User Guide

Arcadia Central Station

User Guide Draft 3

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1 Introduction

This chapter provides an overview of the Arcadia Central Station. It contains the following sections:

1.1 Product Features

Arcadia Central Station is a low-latency, scalable intercom platform that interconnects with wired and wireless intercom systems.

Arcadia Central Station offers:

- 6 IP transceivers (any combination up to a total of 6 of FreeSpeak II and FreeSpeak Edge TCVRs)
- 10 E1 transceivers (any combination up to a total of 10 of FreeSpeak II 1.9 and 2.4 TCVRs)
- 16 wireless beltpacks (any combination up to a total of 16 of FreeSpeak II and FreeSpeak Edge beltpacks
- 8 Dante channels
- 8 Four-wire ports
- 4 Two-wire ports

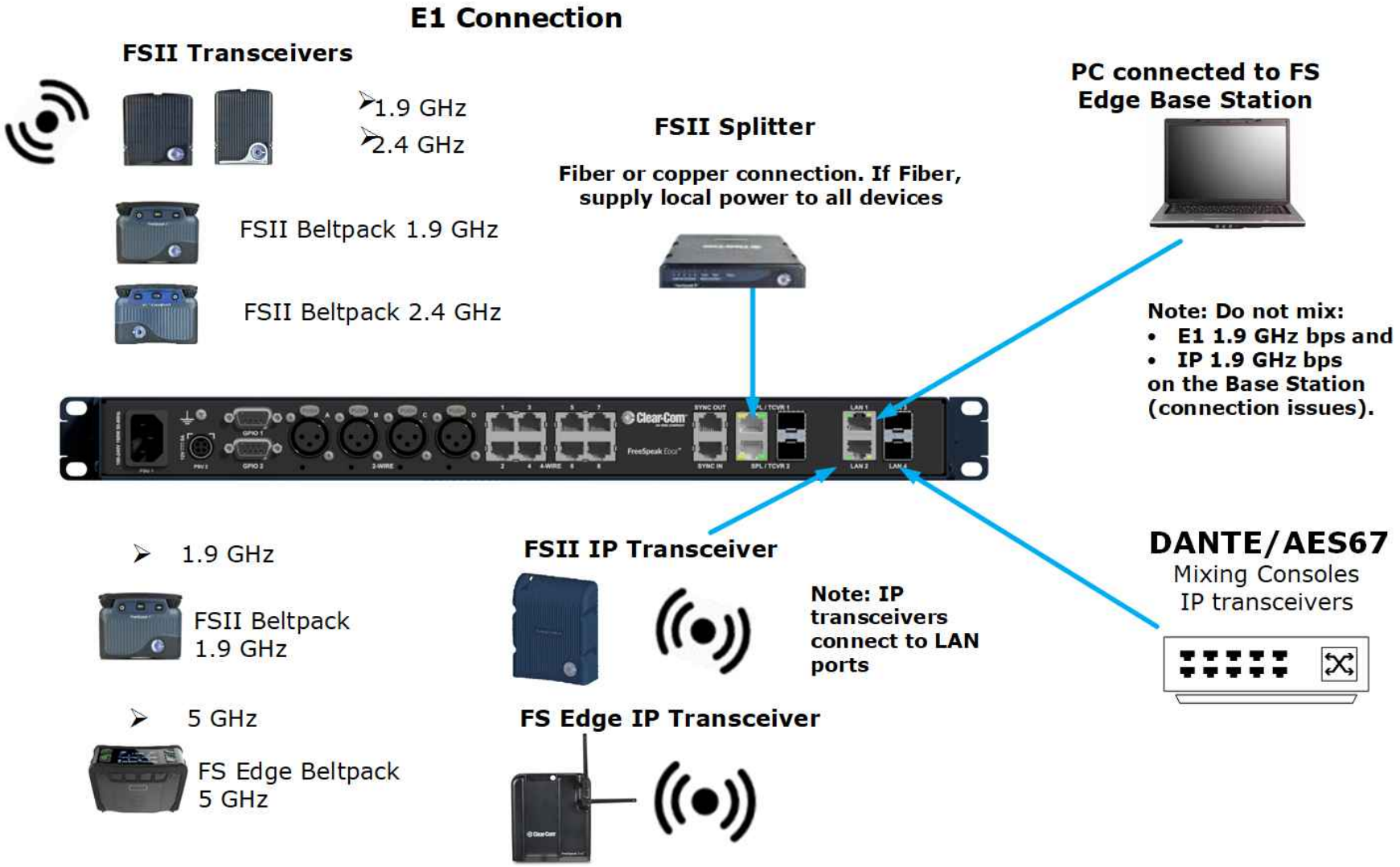
The secure browser-based Core Configuration Manager (CCM) offers intuitive configuration and you also have the option of using the touch-sensitive font-panel screens with encoder button controls.

You can connect the FreeSpeak Edge Arcadia Central Station to:

- Wireless transceivers:
  - 1.9 GHz - E1 or IP connection
  - 2.4 GHz - E1 only
  - 5 GHz - IP only
- Dante compliant systems.

1.2 System overview

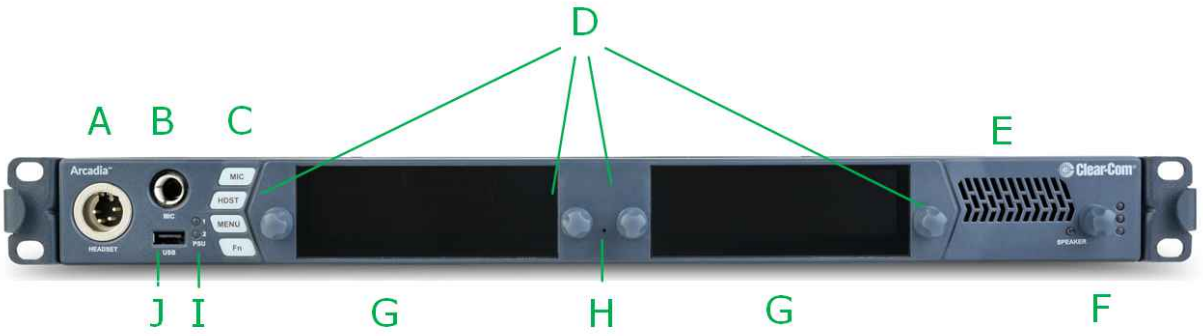
The following graphic shows an overview of how the Arcadia Central Station can interconnect with other intercom systems.



2 Installing Arcadia Central Station

This section describes the front and rear panels, power supplies and cabling recommendations. It also describes network setup and illustrates example applications. It contains the following sections:

2.1 Front Panel Connectors, Controls and Indicators



The FreeSpeak Arcadia front panel connectors, controls and indicators are listed below.

Item	Description
A	Headset connector (4-pin XLR female).
B	Gooseneck mic socket (1/4 inch jack)
C	**Mic**: when a headset is connected, this button switches audio between the headset mic and the gooseneck mic.

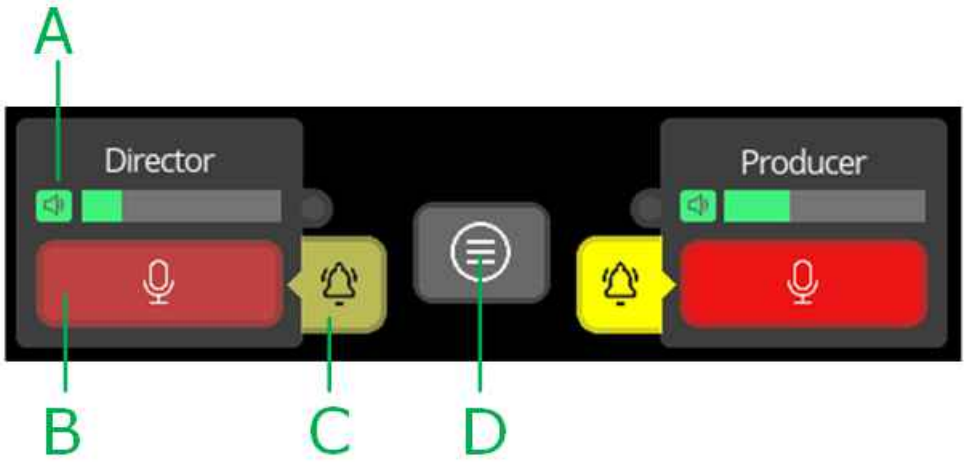
Item	Description
	HDST: when a headset is connected, this button switches the headset microphone output to the loudspeaker. **Menu**: Press to enter menu mode. Press again to exit, or allow menu mode to time out. **Fn**: Function button. No functions currently available.
D	Rotary Encoders. Use these to control channel volume or to navigate through the menu system.
E	Loudspeaker
F	Main loudspeaker/headphone audio control. Push to mute or unmute. Main Volume Level LEDs: • Red - high volume level • Amber - medium volume level • Green - low volume level
G	Color touchscreen displays
H	Pin reset
I	Power Supply Unit LEDs
J	USB A connector. Use to: • Register beltpacks • Upgrade the Arcadia Central Station • Save/Restore system settings • Obtain detailed logs for diagnostic purposes

Delete this text and replace it with your own content.

2.2 Intercom Touchscreens

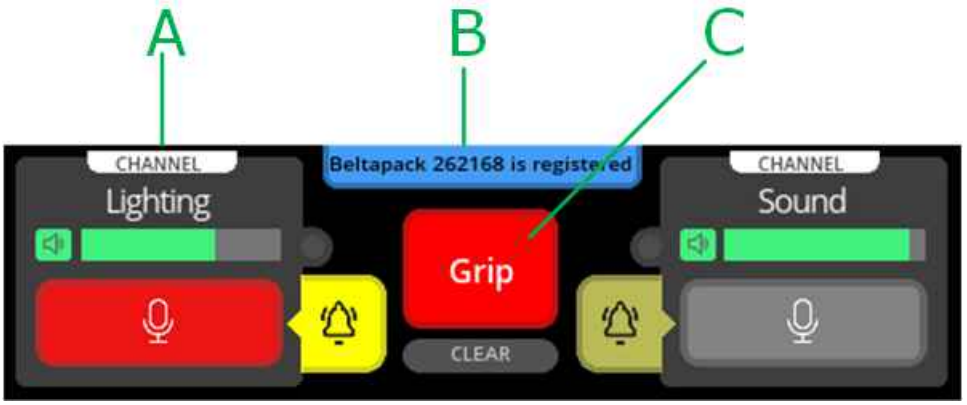
The Arcadia Central Station has two intercom control touchscreens, available when the front panel screens are not in menu mode. Each touchscreen provides access to two channels or point-to-point communications so the front panel can be used as a 4-button intercom station.

