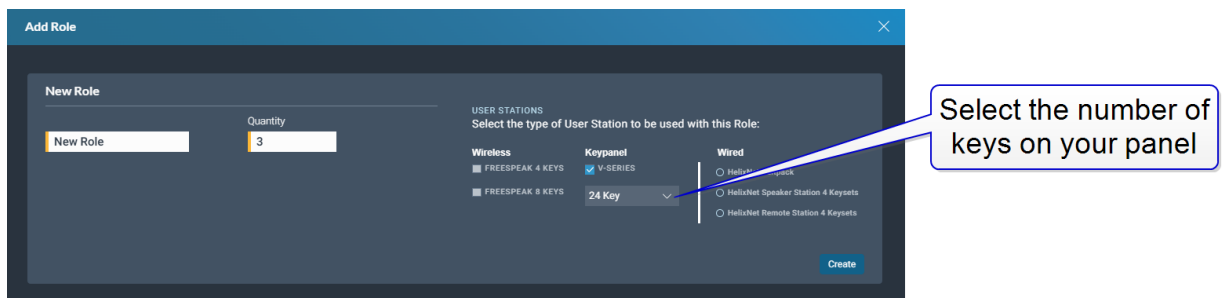
For the panel to connect to Avalon:

- The host and panels must be on the same VLAN
- The panel must have:
  - Login Port: 6001 (hardcoded)

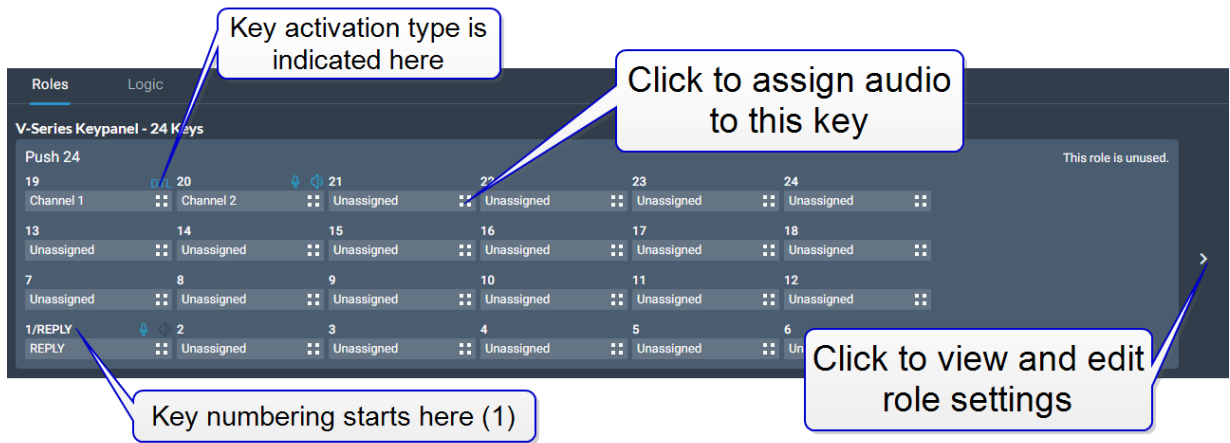
View and edit panel network details in the panel menu system.

## 9.4 Panel roles

Before using the panel you must configure a role for it in **CCM > Configuration > Roles**. Create a role type that matches your panel (12, 24 or 32 keys).

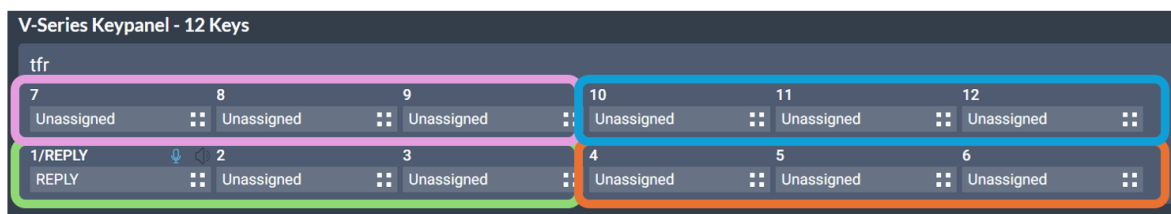
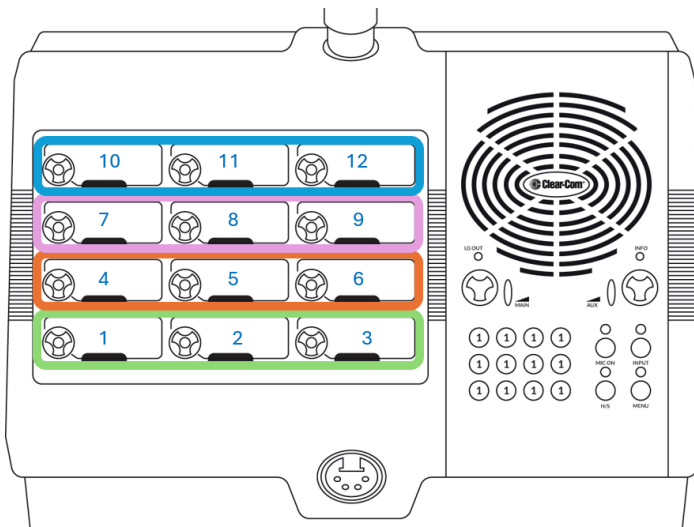


It is possible to select a role for a panel that does not match the number of keys on the panel. For example, you can select a 12 key role on a 32 key panel. If the role layout does not match the physical panel, the panel keys are populated serially, starting from key 1 (Reply) in the lower left-hand corner of the panel.



**Note:** Desktop panels can be configured using the 12 key 1RU Role layout. Keyset layout on a desktop keypanel is as follows:

| CCM Panel Keyset | Desktop Panel (Row 1 = bottom row) |
|------------------|------------------------------------|
| 1-3              | Row 1                              |
| 4 - 6            | Row 2                              |
| 7 - 9            | Row 3                              |
| 10 - 12          | Row 4                              |



## 9.4.1 Fixed Role

If you do not want your panel user to select a role for themselves, you must fix the role to the panel. Do this in **Hardware > Resources > Endpoints** [select panel].

Physical ports shown on this image are not available on Avalon.

The screenshot shows the Clear-Com web interface with the 'Resources' tab selected. On the left, the 'Host Device' sidebar shows details for 'ff080925'. The main area displays 'Endpoints' with a table of resources. The 'Endpoints' table has columns: Status, Label, ID, Role, and Type. One entry is highlighted: CC-IRIS-00225B30, ID CC-IRIS-00225B30, Role Director, Type V-SERIES - AES67. A callout bubble labeled 'Fix role here' points to the 'Fixed Role' dropdown in the settings for this device. Another callout bubble labeled 'Select panel' points to the 'Physical Ports' section.

| Status | Label            | ID               | Role         | Type             |
|--------|------------------|------------------|--------------|------------------|
| ✓      | HRM-4X-301e02    | 301e0298         | Local Config | HRM-4X           |
| ✓      | FoHouse          | a                | Presenter    | V-SERIES - I.V.  |
| ⊙      | Test             | admin            |              | V-SERIES - I.V.  |
| ✓      | CC-IRIS-00225B30 | CC-IRIS-00225B30 | Director     | V-SERIES - AES67 |

**Note:** The fixed role toggles on and off.

For more information on using roles with your keypanel see [Managing Roles on page 62](#).

## 9.5 Panel menu controls

### 9.5.1 Panel controls for menu navigation - quick guide

#### Lever Panel

##### Menu Navigation

Editing fields are used for manually entering or editing items such as IP, usernames, passwords. Existing entries can be navigated for editing.



Press lever down to select or exit and save

##### Editing Fields

Front panel menus are navigated, saved, and exited using the keysets



Move  
back

Move  
forward



##### Keypad for data entry

Numbers



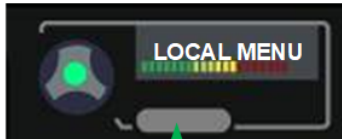
Select 1    Select 2

Numbers and alphabet



Press lever down to scroll through letters and numbers. Example: to select 'a' press lever 3 times.

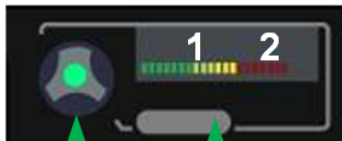
## Rotary Panel



Press to select or  
exit and save



Press to  
move back      Move  
forward



Press to  
select 1

Press to  
select 2

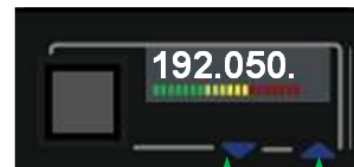


Press to scroll through  
letters and numbers

## Push Panel



Press to select or  
exit and save



Press to  
move back      Move  
forward



Press to  
select 1

Press to  
select 2



Press to scroll through  
letters and numbers

## 9.6 Connecting Keypanels via I.V. Ports

Overview:

- Cable the devices as shown [Connecting Panels to the Network on page 110](#)
- Add an I.V. type **Keypanel** in **Hardware > Resources** (CCM)
- In the panel menu system, set connection details (Avalon management IP address, port, and credentials). Once you have done this the panel will begin its connection sequence
- Check successful connection in **Hardware > Resources** or **Status > Keypanels**

**Note:** *To complete the connection process, the panel must have a role and an active license.*

### 9.6.1 Adding an I.V. Keypanel in the CCM

1. In the CCM, navigate to: **Hardware > Resources > Add Resource**  **> Keypanel**.
2. Select **Method 1 - Manual**.
3. Fill in the label, select port type and enter a username and password.

The screenshot shows the 'Add Resource' dialog box with the 'Keypanel' tab selected. Under 'Method 1 - Manual', there are four input fields: 'Keypanel Label' (with a callout 'Label this panel'), 'Port Type' (a dropdown menu set to 'I.V. Port' with a callout 'Select I.V. port type'), 'User ID' (with a callout 'Username'), and 'Password' (with a callout 'Password (optional)'). A 'Create' button is located below these fields. At the bottom right of the dialog is a 'DONE' button, with a callout 'Close when Done'. The dialog also shows 'Method 2 - Discovery (AES67 Only)' as an option.

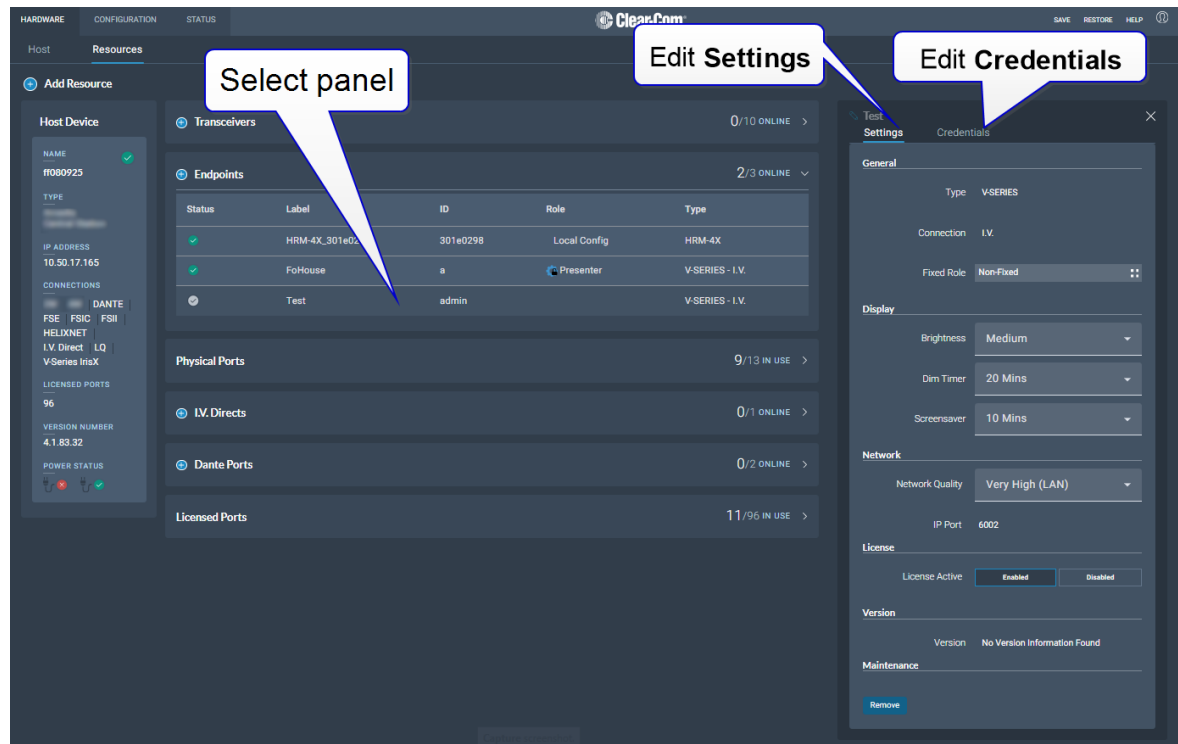
**Note:** *The password is optional, it can be left blank.*

**Note:** *If you do not enter a username the system will create a random, editable username for you. **Username** is essential as it provides a unique identifier for this port.*

4. Click **Create**.
5. This creates a keypanel endpoint that you can view and edit. Select the endpoint in the CCM:

Physical ports shown on this image are not available on Avalon.





6. A green checkmark indicates successful connection.

**Note:**

*If the panel does not have a fixed role, you must select a role on the panel using the panel controllers before the panel will complete its connection sequence. If the panel has a fixed role (and an active license) it will connect immediately.*

## 9.6.2 Setting IP Connection Details in the Panel Menu (I.V. Connections)

On the panel, press the **Menu** button and use the panel controls to:

1. Go into the **LOCAL MENU**
2. Select **IP SETUP**
3. Select **NET SETUP**

**Note:**

*To save your changes, exit the menu item (move back up the menu system)*

- a. Select **DHCP** and check that this is enabled. Press DHCP again to exit and save
- b. Select **LOGIN IP** and input the IP address of the Avalon (Management). Press LOGIN IP to exit and save
- c. Select **LOGIN PORT** and input 6002. Press LOGIN PORT to exit and save
4. Press to exit **NET SETUP**
5. Select **USER ID** and input the User ID, exactly as set in the Avalon CCM. Press USER ID to exit and save

6. Select **PASSWORD** (if used) and enter it exactly as set in the Avalon CCM. Press **PASSWORD** to exit and save

**Note:** *Password is hidden until you press any key on the panel.*

7. Once you have done this, the panel will automatically connect to the Avalon. When connected, the panel displays 'Press any key to start' and is ready to be assigned a Role from the panel or from **CCM Hardware > Endpoints**.
8. Successful connection is indicated by a green check mark in the CCM in **Hardware > Endpoint** and **Status > Keypanel** .

## 9.7 Connecting Keypanels via AES67 Ports

Overview:

- Cable the devices as shown [Connecting Panels to the Network on page 110](#)
- In the panel menu system, set connection details (panel and Avalon AES67 LAN port are in the same VLAN, DHCP status and port number)
- Add an AES67 type **Keypanel** in **Hardware > Resources** (CCM)
  - Use the discovery feature (recommended for fast setup)
  - Use panel mDNS name
- Check successful connection in **Hardware > Resources** or **Status > Keypanels**

**Note:** *To complete the connection process, the panel must have a role and an active license.*

### 9.7.1 Setting IP Connection Details in the Panel Menu (AES67 Connections)

On the panel press the **Menu** button and use the panel controls to:

1. Go into the **LOCAL MENU**
2. Select **IP SETUP**
3. Select **NET SETUP**

- Note:** *To save your changes, exit the menu item (move back up the menu system)*
- a. Select **DHCP** and check that this is enabled. Press DHCP again to exit and save
  - b. Select **LOGIN PORT** and input 6001. Press LOGIN PORT to exit and save
4. Press to exit **NET SETUP**
  5. Exit the menu system.

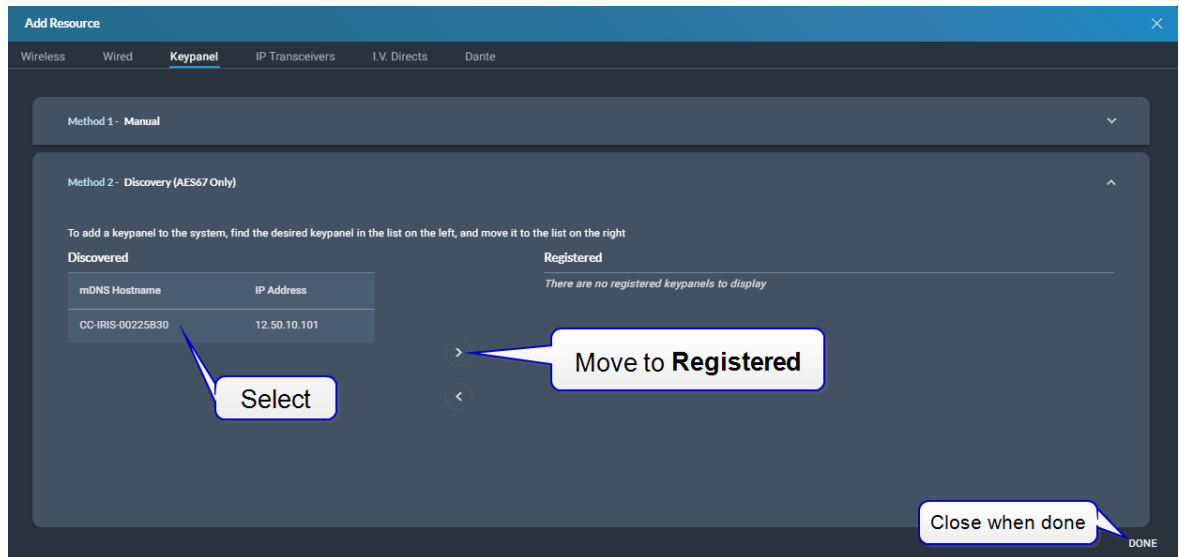
### 9.7.2 Adding an AES67 Keypanel in the CCM

When the panel is cabled to the Avalon AES67 network, it will become visible in the Discovery screen.

Discovery Method (recommended)

1. In the CCM, navigate to: **Hardware > Resources > Add Resource**  **> Keypanel**.
2. Select **Method 2 - Discovery**.

3. Select the discovered panel and move it to **Registered** using the arrow.



4. The panel will start to work through its connection sequence.
5. A green checkmark indicates successful connection.

**Note:** *If the panel does not have a fixed role, you must select a role on the panel using the rotary controllers before the panel will complete its connection sequence. If the panel has a fixed role (and an active license) it will connect immediately.*

**Note:** *The devices will discover across subnets but to connect they must be in the same subnet.*

**Note:** *To unregister the panel, use the back arrow.*

### Manual Method (mDNS)

Find the mDNS name of your panel in the menu screens of the unconnected panel in the form CC-IRIS-XXXXXXXX where XXXXXXXX is the serial number of the panel. The serial number of the panel is printed on the rear of the panel.

1. In the CCM, navigate to: **Hardware > Resources > Add Resource**  **> Keypanel**.
2. Select **Method 1 - Manual**.

3. Fill in the label, select port type and enter the mDNS hostname.

4. Create.
5. The panel will start its connection sequence.
6. If the panel does not have a fixed role, you must select a role on the panel using the panel controllers before the panel will complete its connection sequence. If the panel has a fixed role (and an active license) it will connect immediately.
7. A green check mark indicates successful connection.

## 9.8 Using the Panel

### Start Using the Keypanel

If a role is fixed to the panel, the panel will start, using that role and keysets assigned in the CCM. If the role is not fixed to the panel, select the role you need using the panel controls and press **Start**.

**Note:** Find the admin pin code for the keypanel menu system access in **Hardware > Host > Wireless > General > Administration Pin**.

#### 9.8.1 Panel Licensed Ports

Your panel licensed port capacity can be managed by:

- Disabling a port license (the port will remain in your configuration but will be inactivated)
  - **Hardware > Resources > Endpoints** [select panel] > **License Active:** Enabled/Disabled (default: Enabled)
- Setting licensed port type

- **Hardware > Resources > Licensed Ports > Type**

- Any (default)
- I.V. Port (for an I.V. connected panel)
- AES67 Keypanel port

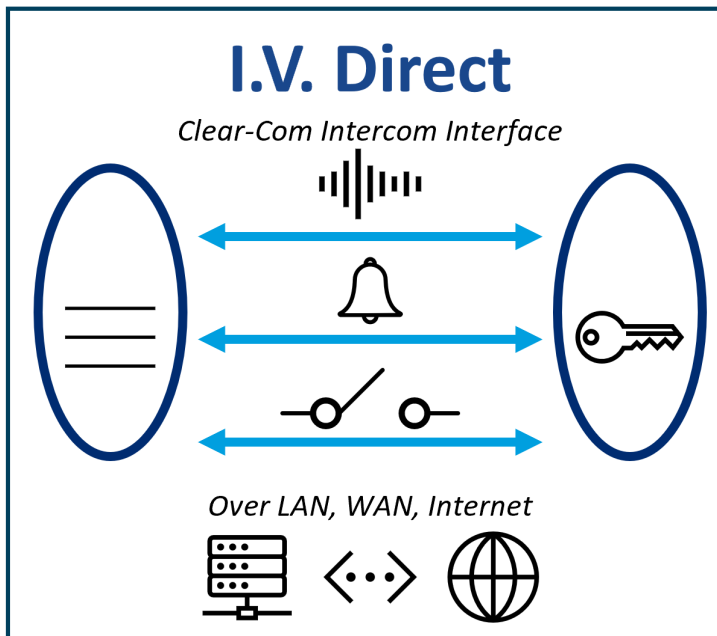
For more information on keypanels, see the *V-Series Iris X Panel User Guide*, available from the Clear-Com website.

# 10 Using I.V. Direct

This chapter topic describes how to use and configure I.V. Direct connections. It contains the following sections:

|                                                    |     |
|----------------------------------------------------|-----|
| 10.1 What is I.V. Direct? .....                    | 124 |
| 10.2 I.V. Direct Configuration Overview .....      | 125 |
| 10.3 Connecting I.V. Direct on your Network .....  | 129 |
| 10.4 Configure I.V. Direct in the Avalon CCM ..... | 130 |
| 10.5 Using GPIO with I.V. Direct .....             | 134 |

## 10.1 What is I.V. Direct?



I.V. Direct/IVC Direct ports enable a variety of IP connections to Clear-Com products, and maybe be used, for example, for:

- Intercom expansion via LQ
- Intercom system bridging

Clear-Com Instant Voice I.V. Direct uses proprietary technology providing LAN, WAN and Internet with optional external IP connectivity.

I.V. Direct ports connect to:

- LQ units - max. 8 ports per LQ
- E-IPA-HX card (and IVC-32 card) - max. 64\* ports per E-IPA card
- Avalon - max. 0-64 \* \*\* ports per Avalon

\* Subject to licensed port capacity

\*\* Subject to Device Allocation

Features include:

- Audio
- Call and Virtual GPIO (LQ only)
- Routable and robust on a network
- Security with user ID and password on each connection



## 10.2 I.V. Direct Configuration Overview

Below are some concepts to understand before undertaking I.V. Direct configuration.

### 10.2.1 Signaling or No Signaling?

I.V. Direct connections to LQ units carry call-signaling and data (GPIO). When creating a port to connect with an LQ, you will select function : **LQ Signaling**.

I.V. Direct connections to another Avalon or to an Eclipse matrix do not carry call-signaling and data. When creating a port of this type, you will select function : **Non-Signaling**.

### 10.2.2 VOIP Caller/Receiver

I.V. Direct is a port containing audio and optionally call and virtual GPIO signals. I.V. Direct includes a security layer where credentials must be setup to establish the connection between a caller that initiates the connection and a receiver that has the credentials of the connection.

#### I.V. Direct Example A - LQ to Avalon

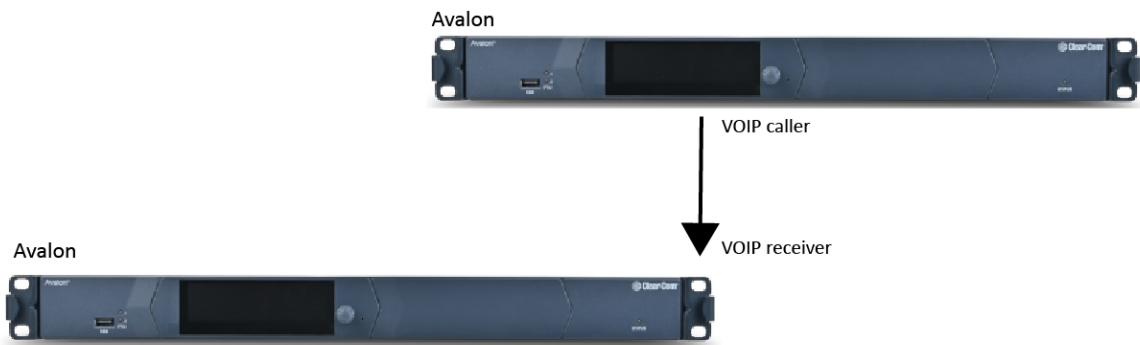
When configuring I.V. Direct connections to LQ units, the LQ unit always calls the Avalon (or Eclipse matrix). The LQ is never the VOIP receiver and no specific VOIP caller/receiver configuration is required.



For information on creating and configuring I.V. Direct ports in LQ , see the LQ User Guide available from the [Clear-Com LQ Knowledge Center](#).

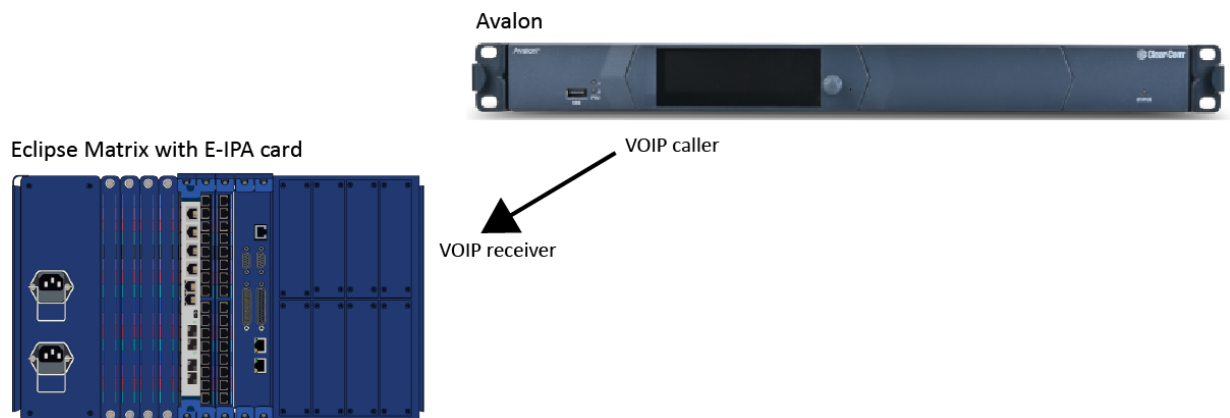
#### I.V. Direct Example B - Avalon to Avalon

When configuring I.V. Direct connections from an Avalon to another Avalon, one device must be the VOIP caller while the other one is the receiver.

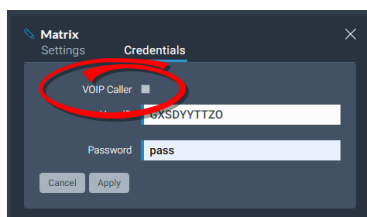


### I.V. Direct Example C - Avalon to Eclipse Matrix

When configuring I.V. Direct connections from an Avalon to an Eclipse matrix, one device must be the VOIP caller while the other device is the receiver.



When configuring an I.V. Direct connection to Avalon or Eclipse, you will determine which device is the caller by enabling the VOIP checkbox in the port credentials tab. (**Hardware > Resources > I.V. Direct** [select port] > **Credentials**).



For information on creating and configuring I.V. Direct ports in Eclipse HX Matrix, see the EHX User Guide available from the [Clear-Com Knowledge Center](#).

## 10.2.3 Credentials

Each I.V. Direct connection must have a **User ID** (unique) and **Password** (recommended). These are the credentials that are used for identifying a connection target on the network, and for security. The User ID and Password are created on the VOIP receiving device, also known as the remote device. The VOIP calling device must have the IP address of the remote device as well as the User ID and Password. The credentials (user ID and password) must be copied exactly between the VOIP receiving (remote) device and the VOIP calling device to establish a successful connection.

**Note:** *Devices that are calling in to an Avalon must use TCP/IP port 6002. This is hard-coded and cannot be changed.*

## 10.2.4 I.V. Direct Ports Enabled/Disabled

I.V. Direct ports can be created and configured in the Avalon CCM up to a maximum of 0-32 I.V. Direct ports per Avalon. However, the active use of these ports is reliant on licensed port capacity. When the ports are enabled in port settings (default is enabled), they will connect according to licensed port capacity on a first come, first served basis. If there is no available licensed port (of type **Any** or **I.V. Direct**), the connection will be refused until such time as a licensed port becomes available. If a license on an I.V. Direct port that is in use is reassigned or changed, the connection will be ended and you will lose audio connection on that port.