Left Intercom Touchscreen



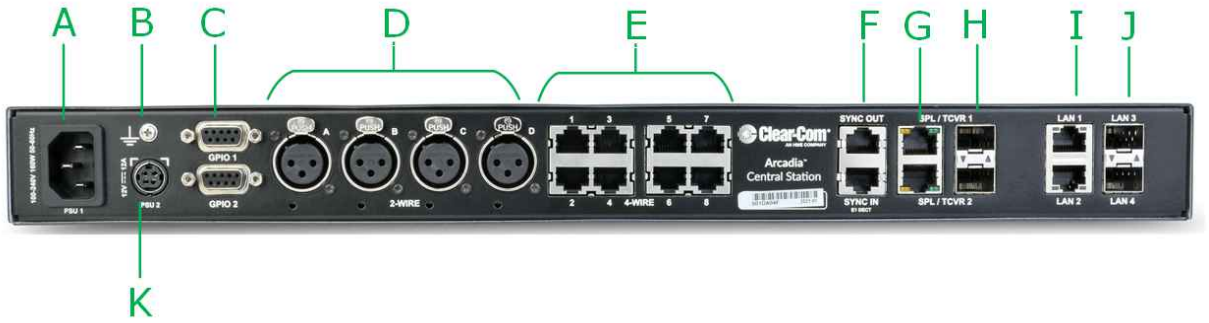
Item	Description
A	Volume level indicator. Control the volume with the rotary controller next to the channel/audio source.
B	Talk button.
C	Call button. Use this to send a call signal.
D	Menu button. Touch to see: • Stage Announce • All talk • Remote mic kill (RMK)

Right Intercom Touchscreen



Item	Description
A	Channel indication. Audio routes can be point-to-point or channels.
B	Beltpacks can be registered by USB from the front panel. A visual indication on the right intercom screen shows sucessful registration.
C	Reply button. Use CLEAR to clear the reply stack.

2.3 Rear Panel Connectors and Indicators



The FreeSpeak Arcadia rear connectors and indicators are listed below.

Item	Description
A	Internal power connector. Mains power lead with internal power supply.
B	Grounding screw.
C	General Purpose Input/Output connectors x2 (DB-9F). • GPIO 1 hosts GPI1 and GPO1 & 2 • GPIO 2 hosts GPI2 and GPO 3 & 4.
D	XLR 2-Wire Partyline connectors (standard microphone cable)
E	RJ45 4-Wire audio and data connectors. Port 8 is dedicated to Program Feed (**PGM**) and Stage Announce (**SA**), to be used with the split XLR cable connector that is supplied with the Arcadia Central Station.
F	Dect Sync RJ45 connectors
G	E1 RJ45 connectors to splitter/transceiver. Do not connect IP transceivers here.

Item	Description
H	SFP cage for E1 fiber connection to splitter/transceiver (Either single-mode or multi-mode fiber modules. Modules must match existing cabling). Do not connect IP transceivers here.
I	RJ45 LAN connectors. IP transceivers are connected here.
J	SFP cage for fiber LAN connectors
K	External power supply connector

2.4 System Powering

There are two power supplies:

- Mains power connector (IEC)(internal power supply)
- DC connector. External AC/DC DIN4 power adapter (part number: 453G020-1)
    - 12V DC, 12A

Use one power connector or both to guard against one failing.

2.5 Clear-Com Ethernet Cable Recommendations

Cable recommendations	
Category (Cat)	Higher Cat numbers will support a higher bandwidth. Therefore, by using a higher Cat number you are future proofing you system to some extent. Example: • Cat 5 : up to 1 GB • Cat 6: up to 10 GB Use Cat 5e or higher.
American Wire Gauge (AWG)	The lower the AWG number, the less temperature rise there wil 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.

Cable recommendations	
Shielded Twisted Pair (STP) or Foiled Twisted Pair (FTP)	Using shielded cable means less problems with interference from other sources. This means that your network will be more robust if you use shielded cables.

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

2.6 Stage Announce and Program Feed

Your Arcadia Central Station is supplied with an RJ45 connector that splits into two XLR connectors. If you wish to use an external Stage Announce (**SA**) and Program Feed (**PGM**), you must connect this to the RJ45 port #8 on the rear of your device, and connect your input (**PGM**) and output (**SA**) to these connectors.

Once you have done this, these resources will be available in the CCM for routing. Simply navigate to **Configuration** in the CCM and click the add button  next to the PGM and SA ports to put them into channels as required. These audio resources can be routed to **Channels**, **Groups**, **Roles** and **Logic** events (GPIOs).

Note: *These resource are unidirectional, not duplex.*

2.7 Set the Arcadia Central Station IP address

By default your Arcadia Central Station works with DHCP IP addressing. However, you can set a static IP address for any of the station IP ports (with the exception of Dante audio that is defined by the Audinate Dante Controller).

The Arcadia Central Station IP address can be set:

- From the Arcadia Central Station front panel menus
- From the Core Configuration Manager (CCM)

2.7.1 Set the Arcadia Central Station IP address from the front panel menus

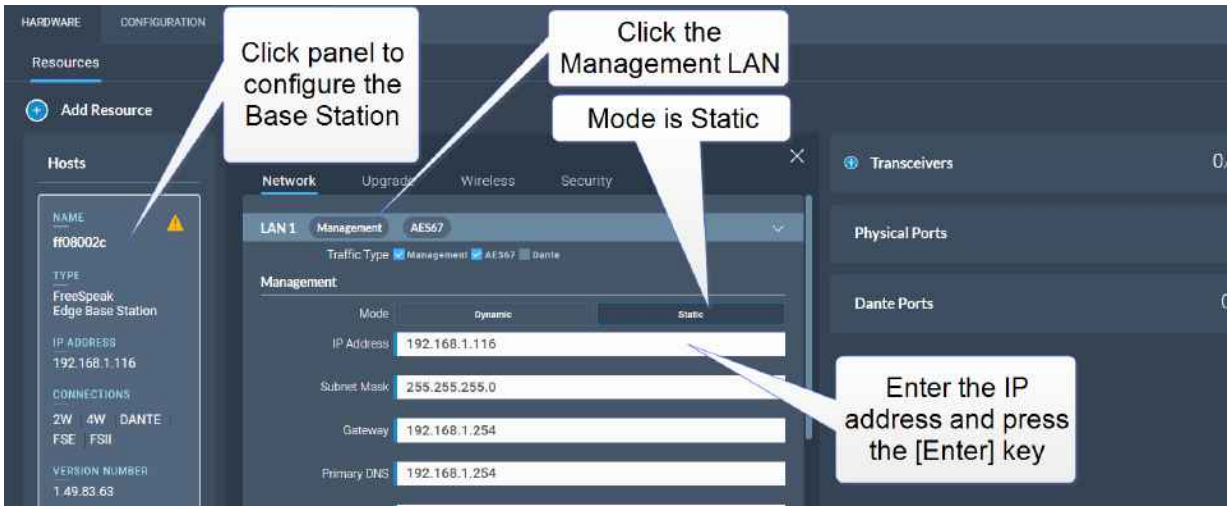
Press the **MENU** button on the front of the Arcadia Central Station to enter the menu system. Scroll/navigate through the menu items by turning the rotary controllers. Push the rotary controllers to select an item.

1. Press the **MENU** button.
2. Using the far left rotary controller, navigate to **Networking**.

3. Scroll to the IP address type you wish to set (**Management** or **AES67**).
4. Navigate to **DHCP** and select **DISABLED** (push to select menu item).
5. A numerical touchscreen keypad appears in the screen.
6. Using the touchscreen, press **Clr** to clear the IP address field.
7. Enter the new IP address using the touchscreen.
8. Press **OK**.
9. Edit the subnet if required .
10. Press OK.
11. The Arcadia Central Station IP address has been changed.

2.7.2 Set the Arcadia Central Station IP address from the CCM

1. In the CCM, navigate to **Hardware > Resources**.
2. Click anywhere on the Arcadia Central Station panel under **Hosts**.
3. In the Network tab, click **Management** (or **AES67** or **Dante**, depending on which IP address you wish to change).
4. Select **Static**.
5. Enter the required IP address and press the [Enter] key.



For information see: **Arcadia Central Station LAN Configuration Rules on page 38**

2.8 Save and Restore 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.

2.8.1 Save 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. The progress of this Save is shown in the notification bar on the front panel.

2.8.2 Save System Setup in the Front Panel Menus

1. Insert a USB drive into the USB connector on the front of the Base.
2. Press the **Menu** button.
3. Using the rotary controllers, navigate to **Administration>Settings>Save**.
4. Push the 4th rotary controller. System setting are saved to the USB drive. The progress of this Save is shown in the notification bar on the front panel.

2.8.3 Restore System Configuration

Your system configuration can be restored to the Arcadia Central Station 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 Arcadia Central Station. The following aspects of the configuration are optionally restored:

- Network settings (IP addresses)
- OTA system ID.

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

2.9 Reset to Default

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

- Reset to default from the Arcadia Central Station menu system: network setting are also reset
- Reset to default from the CCM: network settings are not reset

In either case, after resetting the device to default settings you will have to add all transceivers back into the system using **Hardware>Add Resource>Transceivers** in the CCM. See **Adding IP Transceivers (FS Edge, FS II 1.9, 2.4) on page 54**.

Note: *When you use a pin reset on front the front of the Arcadia Central Station the device reboots.*

2.9.1 Reset to default from the menu system

1. Press the menu button on the front of the Arcadia Central Station.
2. Using the rotary controllers navigate to **Administration>Reset>Reset to Default>Reset Base**.
3. Press the 4th rotary controller.
4. The device will reset to factory defaults and reboot.