## 10.2.5 Configuration Overview

### Avalon CCM

1. Create an I.V. Direct port
  - a. LQ Signaling - For LQ connection
  - b. No Signaling - For Eclipse & Avalon connection
2. Configure settings
3. Configure credentials
  - a. User ID
  - b. Password
  - c. VOIP caller
    - i. If VOIP caller, input the IP address of the target device
4. Apply

**Target Device (LQ, Avalon or Eclipse matrix)**

1. Create I.V. Direct port
2. Configure settings
3. Configure credentials
  - a. User ID
  - b. Password
  - c. VOIP caller: IP address of the Avalon or Eclipse IP card is required if this is the calling device
4. Connect/Apply/Apply map to matrix

**Configuration for connecting devices:**

LQ : in the CCM, navigate to **Accounts > IVC Direct** to add ports.

Eclipse matrix: in the EHX software, navigate to **Hardware > Cards and Ports** [select E-IPA or IVC-32 card] > Add port type **IVC Direct**.

## 10.3 Connecting I.V. Direct on your Network

Avalon v. 3.0 or later

LQ v. 4.0 or later

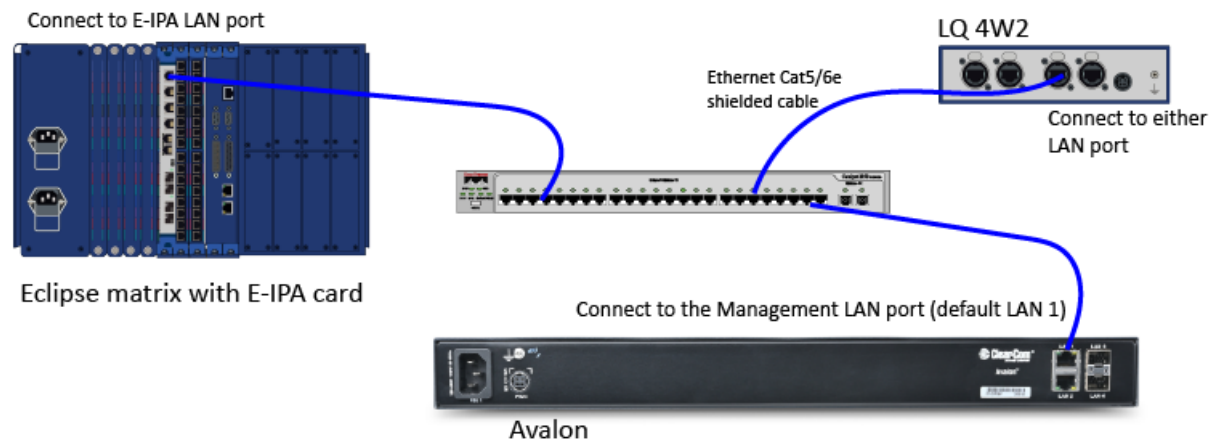
Eclipse HX v. 7.5 or later with E-IPA or IVC-32 card

All devices must be using the minimum firmware version before I.V. Direct connections are set up.

Avalon Central Station and the target systems for I.V. Direct connection(s) (LQ, Eclipse matrix , Avalon) are connected to your network via device LAN connectors using Cat5/6e Ethernet cable. The devices must be able to reach each other across the network.

I.V. direct traffic uses the Avalon Management LAN (default LAN 1).

### 10.3.1 Example I.V. Direct Network Connections



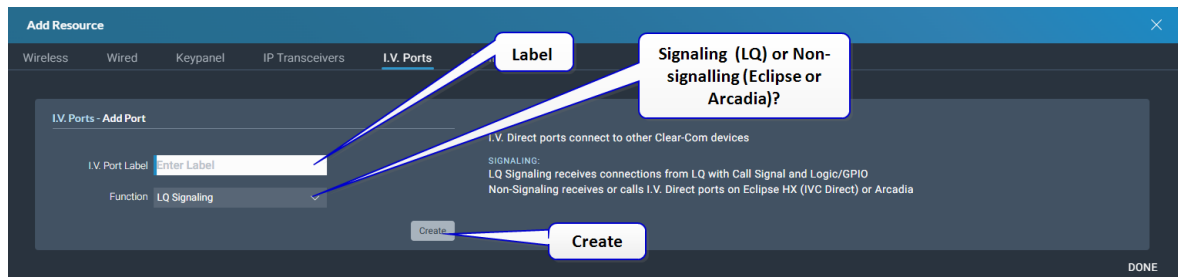
## 10.4 Configure I.V. Direct in the Avalon CCM

Create ports and user credentials (user ID, password, and IP address as needed).

1. Open the Avalon CCM (find the device IP address in the front panel menu system).  
Navigate to **Hardware > Resources**.



2. Click the **Add Resource** button.
3. Make sure the **I.V. Direct** tab is selected.
4. Give the port a label.
5. Select **Function**, LQ signaling for LQ connections, non-signaling for anything else.
6. Click **Create**.



7. The **Add Resource** window stays open so you can create more than one port. Close the window or click **Done** when you have finished creating new ports.
8. Select the newly created I.V. port for **Settings** and **Credentials**.
9. Configure settings:

**MatrixTx Settings** Credentials

**General**

Input Gain: 0 dB

Output Gain: 0 dB

Channel Assignment: Talk-Listen

Network Quality: Very High (LAN)

IP Port: 6002

**License**

License Active: ☒ Enabled ☐ Disabled

**Remove**

Removes the selected ports and frees up the licenses from the system.

An I.V. port needs a license. If you disable the **License Active** checkbox (default is **Enabled**), the port will remain in your configuration but will not consume a license. You will not be able to transmit audio on this port if it is disabled.

- Configure credentials. Configuration of credentials varies according to the device you are connecting to:

For more information see: [I.V. Direct Configuration Overview on page 125](#)

**Note:** Calls to an Avalon must use TCP/IP port 6002. This is pre-configured and cannot be changed.

- Click **Apply**.

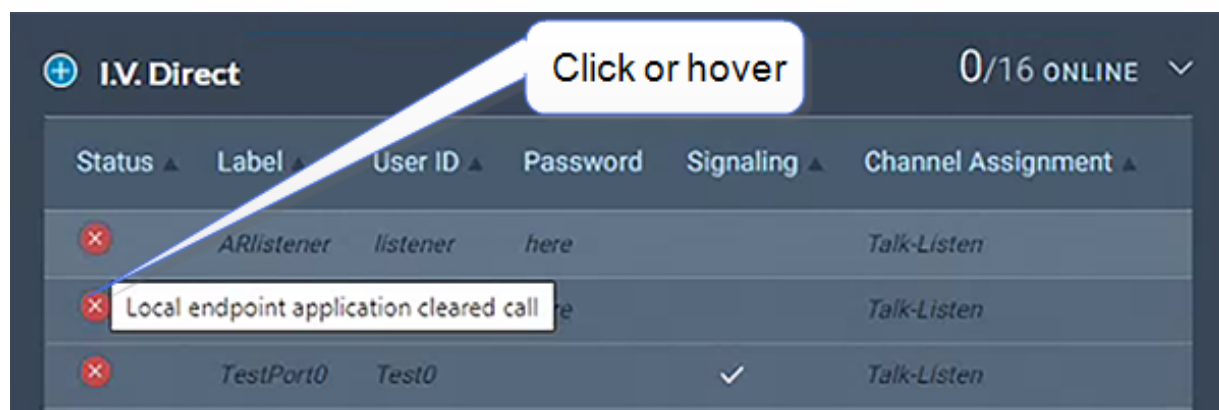
Connected  
IV ports

| Status | Label      | User ID    | Password   | Signaling | Channel Assignment |
|--------|------------|------------|------------|-----------|--------------------|
| ✓      | MatrixTx   | 627D7335C9 | 9D9514575B |           | Talk-Listen        |
| ✓      | MatrixRx   | ICRSMSLMQY | pass       |           | Talk-Listen        |
| ✓      | LQ-R_2     | PTDICVXBDD | pass       | ✓         | Talk-Listen        |
| ✓      | LQ-R       | UERFGHJTEV | pass       | ✓         | Talk-Listen        |
| ⊙      | MatrixTx-2 | RXOEXRAE0D |            |           | Talk-Listen        |

I.V. Direct ports will connect when both connecting devices have been networked and configured. For status and connection information, and to configure GPIOs, go to **Status > Overview > I.V. Direct** [select port].

## Error messages - I.V. Ports

Click or hover on the red cross to see error messages



In the event of a connection failure you will see the following error messages:

| Message                                                                                                   | Reasons for closing the connection                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>Local endpoint application cleared call</i></p> <p>The local device has closed a connection</p>     | <p>The License was removed on the local side (Avalon) for an active I.V. Direct connection</p> <p>The username and password were changed on the local side (Avalon) for an active I.V. Direct connection</p> <p>There are no free licenses for I.V. Direct ports on the local side</p>                                                                                               |
| <p><i>Remote endpoint application cleared call</i></p> <p>The remote device has closed the connection</p> | <p>The username and password were changed on the remote side (LQ/Avalon/EHX) for an active connection</p> <p>The License was removed on the remote side (LQ/Avalon/EHX) for an active connection</p> <p>The I.V. Direct port was disabled on the remote side (LQ/Avalon/EHX) for an active connection</p> <p>There are no free licenses for I.V. Direct ports on the remote side</p> |
| <p><i>Call failed a security check and was ended</i></p>                                                  | <p>The username or password is wrong</p>                                                                                                                                                                                                                                                                                                                                             |

## Configuration for connecting devices:

LQ : in the CCM, navigate to **Accounts > IVC Direct** to add ports.



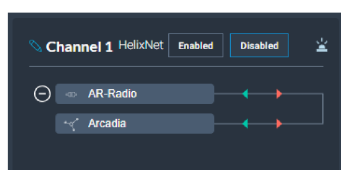
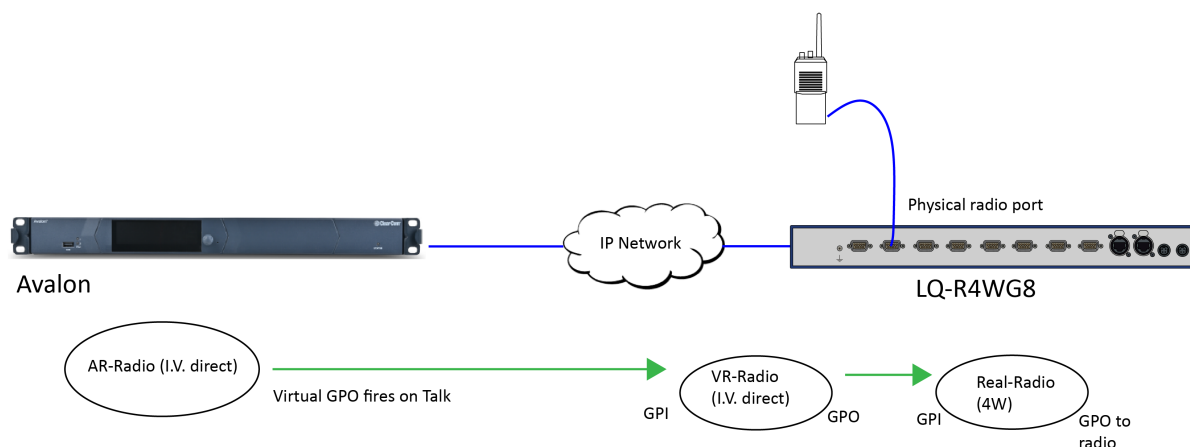
Eclipse matrix: in the EHX software, navigate to **Hardware > Cards and Ports** [select E-IPA card] > Add port type **IVC Direct**.

For information on creating and configuring I.V. Direct ports in LQ or Eclipse HX Matrix, see the User Guide for those products, available from the [Clear-Com Knowledge Centers](#).

## 10.5 Using GPIO with I.V. Direct

Below is an example of using a radio connection with an I.V. Direct with GPIO. An I.V. Direct has been configured between the Avalon (AR-Radio) and the LQ (VR-Radio). GPIOs exchanged between AR-Radio and VR-Radio are virtual via the I.V. Direct. The GPO to the radio is a physical connection from LQ with GPIO.

Avalon does not have local GPIO connectors, so you only will see networked and panel GPIOs.

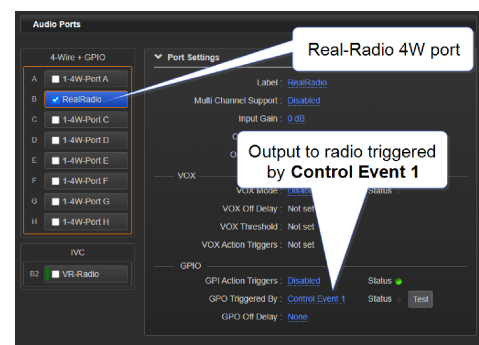
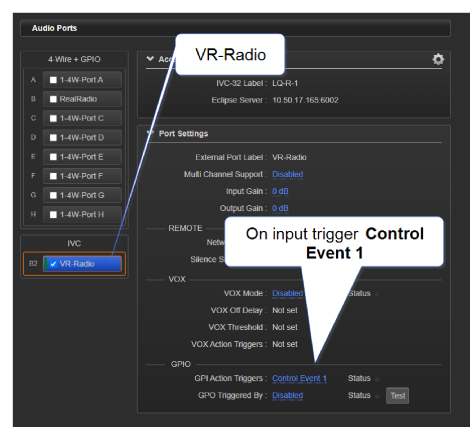


Arcadia and I.V. direct port AR-Radio are put in a channel together

Key assignment to the channel is set to **Talk & Force Listen**

When in a channel, the radio is accessible to other endpoints on the Arcadia system, for example, FreeSpeak and HelixNet.

IV direct port VR-Radio and 4W port Real-Radio are put in a channel together

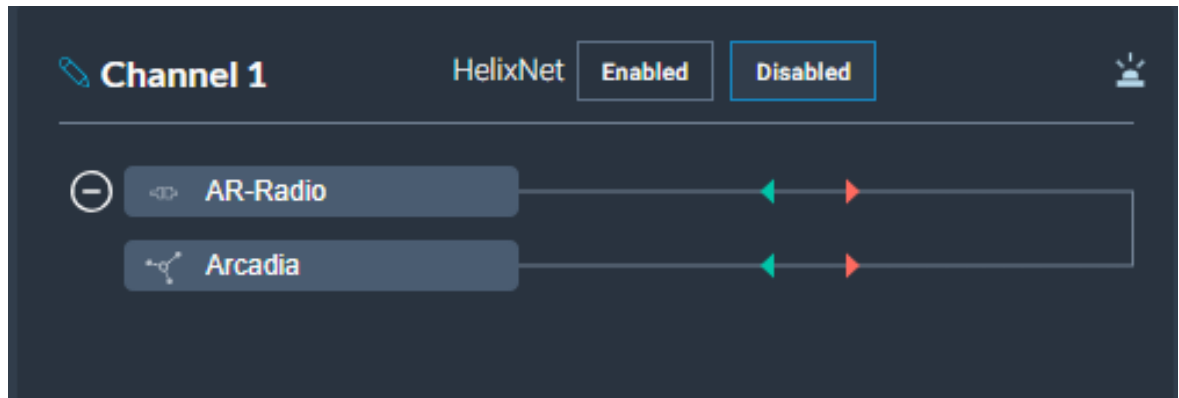


## 10.5.1 Step-by-step configuration of GPIOs with I.V. Direct

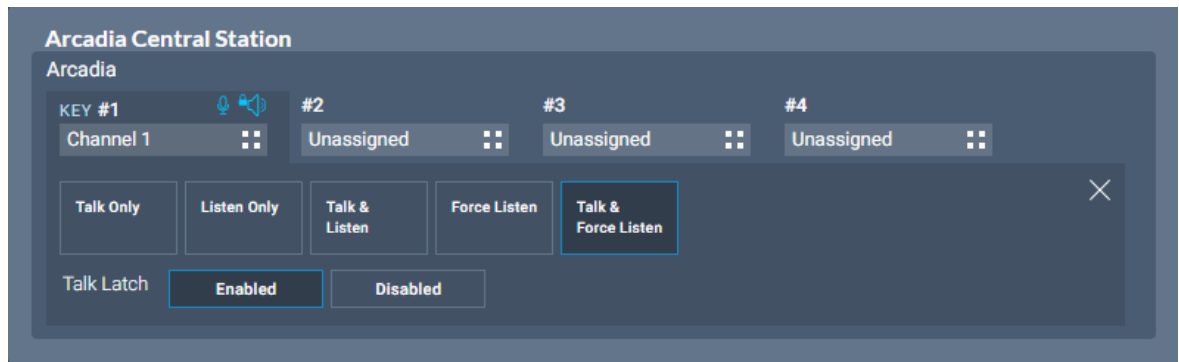
Assume an I.V. Direct port is already configured and connected.

Avalon: Assign the I.V. Direct port to a channel and configure GPO for this port.

1. Navigate to **Configuration > Channels** and put AR-Radio in a channel with the Avalon.



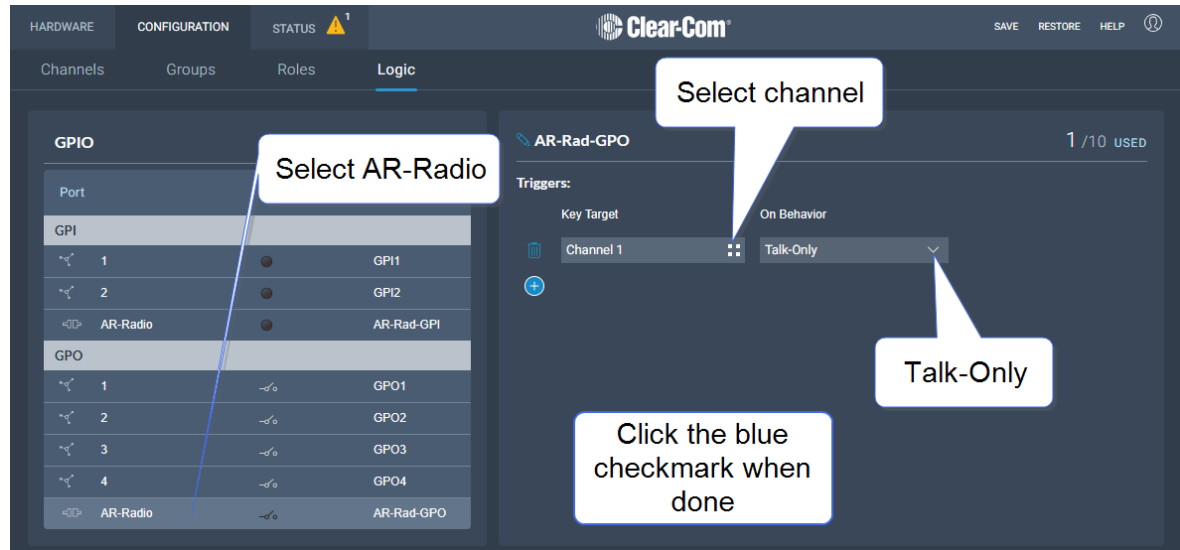
2. Navigate to **Configuration > Roles** [select Avalon] and set the key activation type as **Talk and Forced Listen** (Talk or Talk and Listen can also be used)



3. Navigate to **Configuration > Logic** and select the GPO for AR-Radio.
4. Click the blue + sign to create a new logic trigger.
5. Select the channel that contains the I.V. Direct as the **Key Target**.
6. Select the behavior that will trigger the GPO, in this case, **Talk-Only**. Click the blue checkmark to complete the configuration.

Avalon does not have local GPIO connectors, so you only will see networked and panel

GPIOs.



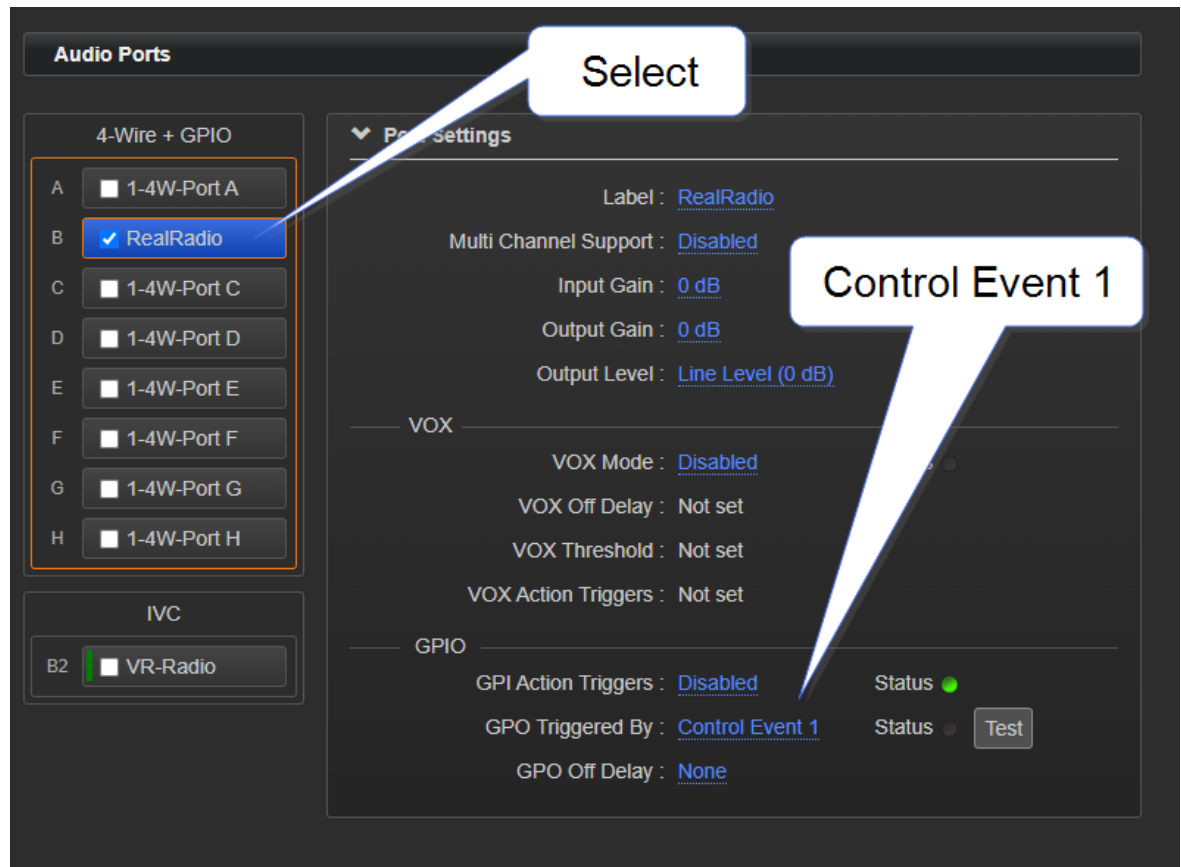
**Note:** GPO Talk & Listen behavior is only for use with FreeSpeak Talk & Listen or Dual Talk & Listen key activations on a single button. Talk-Only is for use with Avalon, FreeSpeak and HelixNet keys using all other types of Talk activations.

LQ: Assign I.V. Direct port and the 4W port that the radio is connected to in a channel and set GPIO (control events) on each port.

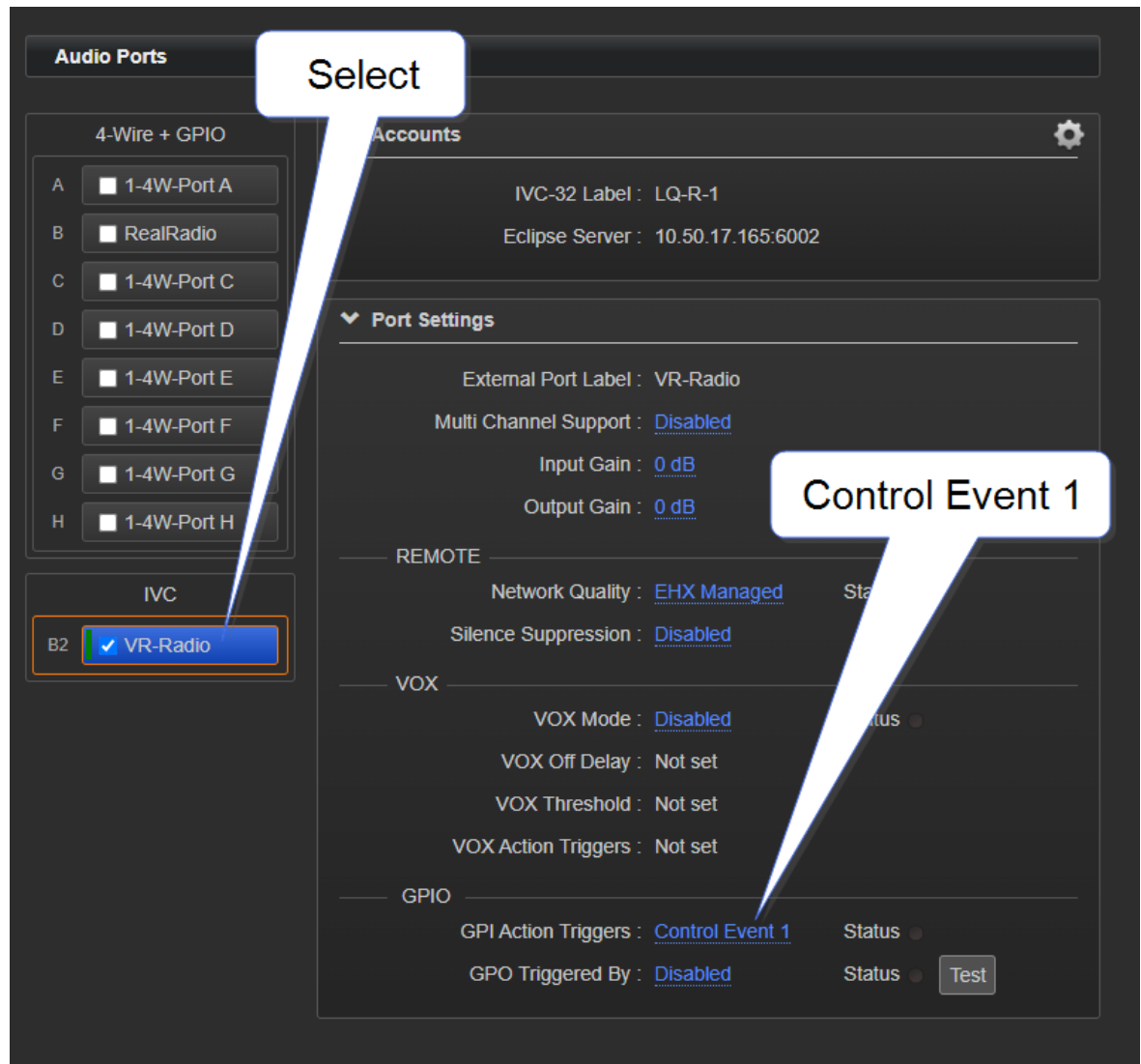
1. In the LQ CCM, navigate to Assignments and associate VR-Radio and Real Radio to a common channel.



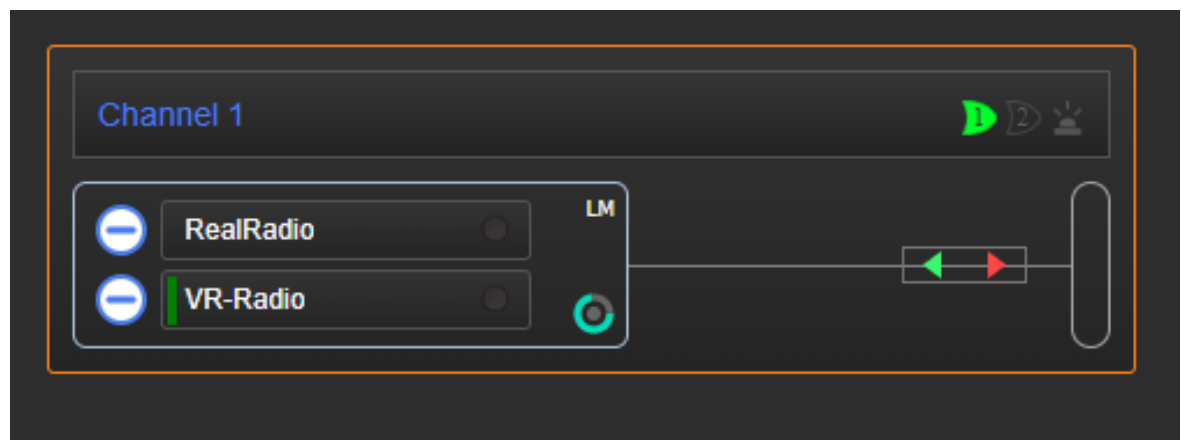
2. Navigate to **Device > Ports** and select the 4W port that the radio is connected to (RealRadio).
3. Set the GPO trigger to Channel Event 1.



4. Select the I.V. Direct port (VR-Radio).
5. Set the GPI trigger to Control Event 1.



- Once the GPIO has been set up, you can see the Channel Event 1 signal in the Assignments page in the LQ CCM when a Talk comes into Channel 1 and activates the GPO to the radio.