2.9.2 Reset to default from the CCM

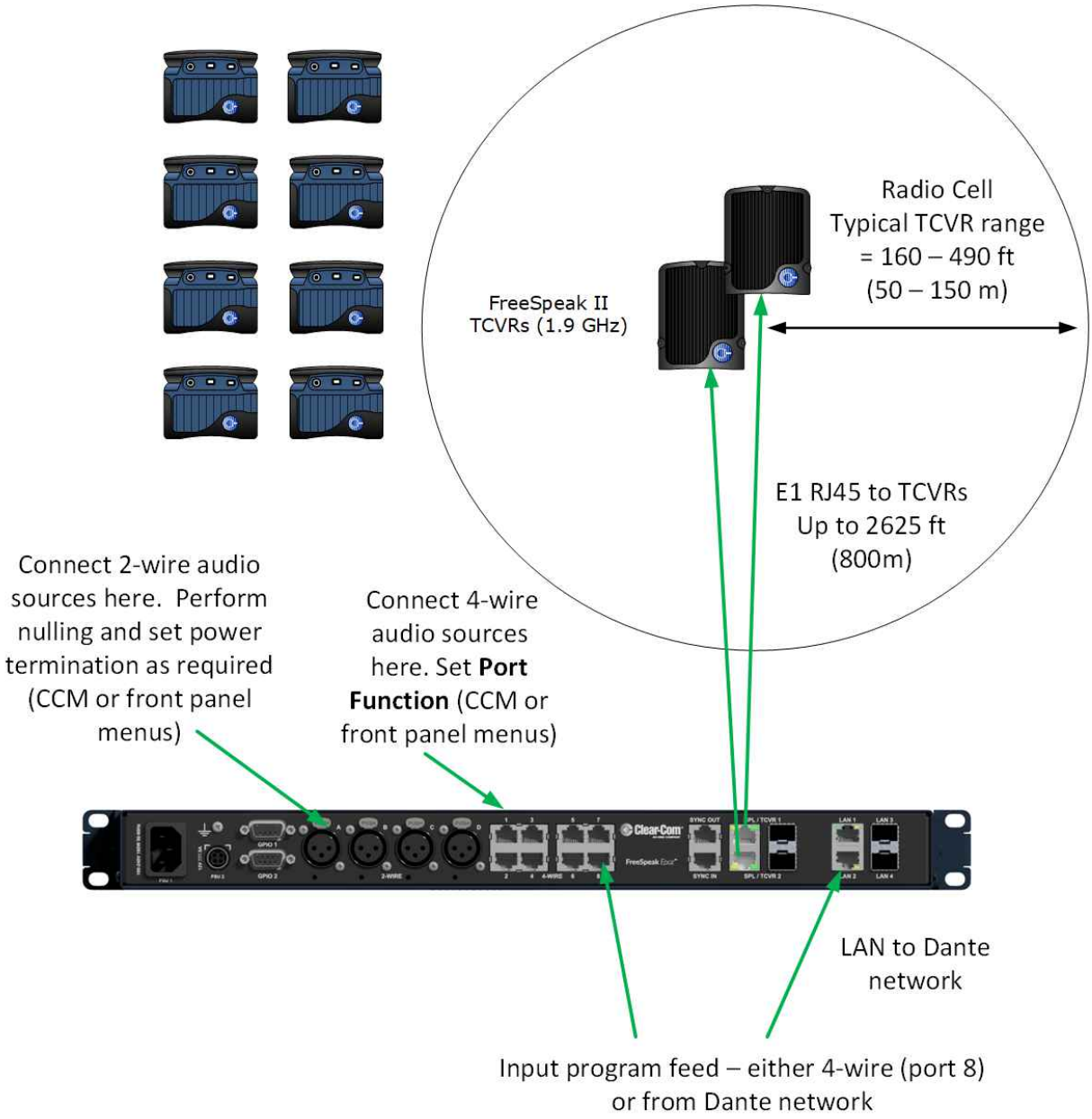
1. In the CCM, navigate to **Status>>Overview>Host Device**.
2. Select **Reset to Default**.
3. **Reset to Default**.
4. The device will reset to factory defaults and reboot.

2.10 Example Applications

Here are some examples of typical installations.

2.10.1 Fast and Easy Setup: E1

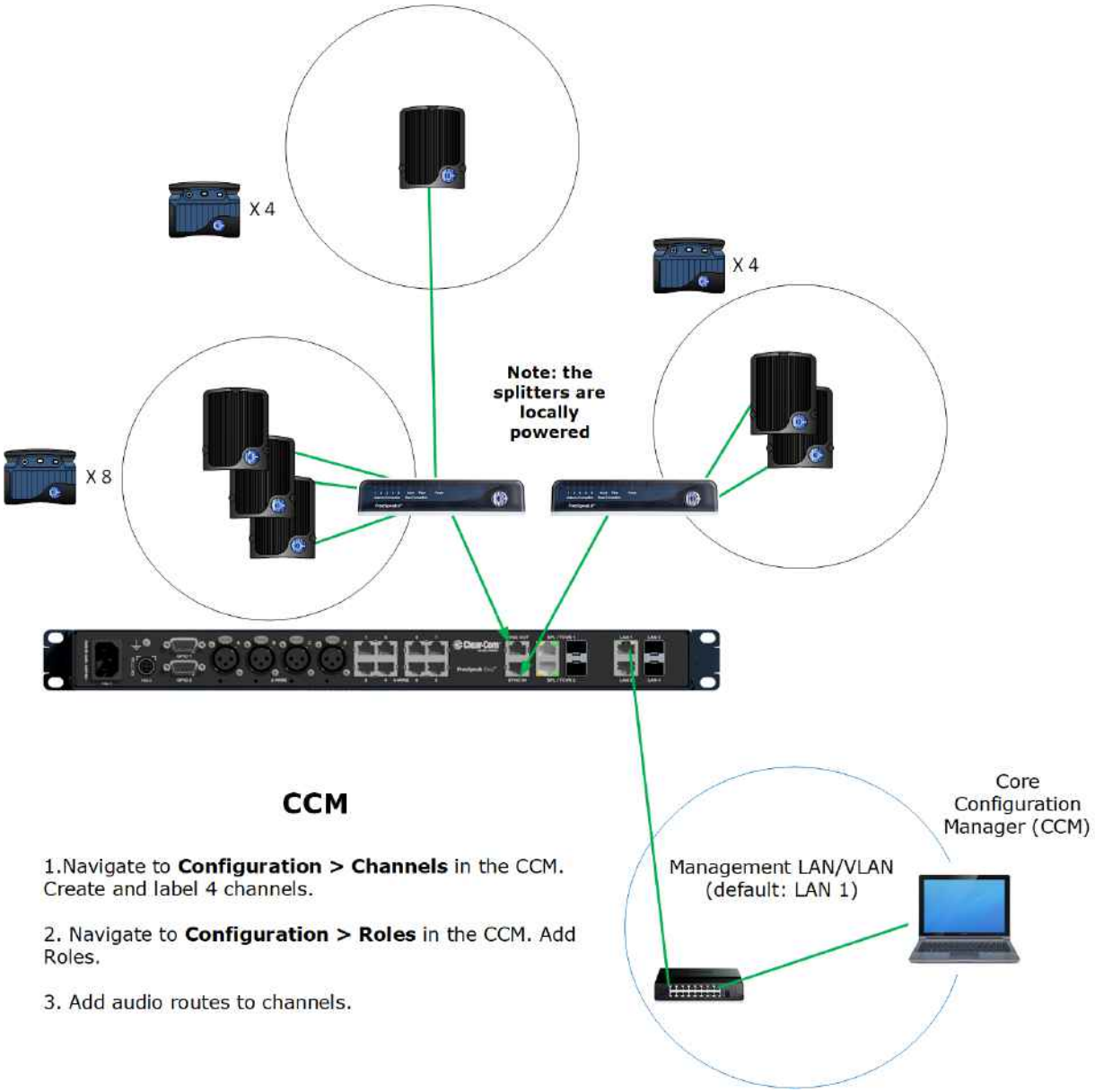
The FreeSpeak II E1 transceivers use a proprietary E1 connection directly to the Arcadia Central Station. The Core Configuration Manager (CCM) is the easiest way to configure your system, but this set up does not require you to use it. This system can be configured from the front panel menu system. In this example, using the default setup, all devices are talking and listening to Channel 1 and Channel 2 and they can engage call signals to those channels.



- For E1 set up, see **Example connection with a splitter on page 28**
- To register beltpacks, see **Registering beltpacks on page 55**
- To set Port Function, see **Port Function on page 26**
- To perform Autonull, see (topic to be written).
- To connect Program Feed, see **Stage Announce and Program Feed on page 14**

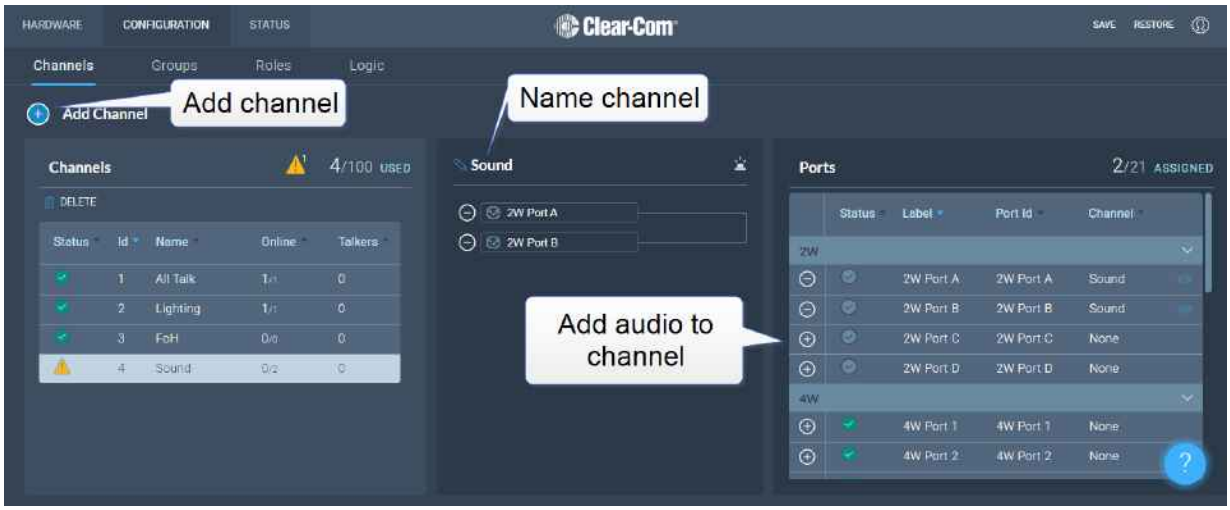
2.10.2 E1 Setup with 6 Transceivers

This set up includes two splitters, both connected via Cat 5e cable using E1 connectivity. Four channels are configured in the CCM: Channel 1=ALL, Channel 2=Lighting, Channel 3=Sound, Channel 4=FoH. 16 roles are configured for the beltpacks.