## 11 Using Dante Systems

To configure Dante you must be familiar with the Audinate Dante Controller, available from the Audinate website.

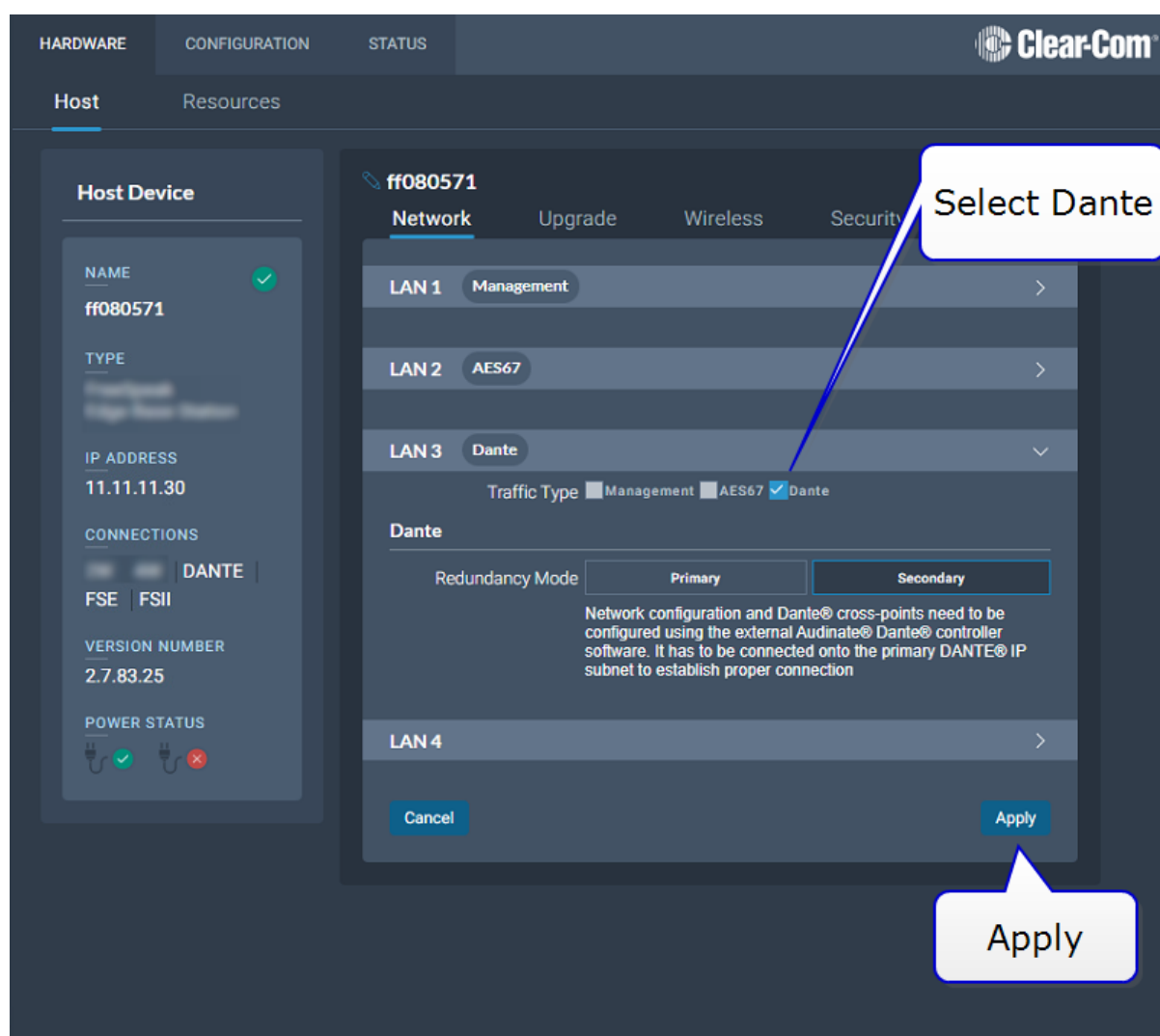
Before configuring the connection in the Dante Controller, you must determine which of the 4 LAN connectors on the Avalon you wish to use for Dante network traffic.

**Note:** *The PC running the Audinate Dante Controller must be connected to the Dante network.*

**Note:** *The Dante connection on the Station supports Dante and Dante AES67 audio interfacing.*

Determining which LAN connector you wish to use for Dante must be done in the CCM.

Navigate to **Hardware > Host**. Under the **Network** tab, select the port for Dante. This port will default to a DHCP setting. If you wish to configure a static IP address you must do this in the Dante controller.



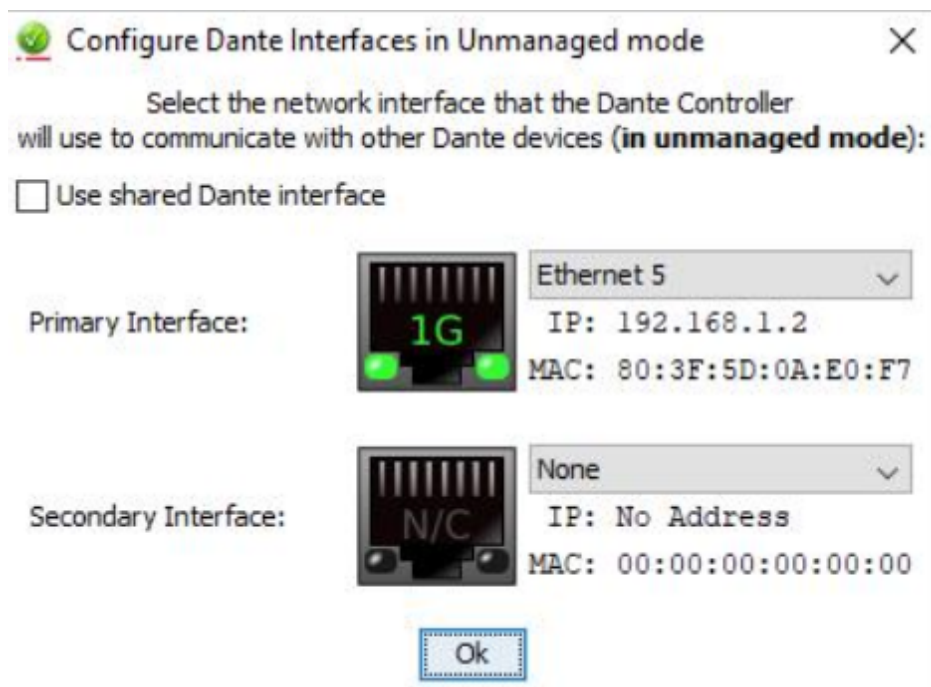
**Note:** *LAN 3 and 4 are for use with an SFP module (either fiber or RJ45).*

**Note:** *You must have sufficient licensed ports; each Dante channel consumes one licensed port.*

LAN connectors can be configured in any way you wish, but the CCM enforces that you can not configure IP transceivers (AES67) and Dante traffic on the same network. This is because AES67 network traffic has different timing requirements than Dante network traffic for FreeSpeak IP transceivers.

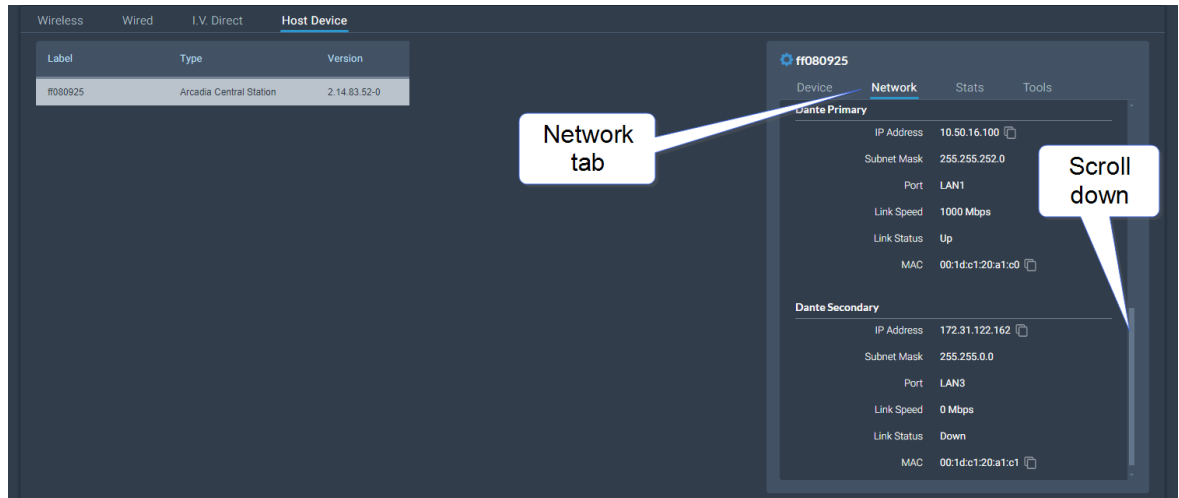
Dante IP configuration is configured in the Dante Controller.

1. In the CCM, navigate to **Hardware > Host > Network** and configure Dante on the LAN connector you wish to use for Dante connections.
2. Connect a cable (Cat5/6e or fiber) to the LAN connector that is designated for Dante. Connect the other end to a switch on your Dante network.
3. Open the Dante Controller and check that the network interface details are correct.

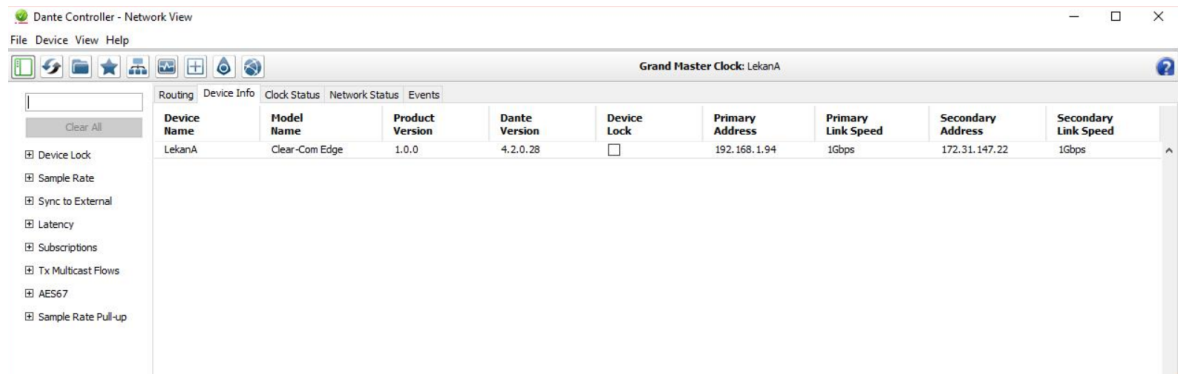


4. Check network and connection details under the **Status > Host Device** tab in the CCM.



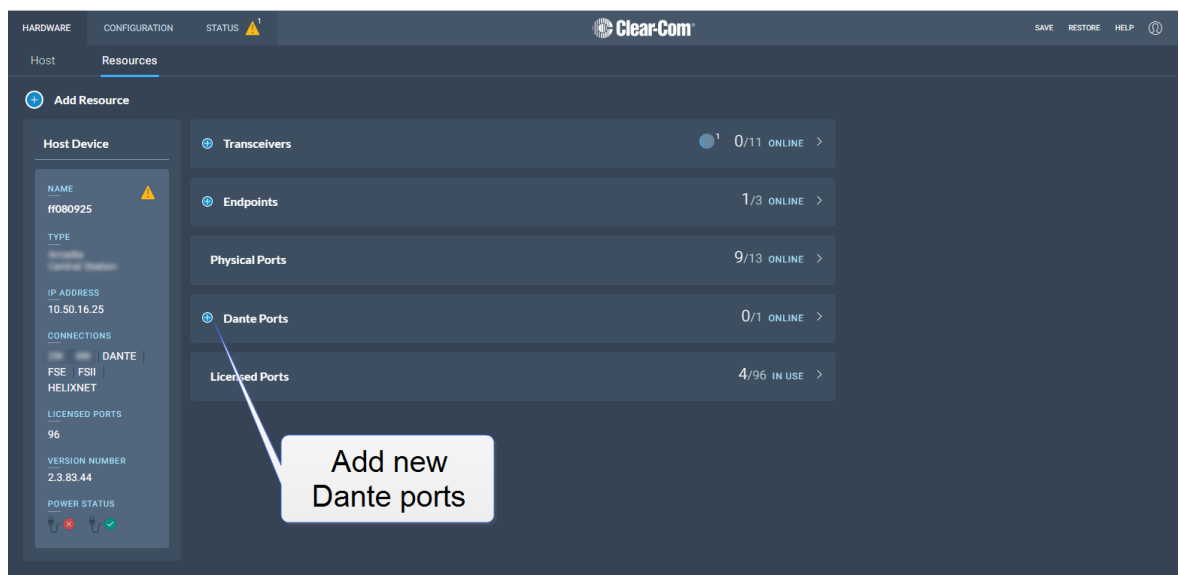


5. Details can also be viewed in the Dante Controller.



6. In the CCM navigate to **Hardware>Resources>Dante Ports** and add Dante ports. Give the new ports a suitable label.

Physical ports shown on this image are not available on Avalon.



**Note:** 2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.

7. Route the channels as required in the Dante Controller.
8. You will see available Dante ports in the **Configuration** page of the CCM. These ports can be assigned to channels on the Avalon in the usual way.
9. Select the required channel click the + icon next to the port.

**Note:** 2W and 4W ports (physical ports), as shown on this image, are not available on Avalon.

The screenshot shows the Clear-Com CCM Configuration page. The top navigation bar includes SYSTEM, SETUP, STATUS, and a Clear-Com logo. Below the navigation bar are tabs for Channels, Groups, Roles, and Logic. The main content area is divided into three sections: Channels, Channel 1, and Ports.

**Channels Section:** Shows a table with 2/100 used channels. The table has columns for Status, Id, Name, Online, and Talkers.

| Status | Id | Name      | Online | Talkers |
|--------|----|-----------|--------|---------|
| ✓      | 1  | Channel 1 | 2/2    | 1       |
| ✓      | 2  | Channel 2 | 1/1    | 0       |

**Channel 1 Section:** Shows a diagram of Channel 1 with Dante P 1 and Edge Base components.

**Ports Section:** Shows a table with 1/20 assigned ports. The table has columns for Status, Name, and Assigned To. The ports are grouped into 2W, 4W, and Dante sections.

| Status | Name      | Assigned To |
|--------|-----------|-------------|
| ✓      | 2W-Port A | None        |
| ✓      | 2W-Port B | None        |
| ✓      | 2W-Port C | None        |
| ✓      | 2W-Port D | None        |
| 4W     |           |             |
| ✓      | 4W-Port1  | None        |
| ✓      | 4W-Port2  | None        |
| ✓      | 4W-Port3  | None        |
| ✓      | 4W-Port4  | None        |
| ✓      | 4W-Port5  | None        |
| ✓      | 4W-Port6  | None        |
| ✓      | 4W-Port7  | None        |
| ✓      | 4W-Port8  | None        |
| Dante  |           |             |
| ✓      | Dante P 1 | Channel 1   |
| ✓      | Dante P 2 | None        |
| ✓      | Dante P 3 | None        |
| ✓      | Dante P 4 | None        |
| ✓      | Dante P 5 | None        |
| ✓      | Dante P 6 | None        |
| ✓      | Dante P 7 | None        |
| ✓      | Dante P 8 | None        |

A callout bubble with the text "Click here" points to the "Dante P 1" port in the Dante section of the Ports table.

# 12 Upgrading Firmware

---

This chapter topic describes how to upgrade the firmware on your Station. It contains the following sections:

|                                        |     |
|----------------------------------------|-----|
| 12.1 Introduction .....                | 144 |
| 12.2 Upgrading using the CCM .....     | 144 |
| 12.3 Upgrading using a USB Stick ..... | 144 |
| 12.4 Upgrading sub-systems .....       | 145 |

---

## 12.1 Introduction

There are two ways to upgrade the firmware on the Avalon:

- Using the CCM web interface. When upgrading from the CCM, you can upgrade connected resources (for example, transceivers and beltpacks).
- Using a USB stick (USB A on the front of the Avalon). When upgrading in this way, only the Avalon can be upgraded.

| Device to upgrade                               | File extension               |
|-------------------------------------------------|------------------------------|
| Avalon, FS II<br>IP TCVR, FS<br>Edge IP<br>TCVR | .ccf                         |
| FS II<br>beltpack, FS<br>II E1 TCVR             | .fww                         |
| FS Edge<br>beltpack                             | .ccu                         |
| HelixNet                                        | See Upgrading HelixNet below |

## 12.2 Upgrading using the CCM

1. In the CCM, navigate to **Hardware > Host > Upgrade**.
2. Press **Select File** and select the file containing the updated firmware.
3. When the file is uploaded, the **Upgrade** button will be enabled.
4. Press the **Upgrade** button.
5. The upgrade process will start and the Avalon will reboot before being available again.
6. The new version of the firmware will be displayed in the **Hosts** panel.

## 12.3 Upgrading using a USB Stick

1. Copy the firmware file onto a USB stick. The file must be at the top level of the USB drive, not within any folders.
2. Insert the USB into the USB port on the front of the Avalon.

3. Press the **Menu** button.
4. Using the rotary controllers, navigate to **Administration > Software > Update**.
5. The display will show the available firmware files stored on the USB. Select the one you require.
6. Press the 4th rotary encoder. The unit will upgrade and then reboot.
7. To check the current firmware version, in the menu system navigate to **Administration > Software > Current**. The current software version is displayed in the 4th menu screen.

## 12.4 Upgrading sub-systems

Sub-systems connected to Avalon may additionally need to be upgraded according to Avalon release notes.

| Device to upgrade                               | File extension               |
|-------------------------------------------------|------------------------------|
| Avalon, FS II<br>IP TCVR, FS<br>Edge IP<br>TCVR | .ccf                         |
| FS II<br>beltpack, FS<br>II E1 TCVR             | .fww                         |
| FS Edge<br>beltpack                             | .ccu                         |
| HelixNet                                        | See Upgrading HelixNet below |

### 12.4.1 FreeSpeak II and Edge

FreeSpeak II and Edge transceivers and beltpacks can be upgraded system-wide from the Avalon Central Station. The firmware for the component to be upgraded is loaded into the Avalon CCM with the steps listed in 13.2 and will then be loaded into all devices that require the firmware.

It is recommended to upgrade beltpacks first and then transceivers.

Depending on the firmware and system size the firmware update may take between 3-15 minutes for each type of system device. The firmware file will remain in the Avalon until it is rebooted or another file is loaded.

## 12.4.2 FreeSpeak Icon beltpacks

FreeSpeak Icon beltpacks are upgraded over USB connection using a software utility available from the Clear-Com website.

## 12.4.3 HelixNet

Upgrades to the HelixNet system are included with the Avalon software. The HelixNet system requires that all connected devices have the same firmware. Therefore, any mismatches that are detected will cause an immediate and automatic upgrade (or downgrade) to the HelixNet devices on connection. The HelixNet system will also upgrade automatically when the Avalon Central Station is upgraded.

**Note:** *HelixNet Endpoints manufactured in January 2023 (serial number ends with C00 or higher letter/number) or later can only be used with Avalon version 2.8 or HMS-4X version 4.4. These endpoints cannot be used with older versions due to differences in hardware components.*

## 12.4.4 V-Series

V-Series keypanels are not upgraded via the Avalon and should be upgraded directly at the panel.

V-Series IrisX panels are upgraded either locally using USB from the front panel, or, over a network using the panel's CCM interface.

## 12.4.5 Dante

Dante firmware is upgraded using Dante Update, available from within the Dante Controller.

# 13

## Licensing

---

This chapter topic describes how to upgrade your Avalon Central Station license. It contains the following sections:

|                                                                   |     |
|-------------------------------------------------------------------|-----|
| 13.1 Licensed Ports .....                                         | 148 |
| 13.2 Online Activation of Additional Licenses (Recommended) ..... | 148 |
| 13.3 Offline Activation of Additional Licenses .....              | 150 |

---

## 13.1 Licensed Ports

The Avalon Central Station is available with licensed port capacity as best fits your needs:

- 16 ports
- 32 ports
- 48 ports
- 64 ports
- 80 ports
- 96 ports
- 112 ports
- 128 ports
- 144 ports
- 160 ports
- 168 ports
- 176 ports
- 192 ports
- 200 ports

You can purchase additional licensed port capacity in 8 or 16-port bundles to a maximum of 200 ports.

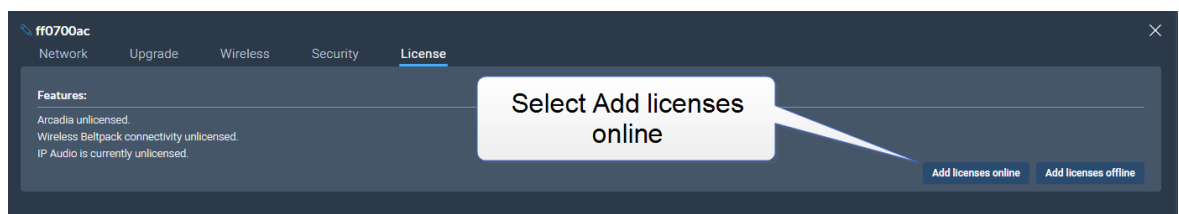
When you purchase licensed port upgrades you will receive a **License Ticket ID** that can be activated in the CCM of your Avalon Central Station.

## 13.2 Online Activation of Additional Licenses (Recommended)

**Note:**

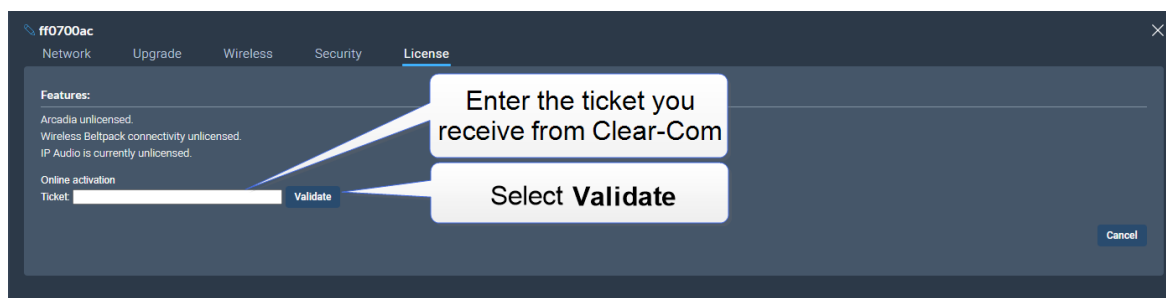
*You can activate licenses online if your PC and Avalon Central Station have an Internet connection on the same network.*

1. Navigate to **Hardware > Resources > Host > License**, and select **Add licenses online**.

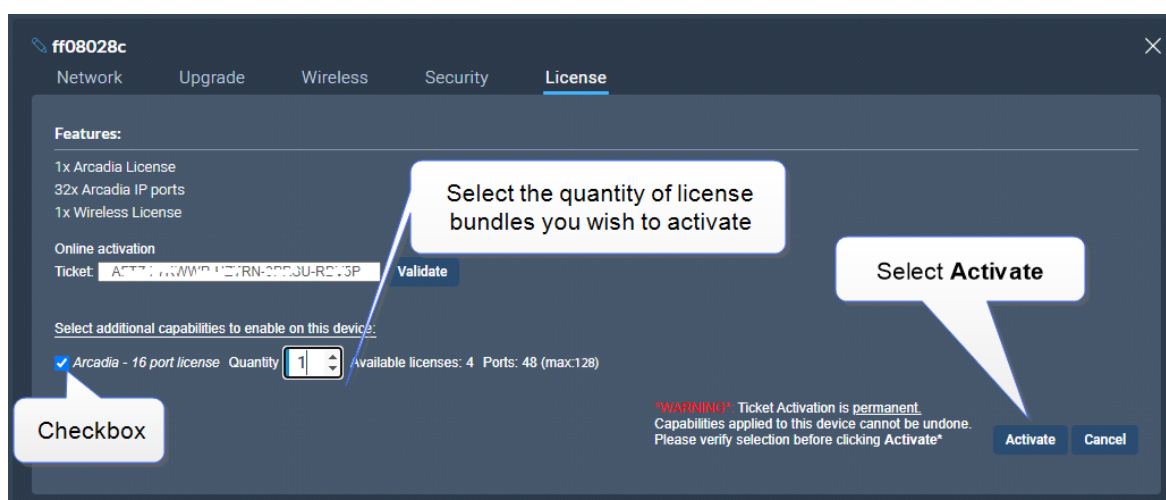




2. Enter the ticket you received from Clear-Com, and then select **Validate**.



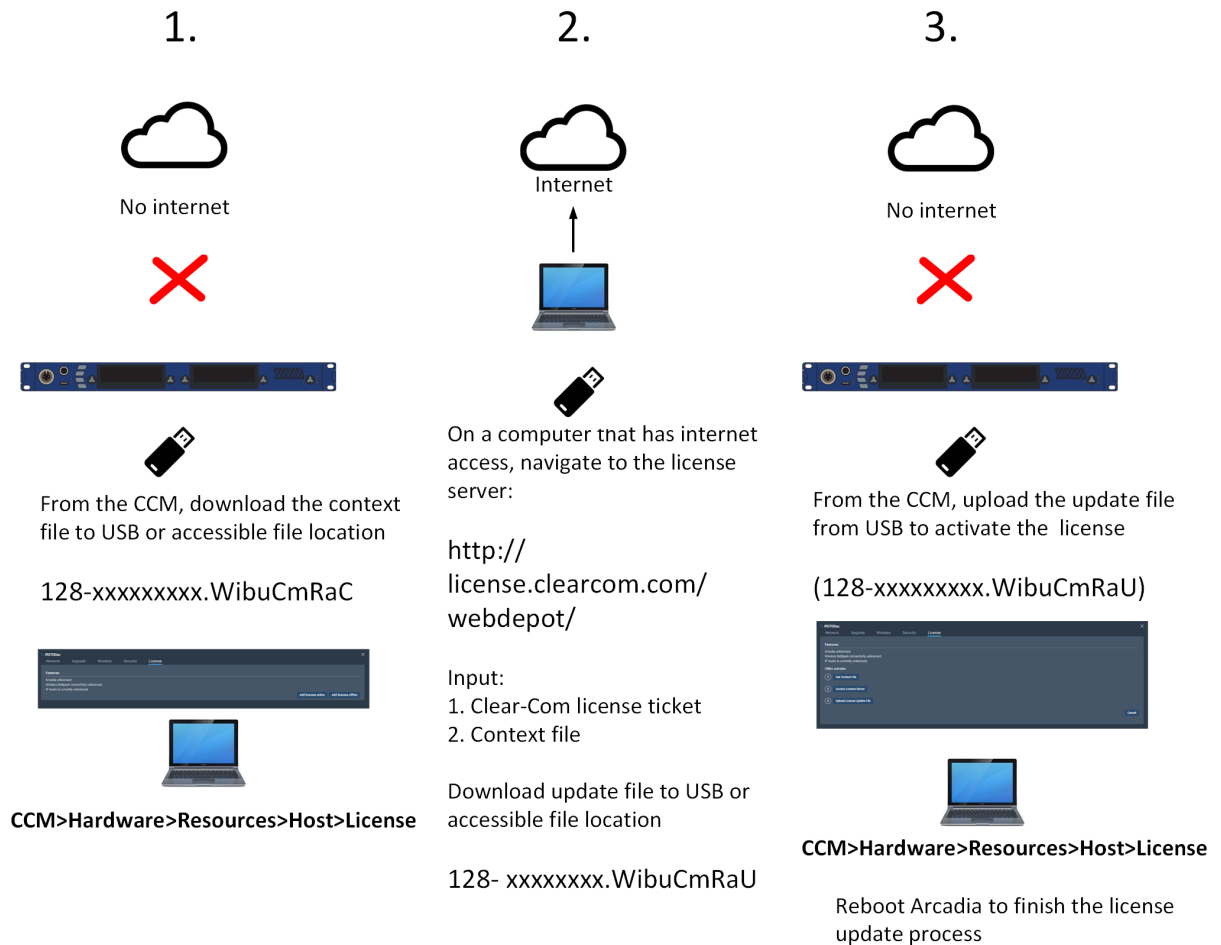
3. Click the checkbox, select the quantity of 8 or 16-port bundles of licensed port upgrades you wish to install and select **Activate**.



4. You must reboot the Station before the licenses take effect. In the CCM, navigate to **Status > Overview > Host Device** and select **Reboot**.
5. Once the licenses are activated, you will be able to see how many licenses you have in the **Hardware > Resources** page under **Licensed Ports**.