To set the splitter dip-switches see the FSII Splitter Quick Start Guide (FSII SPL-QSG) in the Clear-Com FreeSpeak Knowledge Center on the Clear-Com website: Clear-Com Freespeak II Knowledge Center

1. Configure channels in the CCM



2. Add roles and configure the keys on the beltpacks

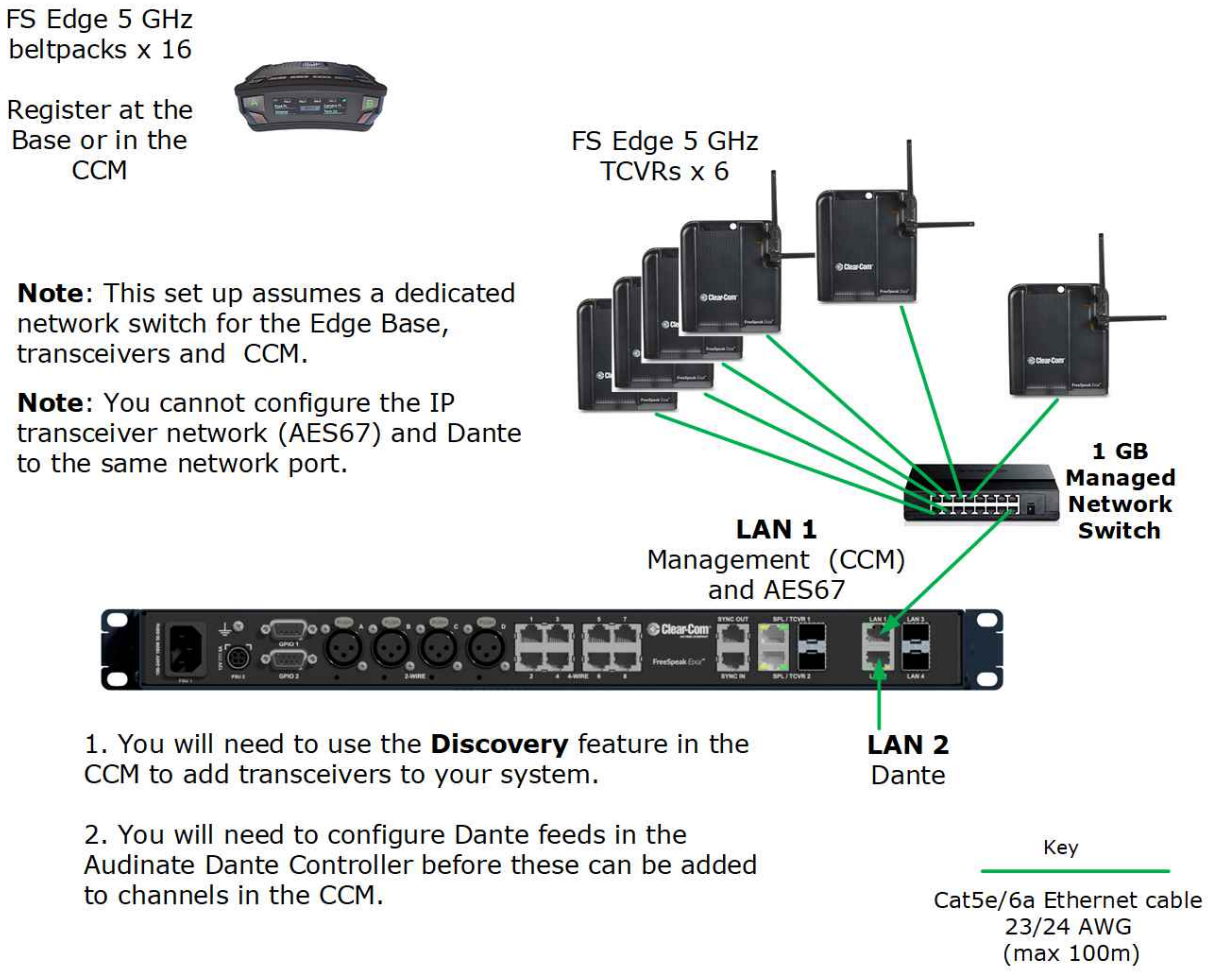
2.10.3 Using IP Transceivers with the Arcadia Central Station

This set up has a total of 6 FS Edge transceivers with 16 Beltpacks connected. The IP transceivers are connected via a network that is configured for AES67 traffic. These are configured using the CCM. There are four 2-wire partylines 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.



To follow the Edge transceiver connection process see the Transceiver QSG (PDF) available from the FreeSpeak Edge Knowledge Center.

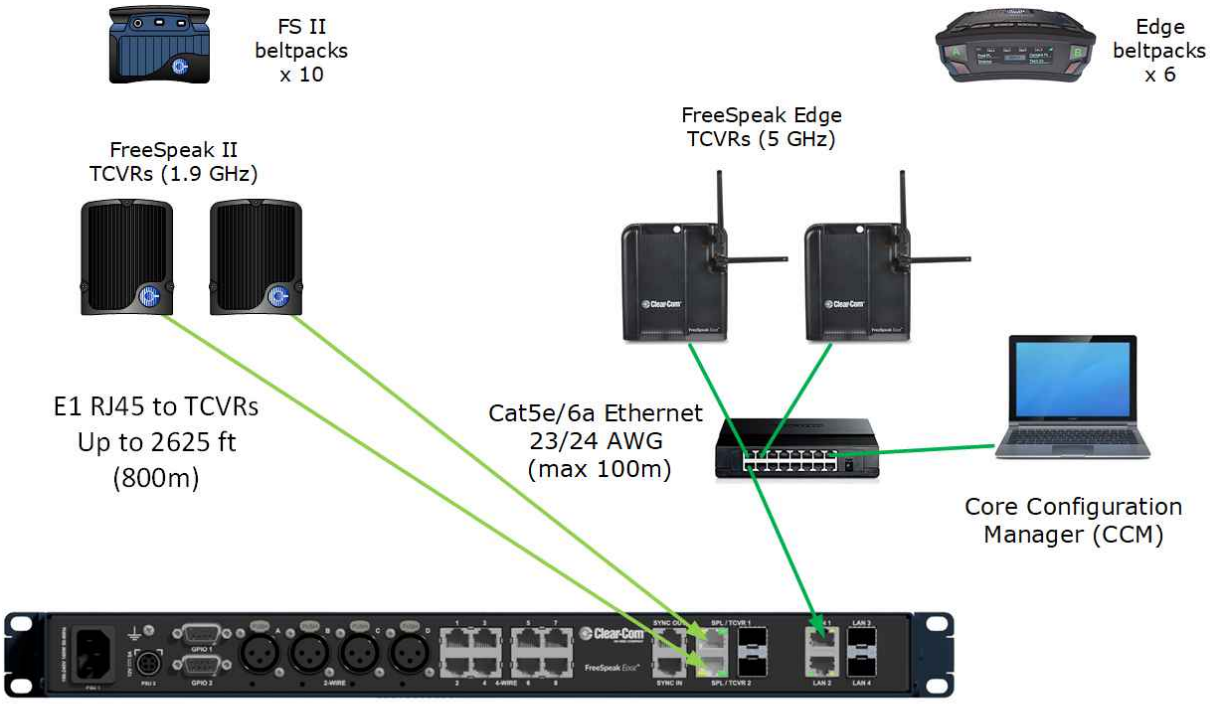
For network set up see **Network Set Up for IP Transceivers on page 36**

1. Device Discovery in the CCM

2. For information on connecting Dante to your system see **Dante connections on page 31**

2.10.4 Split Frequency Setup (5 GHz and 1.9 GHz System)

This set up has 5 E1 FS II transceivers (1.9) with ten beltpacks and 2 FS Edge IP transceivers. The E1 Transceivers will automatically connect to the base once powered, but the Edge transceivers require additional configuration in the CCM and must be connected to a network that is configured for AES67 traffic.



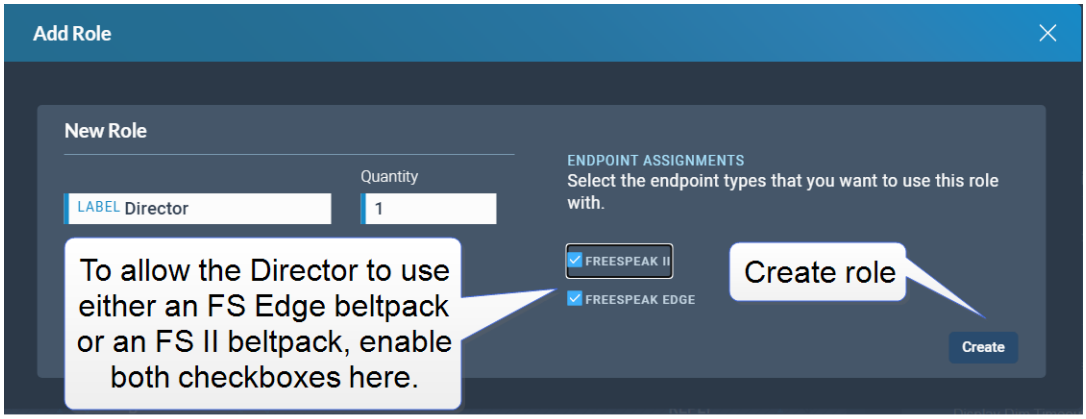
CCM Configuration

2 x Channels: Cameras, Lighting

6 x Roles: Director, Stage Manager, 2 Runner, 2 Maintenance

Note: you can create roles that can be used by both 5 GHz and/or 1.9 GHz beltpacks.

Create roles that can be used by both transceiver types: in the CCM navigate to **Configuration>Roles>Add Role**.



3 Connecting to other systems

This chapter describes how to connect your Arcadia Central Station with other intercom systems. It contains the following sections:

3.1 Connecting 2-Wire Systems

When connecting 2-wire equipment the following functions should be taken into consideration:

- Auto-null. Every time equipment is changed on a 2-wire interface (port) you should run auto-null. When nulling, make sure all talk paths are closed on the channel that you are nulling (both on the Arcadia Central Station and the other wired and wireless endpoints). You must null every time you add wired resources to your system.
- Enable/disable the partyline power. Do this in **CCM > Hardware >Resources > Physical Ports > 2-Wire**. Default setting: **Disabled**.
- Enable/disable Line termination. The line should only be terminated once on interconnected devices, do not terminate on more than one piece of equipment. Default setting: **Disabled**.

These functions can be set either in the 2-wire port settings page of the Core Configuration Manager (CCM) or from the front panel screens on the Arcadia Central Station.

In the CCM navigate to: **Hardware>Physical Ports** (select port):

3.2 Connecting 4-Wire Systems

When connecting to 4-wire equipment the following need to be taken into account:

- To minimise noise, use screened (shielded) cable when connecting 4-wire ports.
- Pin-out configuration (Port Function) can be set on all the Arcadia Central Station 4-wire interfaces. This is a software switch that switches the configuration of the pins on the

RJ45 connectors according to the device you are connecting to. Default setting: **4-Wire-X**.

3.2.1 Port Function

Check this function whenever you are connecting 4-Wire devices (not GPIO DB-9M connectors) to your Arcadia Central Station. Default = **4-Wire-X**.

About Port Function

Clear-Com products are designed so central audio routing devices (base stations and matrices) can connect directly to other Arcadia Central Stations using a straight-through CAT 5/6 cable. The pin assignments (inputs and outputs) on these devices are complementary. Previously, a crossover cable was necessary when connecting bases to other bases (RJ45 connector). It is no longer necessary to use a crossover cable as there is now a **Port Function** toggle which changes pinouts as required. To set this function navigate in the CCM to **Hardware > Rescources > Physical Ports** and select the required 4-Wire port.

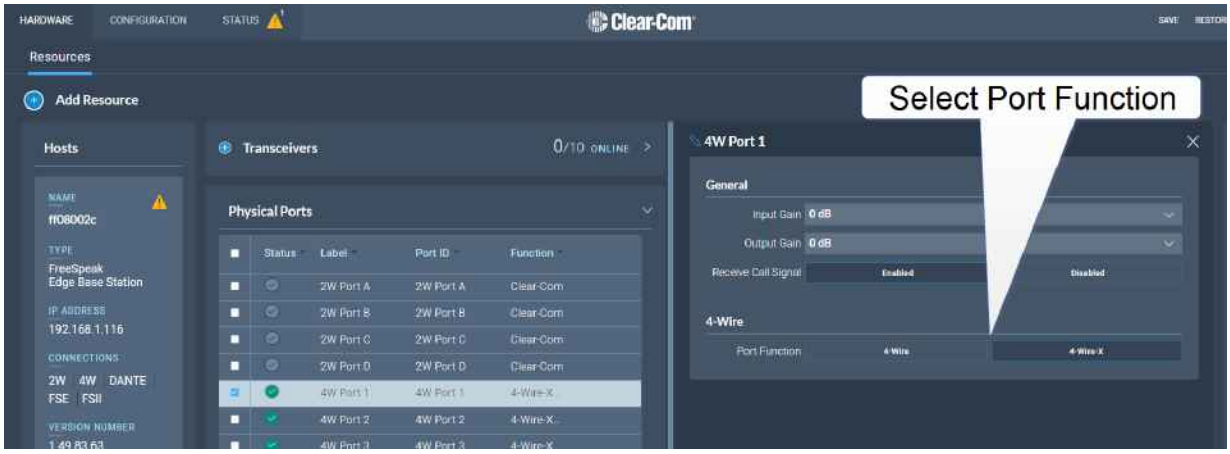
Port Function Pinouts

	4-Wire	4-Wire-X (default)
1	Data in +	Data out +
2	Data in -	Data out -
3	Audio in +	Audio out +
4	Audio out +	Audio in +
5	Audio out -	Audio in -
6	Audio in -	Audio out -
7	Data out +	Data in +
8	Data out -	Data in -

How do I set Port Function (pin polarity) on a 4-Wire connection?

Connect the devices using 1:1 Cat5/6/6e cable.

1. In the CCM, navigate to **Hardware > Resources > Physical Ports**.
2. Select the 4-Wire port.
3. Select **Port Function**.



3.3 Connection to transceivers

This section describes linking transceivers over E1 connections and IP connections.

3.3.1 Connecting transceivers over E1

E1 is a telecommunications standard whereby data and power are sent over Cat 5/6 or Fiber cable (data only). E1 connections must have dedicated cabling as it is not possible to use network switches with this technology.

FreeSpeak II systems (1.9 and 2.4 GHz) can be connected to the Arcadia Central Station using E1 connectivity.

How to connect transceivers over E1

Transceivers can be connected directly to the Arcadia Central Station (two transceivers) or connected using a FreeSpeak II splitter (five transceivers).

Transceivers/splitters are connected to the Arcadia Central Station using connectors G and H. See:**1 Rear panel connectors and indicators**

Note: *Transceivers and splitters can be connected using Fiber or copper cable. If you use Fiber, the devices MUST have local power.*

Example connection with a splitter

Note: *The splitter connections are switched between RJ45 and Fiber routing using dip switches inside the splitter.*

For more examples of connection options and how to set the dip switches, see the FreeSpeak II Splitter Quick Start Guide available from the FreeSpeak II Knowledge Center

Cable distances - E1 connections

Arcadia Central Station to TCVR/splitter	
1 TCVR directly connected to and powered by the Arcadia Central Station	• 328 ft (100 m) using shielded 24 AWG Cat 5/6e cable • 164 ft (50 m) using shielded 26 AWG Cat 5/6e cable
1 TCVR directly connected to the Arcadia Central Station with local/direct power at TCVR	• 2625 ft (800 m) using shielded 24 AWG Cat 5/6e cable • 1312 ft (400 m) using shielded 26 AWG Cat 5/6e cable
Arcadia Central Station to splitter (splitter is powered)	• 2625 ft (800 m) using shielded 24 AWG Cat 5/6e cable • 1312 ft (400 m) using shielded 26 AWG Cat 5/6e cable

Splitter to TCVRS	
TCVRS powered by splitter	• 328 ft (100 m) using shielded 24 AWG Cat 5/6e cable • 164 ft (50 m) using shielded 26 AWG Cat 5/6e cable
TCVRS have local/direct power	• 2625 ft (800 m) using shielded 24 AWG Cat 5/6e cable • 1312 ft (400 m) using shielded 26 AWG Cat 5/6e cable

Note: *Fiber connections: Connection distances will depend on existing cable infrastructure.*

Using a transceiver with a fiber connection

You may wish to connect a Arcadia Central Station to a splitter (FSII-SPL) using Fiber. In this case, you need to install Fiber modules to the Arcadia Central Station and the splitter.

- Modules are available for single mode Fiber cable (HLI-SMFO) and multi-mode Fiber cable (HLI-MMFO)
- Modules, which must be ordered from Clear-Com are supplied as a pair, one for the Arcadia Central Station and one for the splitter.
- Modules can be hot patched, no need to power off devices.
- To install the modules, simply remove the dust cap from the connector port and slide the module into the connector.

Note: *When using a Fiber connection, all devices must have local power supplied.*

Cable Length Offset (E1)

Cable length offset is used to prevent the DECT or radio signals between transceivers getting out of synchronization. If transceivers are not synchronized, beltpack handover will not happen effectively. This is particularly important if you have overlapping transceiver coverage zones (RF cells) or the beltpacks need to move between coverage zones.

Cable length offset or transceiver sync compensation needs to be set when:

- The distance in total cable length between transceivers is ≥ 1640ft / 500m (this includes both fiber and copper cable runs).

Example

TCVR #1: total cable length = 328ft /100m

TCVR #2: total cable length = 2788ft / 850m

The difference in cable length between transceivers = 2460ft / 750m. Therefore, in this case you must set transceiver cable length on both transceivers. This allows any latency to be calculated and offset by the system.

How to Set Cable Length

In the configuration tool, navigate to: **Resources > Transceivers > Details > General >Cable Length**

3.3.2 Connecting IP Transceivers

Introduction

How to connect IPTs.

Graphic showing typical IPT connection.

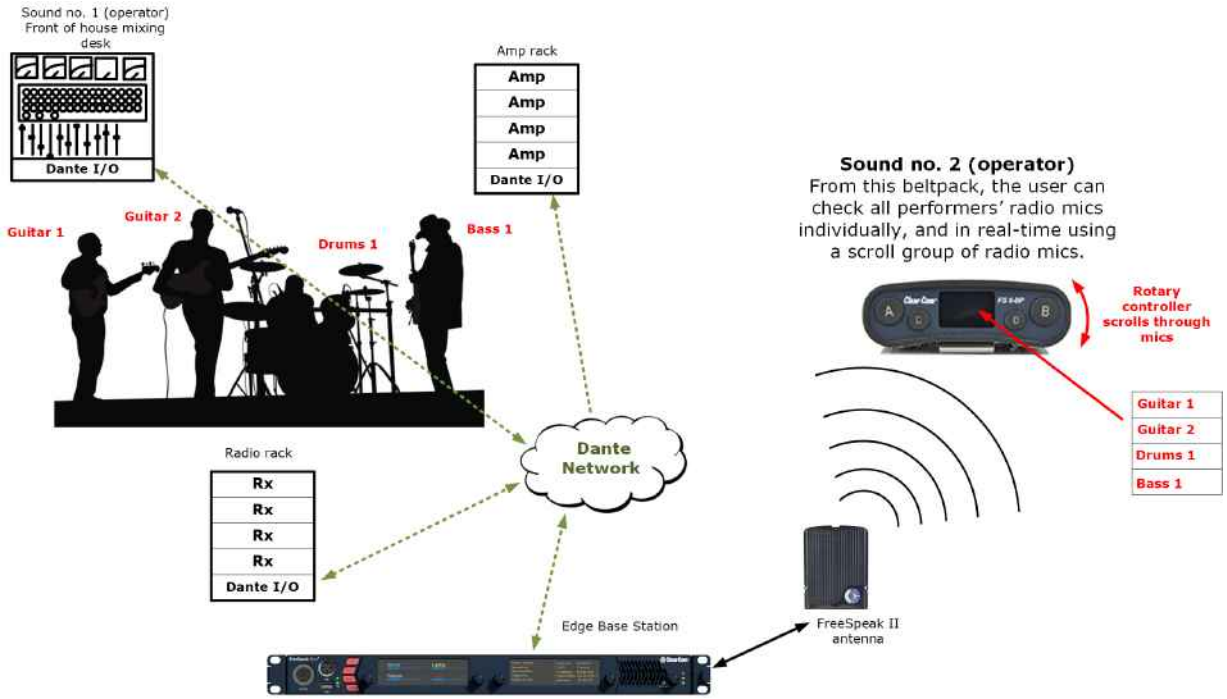
3.3.3 Connecting to legacy FS II transceivers

Introduction

How to connect to legacy FS II transceivers.

Graphic showing a typical connection.