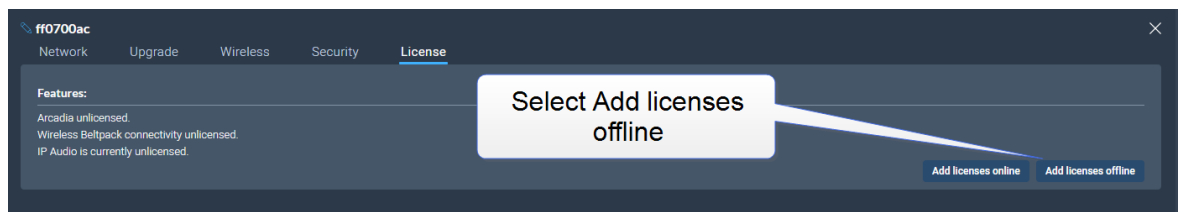
## 13.3 Offline Activation of Additional Licenses

The graphic shows an Arcadia unit, but is applicable to Avalon and Arcadia.

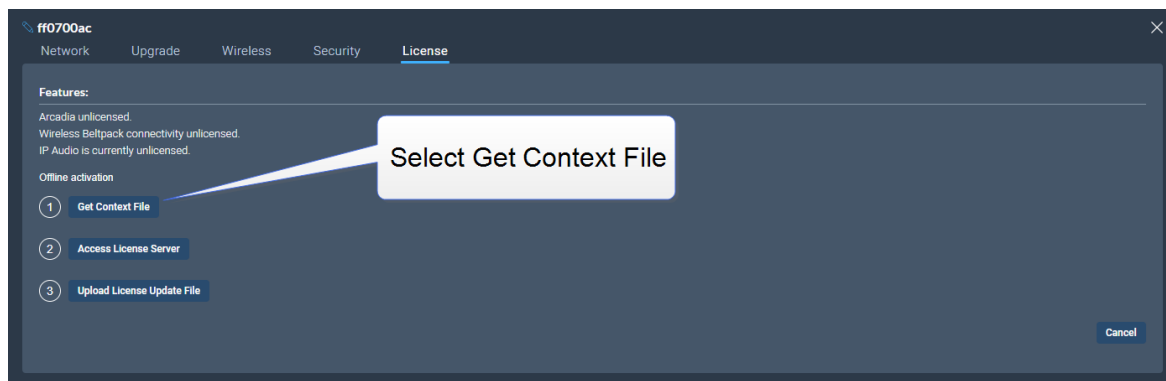


For detailed steps see below.

1. Navigate to **Hardware > Resources > Host > License**, and select **Add licenses offline**.

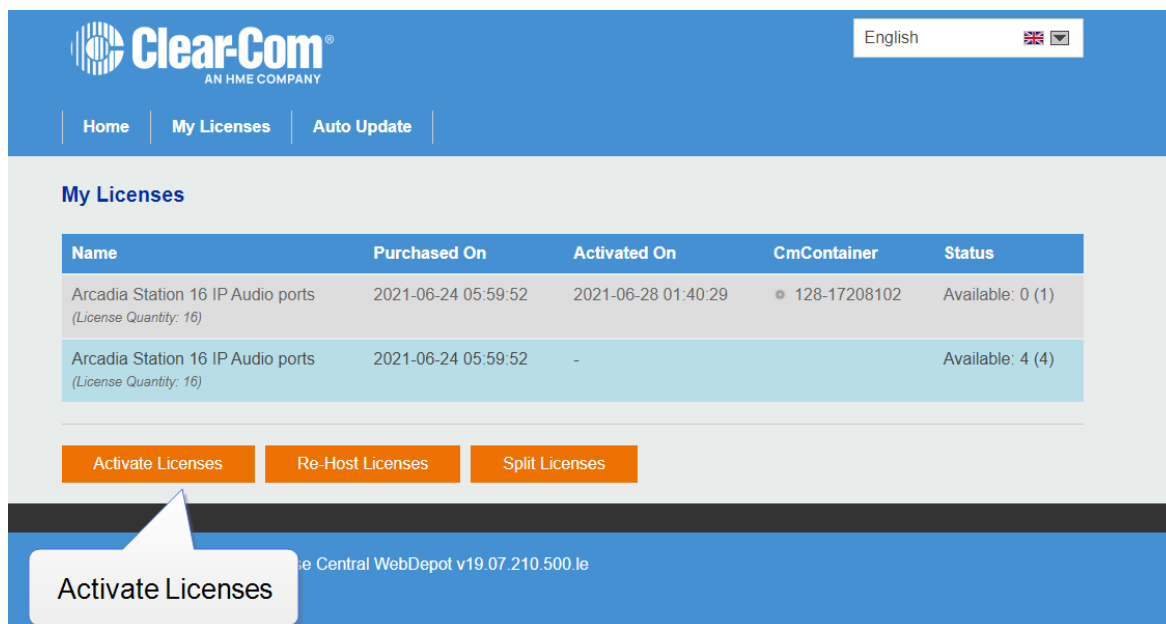


2. Select **Get Context File**.

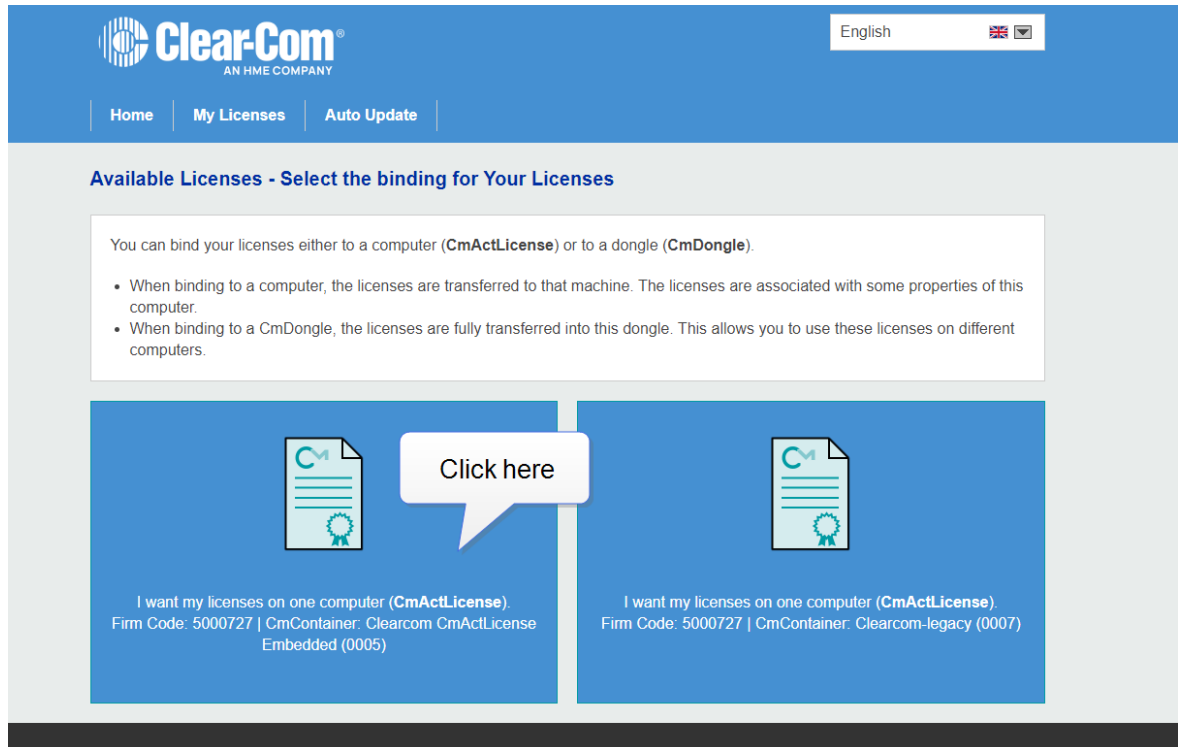
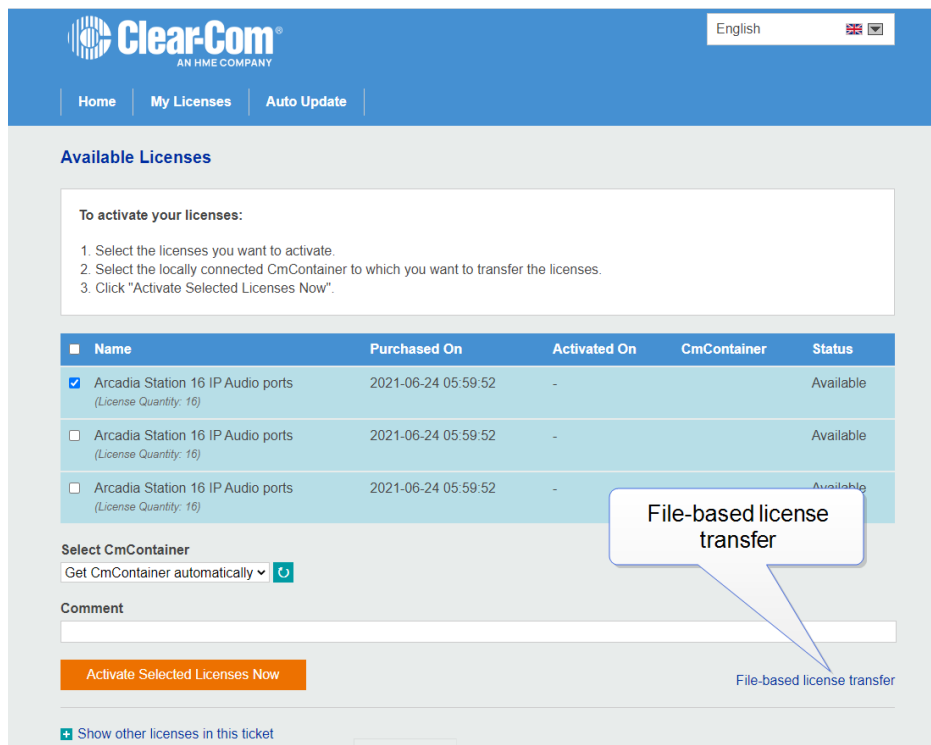


The context file downloads locally.

3. Use another PC which has internet access and connect a browser to <http://license.clearcom.com/webdepot/>. As you will download the licenses into the previously downloaded context file (step 2) you need the context file on the new PC.
4. You will see the online license server. Enter your Clear-Com ticket number, and then Click **Next**.
5. The licenses on your ticket are displayed on the screen. Select **Activate Licenses**.



## 6. Select the left-hand option.

7. Click **File-based license transfer**.

8. Select the required license(s). Click **Choose File** and navigate to the context file (downloaded in step 2). Select it. Then click **Start Activation Now**.

1. Ensure license is selected

| <input type="checkbox"/>            | Name                                                        | Purchased On        | Activated On | CmContainer | Status    |
|-------------------------------------|-------------------------------------------------------------|---------------------|--------------|-------------|-----------|
| <input checked="" type="checkbox"/> | Arcadia Station 16 IP Audio ports<br>(License Quantity: 16) | 2021-06-24 05:59:52 | -            |             | Available |
| <input type="checkbox"/>            | Arcadia Station 16 IP Audio ports<br>(License Quantity: 16) | 2021-06-24 05:59:52 | -            |             | Available |
| <input type="checkbox"/>            | Arcadia Station 16 IP Audio ports<br>(License Quantity: 16) | 2021-06-24 05:59:52 | -            |             | Available |

Select an already used CmContainer  
No CmContainer selected ▼

or

Pick a license request file (\*.WibuCmRaC) of another CmContainer  
Choose File 128-17208102 (4).WibuCmRaC

Comment

**Start Activation Now** Direct license transfer

2. Navigate to the previously downloaded context file and select it

3. Start Activation Now

9. Download the License Update File
10. Do not **Upload Receipt Now**. Instead, return to the CCM and select **Upload License Update File**.
11. Navigate to where you have stored the downloaded file from Step 9 (128-xxxxxxx.WibuCmRaU). Select the file. The license will upload.
12. You must reboot the Station before the licenses take effect. In the CCM, navigate to **Status > Overview > Host Device** and select **Reboot**.
13. Once the licenses are activated, you will be able to see how many licenses you have in the **Hardware > Resources** page under **Licensed Ports**. You can also see licensed features on the **Hosts** panel in the same page.

# 14

## Security

---

This chapter topic describes important security features. It contains the following sections:

|                                                       |     |
|-------------------------------------------------------|-----|
| 14.1 Warning .....                                    | 155 |
| 14.2 Secure HyperText Transfer Protocol (HTTPS) ..... | 155 |
| 14.3 Using HTTPS .....                                | 155 |
| 14.4 The Force HTTPS Feature .....                    | 155 |
| 14.5 Forcing HTTPS .....                              | 156 |
| 14.6 Using Security Certificates .....                | 158 |
| 14.7 EasyDNS update button (Avalon 4.1and up) .....   | 158 |

---

## 14.1 Warning

The CCM ensures that you do not turn off port 80 without testing your certificate. If you turn off port 80 without ensuring that you can reach the CCM using port 433 it is possible to get locked out of your CCM. If this happens, you must reset the Avalon from the front panel menus. This will remove all configuration, including network details from your Avalon.

**Note:** *Some knowledge of certificate authorization and HTTPS is needed when setting up a secure connection between a PC hosting the Core Configuration Manager (CCM) and a Avalon.*

**Note:** *Each browser type (for example, Safari, Chrome, Edge, Firefox) uses its own method for certificate management. These methods can change with time and is beyond the control of Clear-Com. Please refer to the instructions supplied with your browser if you require more information.*

The following are some of the main security features.

## 14.2 Secure HyperText Transfer Protocol (HTTPS)

HTTPS is an adaptation of the HTTP protocol. It protects against an intermediary being able to intercept data between devices, using data encryption and Public Key Cryptography to create a secured channel.

## 14.3 Using HTTPS

When using the CCM to establish your intercom setup, you might wish to protect your login credentials and configuration details from unauthorized interference. In this case you will establish an encrypted connection between the CCM and your Avalon using the **Force HTTPS** feature.