3.4 Dante connections



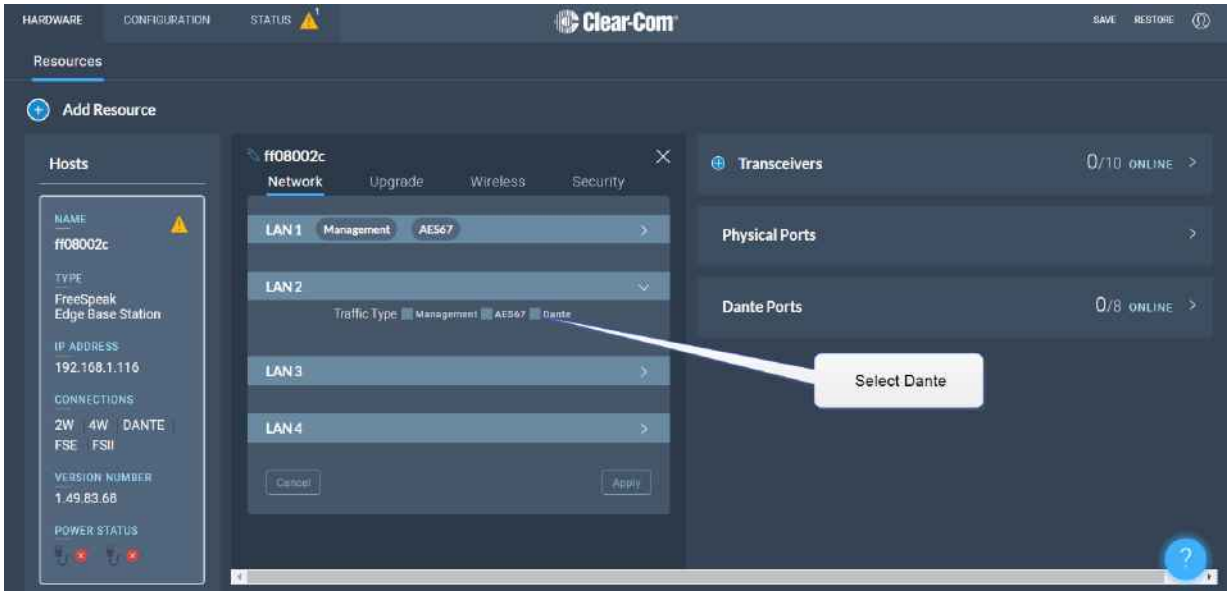
Example application: Dante

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

Once connected, the Arcadia Central Station hosts eight Dante channels.

Before configuring the connection in the Dante Controller, you must determine which of the 4 RJ45 LAN connectors on the Arcadia Central Station you wish to use for Dante network traffic. See **1 Rear panel connectors and indicators**.

Determining which LAN connector you wish to use for Dante must be done in the CCM. Navigate **to Hardware > Resources** and click on the host panel to see the host device settings. Under the **Network** tab, select the port for Dante. This port will default toa DHCP setting. If you wish to configure a static IP address you must do this in the Dante controller.



Note: *Currently the Arcadia Central Station does not support secondary Dante networks.*

Note: *LAN 3 and 4 are fiber connections. If you use these you will need an SFP fiber module.*

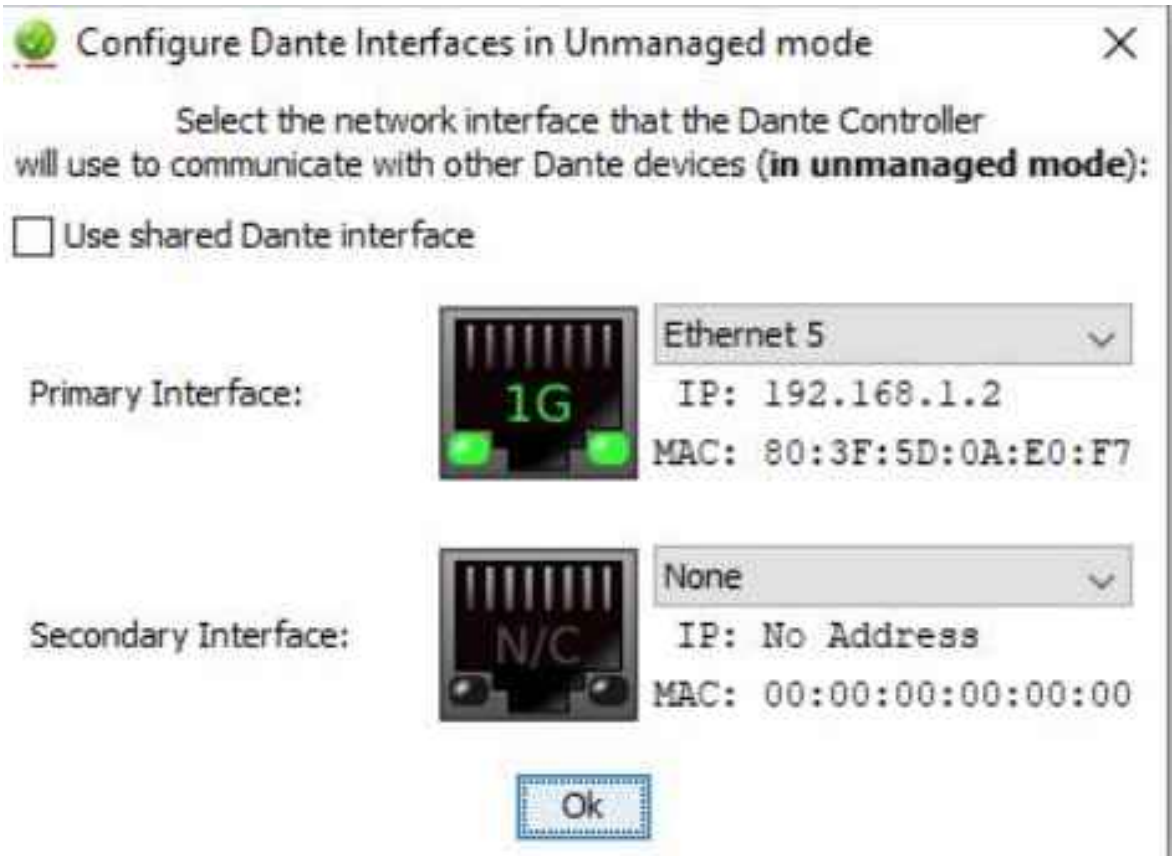
LAN connectors can be configured in any way you wish, but the CCM enforces that you MUST NOT configure IP transceivers (AES67) and Dante traffic on the same network. This is because AES67 network traffic has higher timing requirements than Dante network traffic, due to the need for IP transceivers to achieve DECT synchronization.

3.4.1 Dante connection overview

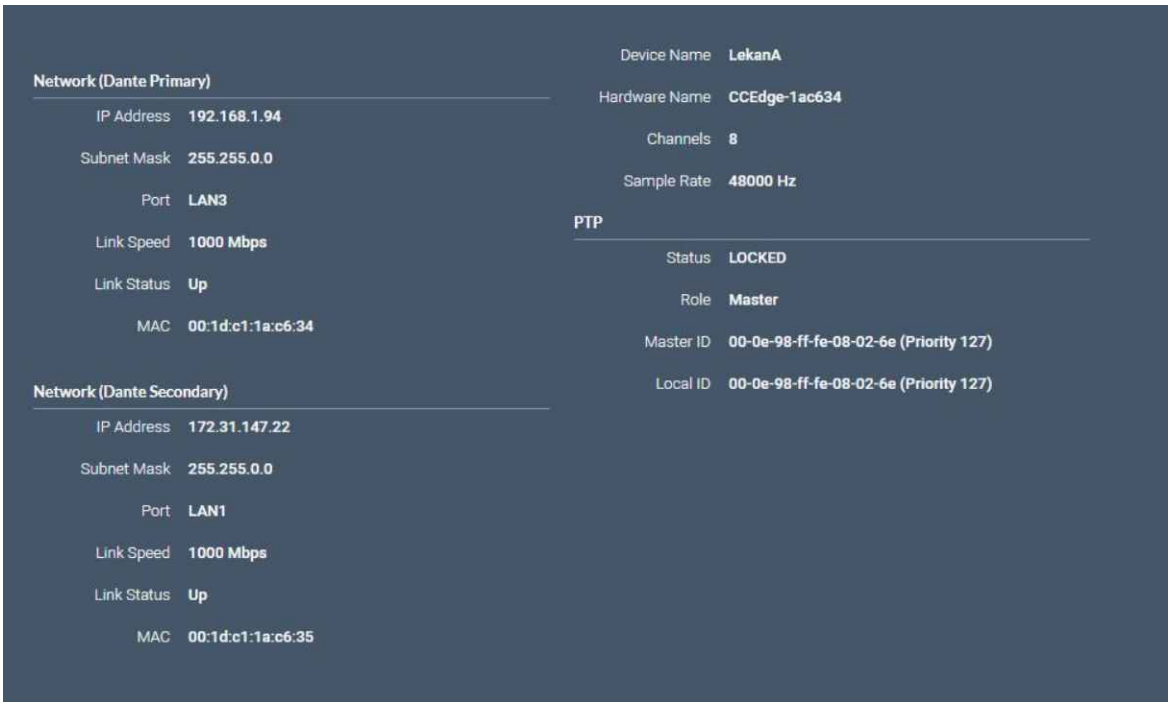
When configuring Dante connections, the IP address for the Arcadia Central Station is determined by the Dante Controller.

1. Connect a cable (Ethernet or fiber) to the LAN connector that is designated for Dante (default LAN 2). Connect the other end to a switch on your Dante network.

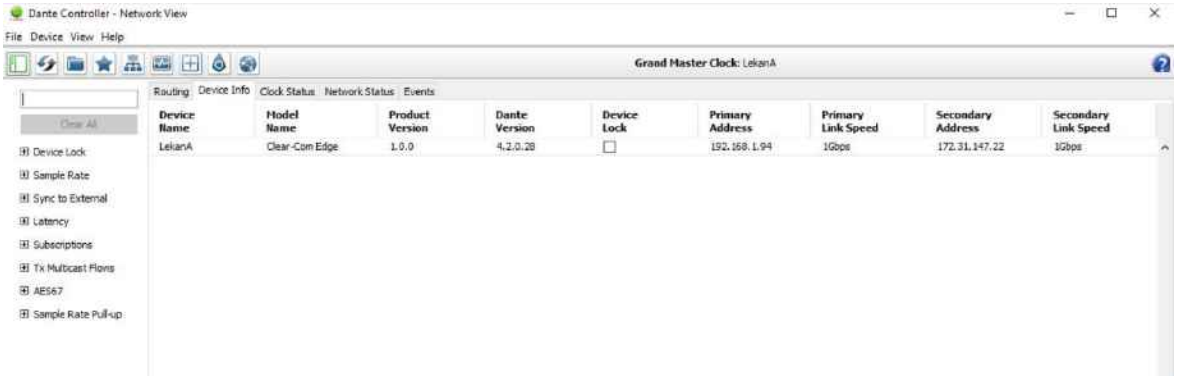
2. Open the Dante Controller and check that the network interface details are correct.



3. Check network and connection details under the **Status** tab in the CCM.

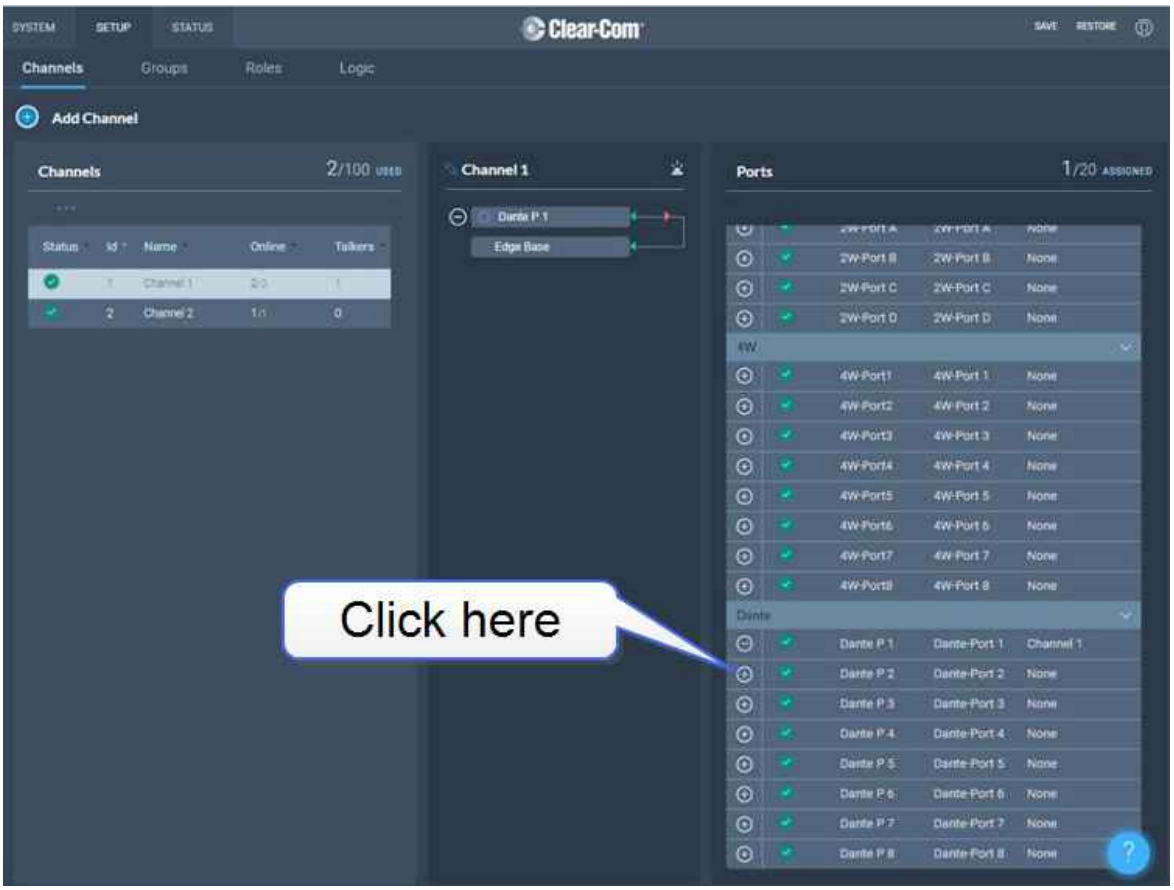


4. Details can also be viewed in the Dante Controller.



5. Route the channels as required in the Dante Controller.

6. You will see available Dante ports in the **Configuration** page of the CCM. These ports can be assigned to channels on the Arcadia Central Station in the usual way (select the required channel click the **+** icon next to the port).



4 Network Setup

This chapter describes how to set up and configure your network for Arcadia Central Station systems. It contains the following sections:

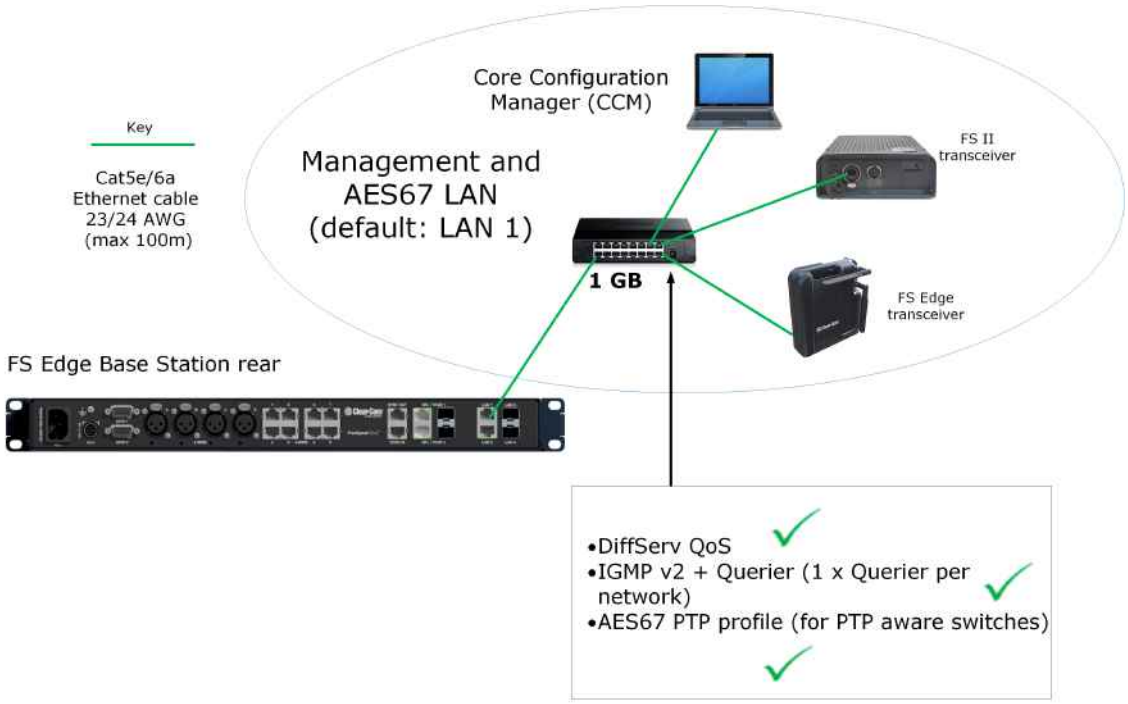
4.1 Network Set Up for IP Transceivers

Your Arcadia Central Station has up to 5 IP addresses. IP traffic is spread over these addresses. See LAN ports 1 - 4 (**I** and **J**) on the Arcadia Central Station **1 Rear panel connectors and indicators**.

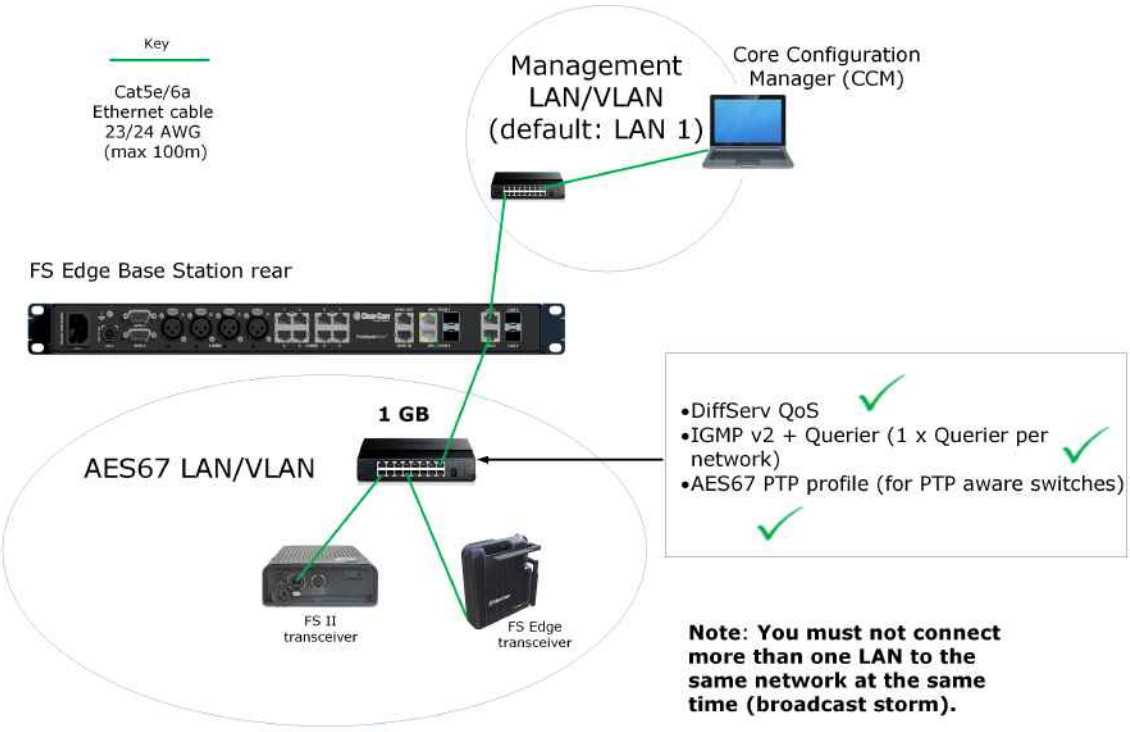
The LAN ports are fully user configurable but you can work with the default settings:

- LAN 1: Management and AES67 (AoIP) audio traffic are combined on this connector
- LAN 2: not configured
- LAN 3: not configured (SFP)
- LAN 4: not configured (SFP)

4.1.1 FS Edge Arcadia Central Station to IP Transceivers #1



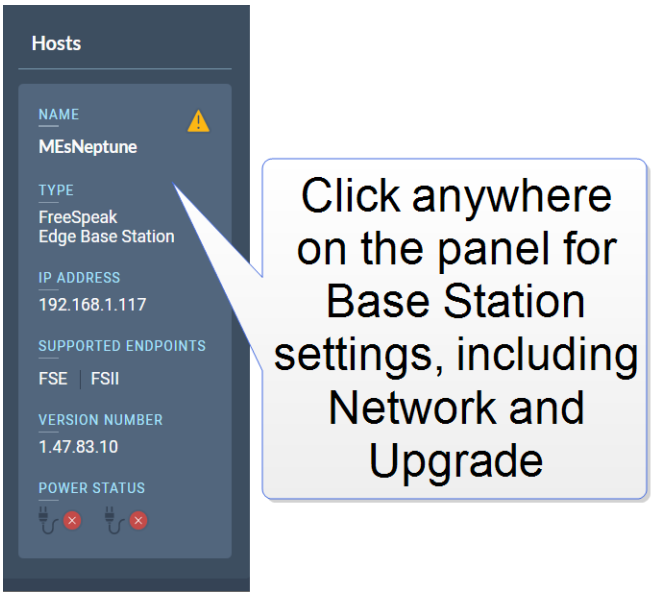
4.1.2 FS Edge Arcadia Central Station to IP Transceivers #2



Set up rules:

- The default setup (management and AES67 audio on the same connector) is intended for use with a dedicated network switch for the Edge Arcadia Central Station and it's transceivers (see example network set up #1).
- If you do not have a dedicated network switch, Clear-Com recommends that you split AES67 traffic onto a separate LAN (see example network set up #2). This is in order to accomodate the IP transceivers high need for clocking accuracy: the devices need to be in sync with each other (PTP, DECT or 5G radio) in order to allow beltpack handover between transceivers. Too much 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 master and slave 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 switch to the link-local range automatically (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 enabled network switch.