## 14.4 The Force HTTPS Feature

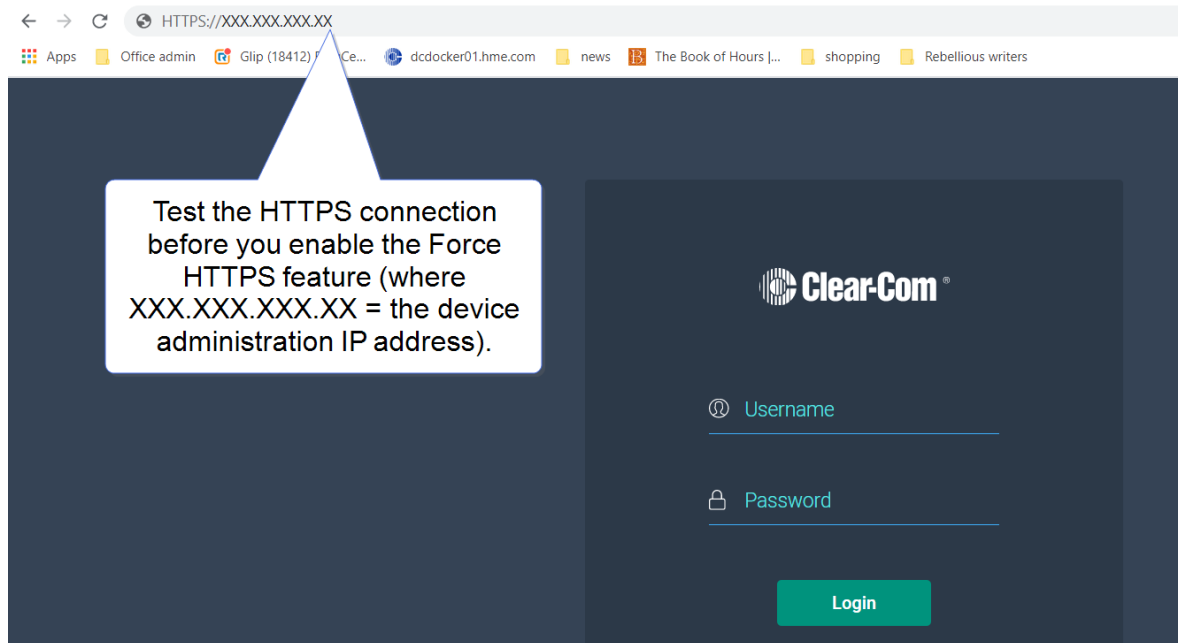
The Avalon uses port 80 (HTTP) and port 433 (HTTPS) for management. If you wish to create a secured route for data between the CCM and the Avalon you must:

- Install a security certificate
- Turn off port 80, forcing traffic to use port 433

This creates a certified and encrypted connection between the Avalon and the PC accessing the CCM.

## 14.5 Forcing HTTPS

1. Chose and install a security certificate on the PC or browser used to reach the CCM of the Avalon. Clear-Com offers a choice of 3 different types of certificate, offering different levels of security.
2. Test the certificate by trying to reach the CCM on the HTTPS port. Type: **HTTPS:// device IP address** in the browser URL field and press the [Enter] key.



To enable **Force HTTPS** in the CCM navigate to: **Hardware > Resources > Host**  **> Security** and click to enable **Force HTTPS**. This turns port 80 off, forcing traffic to use port 433.



 **ff080238** 

**Network** **Upgrade** **Wireless** **Security**

**General**

 **Info**

PLEASE CONNECT USING HTTPS BEFORE FORCING HTTPS. THIS IS TO ENSURE YOU WON'T HAVE CERTIFICATE VALIDATION ISSUES.

Force HTTPS 

Enabled

Disabled

**Default Certificate**

The default certificate is used for internal traffic. Any other certificate loaded onto this unit will only be utilized for CCM.

Regenerate

|                       |                                 |
|-----------------------|---------------------------------|
| Certificate Status    | Valid                           |
| Certificate Type      | Self-signed                     |
| Certificate Authority | Clear-Com                       |
| Expiration Date       | Jun 8 2023 --- 765 day(s) left. |
| CA Certificate        | <div>Download</div>             |

**Active Certificate**

Use Default Certificate 

Switch

Use EasyDNS Certificate 

Switch

EasyDNS hostname 

cc-fsebase-31zyf587-0.clearcomdevices.com

## 14.6 Using Security Certificates

There are three types of security certificate available. Choose the certification option that best suits your security requirements:

- A certificate of your own choosing (full chain and private key)
- An EasyDNS authorized certificate for \*.clearcomdevices.com (this option requires you to register your Avalon with a DNS server) and cannot be used unless your Avalon has internet access
- The Clear-Com self-signed certificate

More detail about certificates:

1. **A certificate of your own choosing.** This option gives you complete control over the security of your Avalon. This option requires specialized knowledge about how to obtain a full chain certificate and private key, and how to install them on your browser. When using your own certificate you might have to provide a DNS server address and register the Avalon.
2. **The EasyDNS certificate.** This is a commercial Avalon certificate. When using the EasyDNS certificate you have to have a DNS server address for registration and a gateway for your device in order for the browser to verify the certificate with AlphaSSL and GlobalSign.
3. **The Clear-Com self-signed certificate (default).** This certificate can be used in a private network (does not require Internet access to verify the certificate). It can also be used to perform an initial test of your security setup. **Warning:** Browsers can be configured to trust the self-signed certificate, but this process will vary between browsers.

## 14.7 EasyDNS update button (Avalon 4.1 and up)

The Easy DNS certificate expires every 12 months. Use the **Update Certificate** button to download and install the latest certificate from Skyport. This requires an internet connection

Find the update button in: **Hardware > Host > Security > Update Certificate.**

**Note:** *The certificate will not download if the Avalon clock is wrong. Therefore, you are advised to sync the clock before downloading the certificate (**Status > Host Device > Tools > Sync Clock**).*

## Appendix B: Clear-Com Ethernet Cable Recommendations

| Cable recommendations                                    |                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Category (Cat)                                           | <p>Higher Cat numbers will support a higher bandwidth. Therefore, by using a higher Cat number you are future proofing your system to some extent. Example:</p> <ul style="list-style-type: none"> <li>• Cat 5e : up to 1 GB</li> <li>• Cat 6: up to 10 GB</li> </ul> <p>Use Cat 5e or higher.</p>                     |
| American Wire Gauge (AWG)                                | <p>The lower the AWG number, the less temperature rise there will be in the cable when using PoE. This is particularly important for bundles. Local building regulations may rule out the use of 26 AWG or higher, depending on the installation. Check with your local building regulations. Use AWG 24 or lower.</p> |
| Shielded Twisted Pair (STP) or Foiled Twisted Pair (FTP) | <p>Using shielded cable means less problems with interference from other sources. This means that your installation will be more robust if you use shielded cables.</p>                                                                                                                                                |

**Note:** Overall recommendation: Use Cat 6a, 23 AWG STP cable.

| Part                              | Part Number    |
|-----------------------------------|----------------|
| External power supply, 12VDC 150W | PSU-EXT-0001   |
| Fan plate assembly                | T40020-1       |
| Rack ear (x1)                     | 272G162-SP     |
| Encoder cap (x1)                  | 272G286-SP     |
| Optional equipment                |                |
| Ethernet fiber modules*:          |                |
| 1 Gbps SM SXFIBER SFP             | SFP-SMFO-1G-LX |
| 1 Gbps MM LXFIBER SFP             | SFP-MMFO-1G-SX |
| 1 Gbps RJ45 SFP                   | SFP-RJ45-1G    |
| PSU Mounting Bracket              | 272G048-SP     |

\*There is a detailed list of all Clear-Com SFPs (including range, wavelength and speed) on the [Clear-Com Avalon Knowledge Center](#).

## 17 Appendix F: Regulatory Compliance (Regulatory Model: 1410)

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Applicant Name: Clear-Com LLC

Applicant Address: 1301 Marina Village Pkwy, Suite 105, Alameda CA 94501, United States

Manufacturer Name: Clear-Com LLC

Manufacturer Address: 1301 Marina Village Pkwy, Suite 105, Alameda CA 94501, United States

Country of Origin: USA

Brand: Clear-Com

**Caution:** All products are compliant with regulatory requirements detailed in this document when the user follows all installation instructions and operating conditions per Clear-Com specifications

**Caution:** Use of accessories and peripherals other than those recommended by Clear-Com may void the product's compliance as well as the user's authority to operate the equipment.

### 17.1 FCC Notice

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by Clear-Com, LLC, an HM Electronics, Inc. company could void the user's authority to operate this equipment.

### 17.2 Industry Canada Compliance Statement

This Class[A] digital device complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

## 17.3 Korean Notice

A급 기기 (업무용 방송통신기자재)

이 기기는 업무용(A급)으로 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

## 17.4 European Union (CE mark)

The CE marking indicates compliance with the following directives and standards, whenever applicable to the product in question.

**Directives:**

- Electromagnetic Compatibility Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- RoHS Directive 2011/65/EU, 2015/863/EU

**Standards:**

- EN55032
- EN55035
- IEC/EN62368-1
- EN IEC 63000



## 17.5 United Kingdom (UKCA Mark)

The UKCA (UK Conformity Assessed) marking is a new UK product marking that will be used for goods being placed on the market in Great Britain (England, Wales and Scotland). The UKCA marking alone cannot be used for goods placed on the Northern Ireland market, which require the CE marking or UK(NI) marking.



**Warning:**

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

## 17.6 Electrical and Electronic Equipment (WEEE) Waste

The European Union (EU) WEEE Directive (2012/19/EU) places an obligation on producers (manufacturers, distributors and/or retailers) to take-back electronic products at the end of their useful life. The WEEE Directive covers most Clear-Com products being sold into the EU as of August 13, 2005. Manufacturers, distributors and retailers are obliged to finance the costs of recovery from municipal collection points, reuse, and recycling of specified percentages per the WEEE requirements.

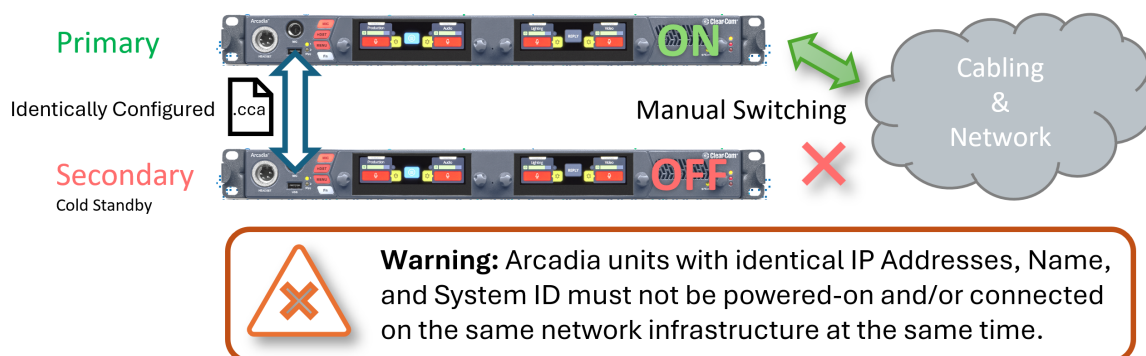
### Instructions for Disposal of WEEE by Users in the European Union

The symbol shown below is on the product or on its packaging which indicates that this product was put on the market after August 13, 2005 and must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of the user's waste equipment by handing it over to a designated collection point for the recycling of WEEE. The separate collection and recycling of waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local authority, your household waste disposal service or the seller from whom you purchased the product.





## Appendix G: Setting up a Cold Standby Unit



### Preparing a cold standby Avalon

Avalon includes various internal features to facilitate a redundant cold standby (secondary) unit for a manual switchover. This is where you can physically switch FreeSpeak, HelixNet, V-Series, I.V. Direct, and analog connections between identically configured Avalon devices and have system components reconnect.

The primary and identically configured cold standby Avalon units **MUST NOT** be powered on OR on the same network at the same time.

Dante interfaces do not allow for cloned standby units to be configured but does allow routing changes to change over to a different device.

Please see a section on Dante switchover later in this chapter.

### Configuring the system

On: Avalon Primary Unit:

- Configure
  - To prepare a cold standby unit for manual switchover, start with getting your primary Avalon system paired to all endpoints, and the system fully connected and configured
- Record
  - Document the name of the Avalon unit, its IP settings and Wireless System ID
- Save
  - Once connected and configured, save the configuration of the primary Avalon

## Avalon secondary unit

- Verify networking
  - Ensure the secondary unit is not on the same physical network as the primary Avalon unit
- Restore with network settings & system ID
  - Open the CCM and select **Restore Configuration**
  - Restore the configuration with **Network Settings** and **Wireless System ID**
  - Verify configuration is restored: ensure that the system ID, IP settings and the name of the Avalon match those of the primary unit

## Switching between Avalon primary & secondary units

The primary Avalon unit can now be switched out for the secondary Avalon unit in its most basic form by physically moving the network, FreeSpeak E1, and analog connections from the primary to the secondary unit.

As this switching is done, transceivers and user stations will reconnect with the role fixed to them in the configuration. Key listens will come up in their initial state; unlatched and at a unity level unless otherwise configured.

Once fully configured, it is recommended to test the switchover and observe its behavior within the infrastructure that supports it.

## Dante switchover using Dante Controller presets

Dante doesn't recommend using identically configured cold standby units. However, if no other Avalon functionality (e.g., Management) is configured on the Dante LAN ports, this allows the Dante ports of both the primary and secondary Avalon units to be connected to the Dante network at the same time and make use of the Dante Controller's presets functionality for switchover.

To do this, go to Dante Controller:

- Configure the Dante network for the primary Avalon unit, including all routing
- Go to **File > Save Preset**
- Select the primary Avalon unit. All receiving Dante stream information will be stored in the preset
- Click on **Advanced**

- Ensure **Name** and **Rx Channel Subscription** are checked at a minimum, but it is recommended that all information is included
- Save as the Primary Avalon preset
- Repeat all of the above steps for the secondary Avalon unit

You can now restore the preset for either the primary or secondary Avalon units in the Dante Controller.

## Implementing your workflows

Various 3rd-party options could be used to perform the switchover, such as 3rd-party port switchers or network switch port controls, in addition to VLAN or preset assignments, depending on your infrastructure. Clear-Com recommends a simple deployment, clear labeling and a tested and documented procedure for how to switch between primary and secondary Avalon units in your infrastructure.

## Theory of operation - for troubleshooting

- FreeSpeak E1 transceivers connect via a physical connection to the Avalon.
- FreeSpeak IP transceivers broadcast their mDNS name on the network which gets stored in the configuration of Avalon upon pairing. Avalon will then connect to this transceiver when it is visible on the network
- FreeSpeak transceivers broadcast the system ID of Avalon to any FreeSpeak beltpack within range
- FreeSpeak beltpack pairing stores the system ID of Avalon in the beltpack **System Connect** screen. This will allow the beltpack to connect to any active Avalon with an identical configuration of beltpack pairing and system ID delivering either the list of available roles or a fixed role
- FreeSpeak beltpack pairing stores the beltpack's unique ID in the Avalon system configuration which Avalon uses to allow the beltpack to connect to the system
- HelixNet user stations connect to the mDNS or IP address of Avalon once paired either from the HelixNet User Station front panel menu or from the Avalon CCM via mDNS. Upon reconnecting, the HelixNet user station will either request the last role it used or use a fixed role, if this is configured
- V-Series keypanel and I.V. Directs (I.V. Ports) generally have a unique user name and password established in the Avalon and stored in the configuration. The keypanel or direct then logs in to the Avalon using IP address, port number, user name and password

on whichever Avalon (primary or secondary) is available on the network. A V-Series keypanel will automatically take a role if one is fixed to it in the configuration