4.2 Arcadia Central Station LAN Configuration Rules

Note: *Do not plug any two LAN ports into the same LAN or VLAN. This could lead to a broadcast storm.*

Note: *Resetting the AES67 IP address will cause the Arcadia Central Station to reboot.*

- AES67
  - AES67 should not be on the same subnet as Management unless they are on the same LAN port (rear port)
  - AES67 cannot be on the same LAN port as DANTE primary or secondary
- Static IP
  - The static IP addresses cannot be in link local range: 169.254.xxx.xxx
  - The static IP addresses cannot be in the reserved range: 10.0.0.0-7
  - The static IP addresses cannot be in the LQ tunnel range 172.23.xxx.xxx

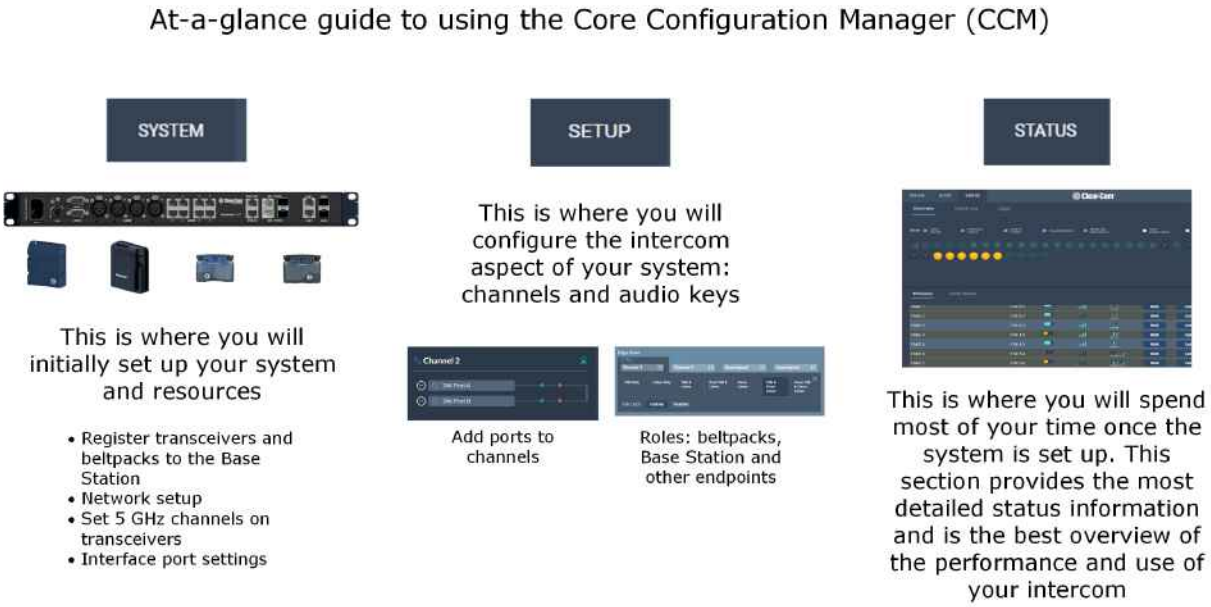
- The static IP addresses cannot be in the localhost range 127.xxx.xxx.xxx
- The static IP addresses cannot be in the multicast range 224-239.xxx.xxx.xxx

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

5 Core Configuration Manager (CCM) walkthrough

This chapter describes the main pages of the CCM. It contains the following sections:

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 FreeSpeak Edge system. It provides an overview of all the system components and interfaces. It is password protected and suitable for use in poorly lit environments.



Click the pencil to label or name an entity

Click the cog to configure device settings

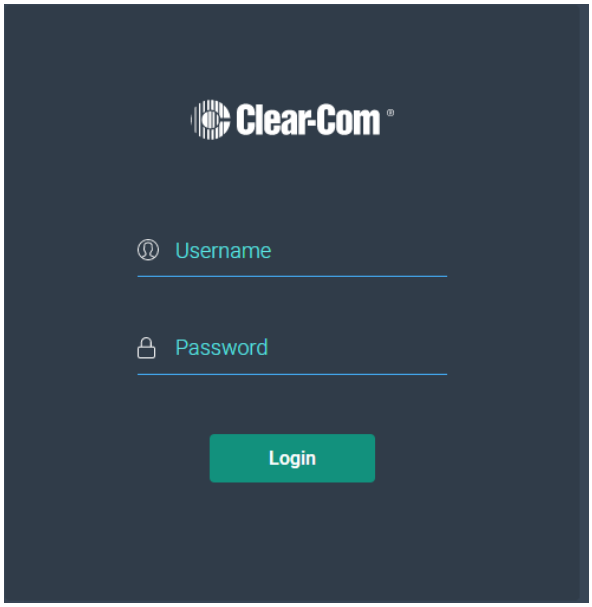
You can access the CCM using the following internet browsers:

- Chrome
- Safari
- Firefox
- Microsoft Edge

5.1 Accessing the CCM

1. Make sure that the FS Edge Arcadia Central Station is connected to a network using the LAN connector that is configured for management (Default LAN 1) on the rear panel of the device (see **1 Rear panel controls and indicators**)

2. Open a supported internet browser on a desktop that is connected to the same network as the FS Edge Arcadia Central Station.
3. In the browser address field, enter the IP address of the FS Edge Arcadia Central Station. You can find this from the front panel menus (see **Configuring from the Front Panel on page 79**).

   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.

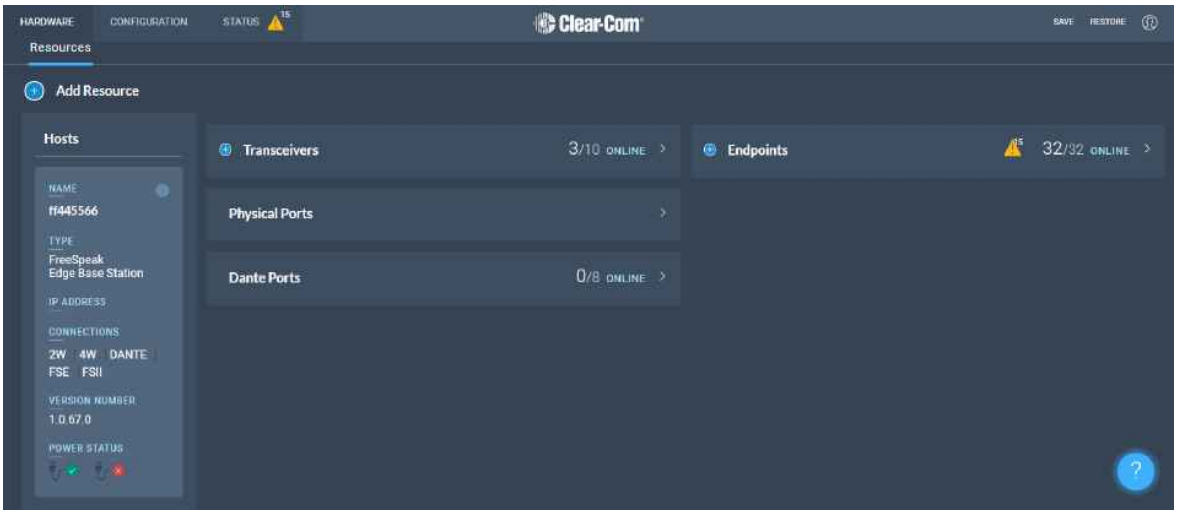
4. Enter the username and password, and then click **Login**.

   The default values are:

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

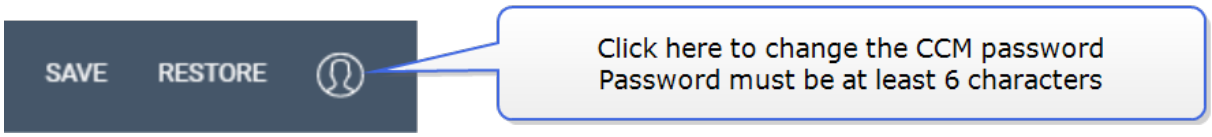
   Note: *The username and password are case sensitive.*

The CCM landing page opens.



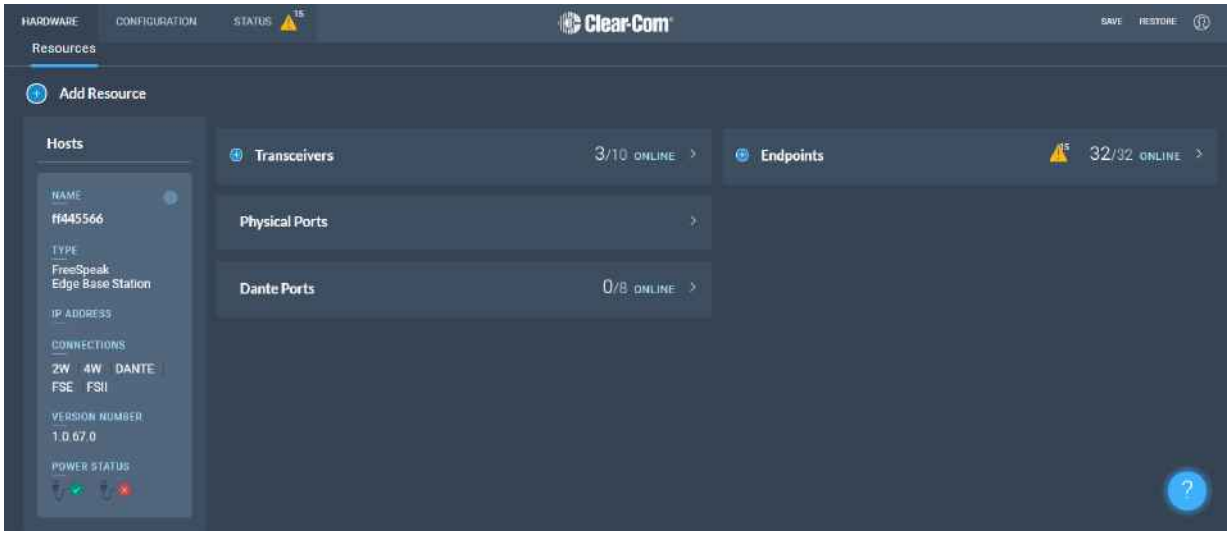
5.2 Change CCM Password

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 Arcadia Central Station front panel menus.*

5.3 Hardware



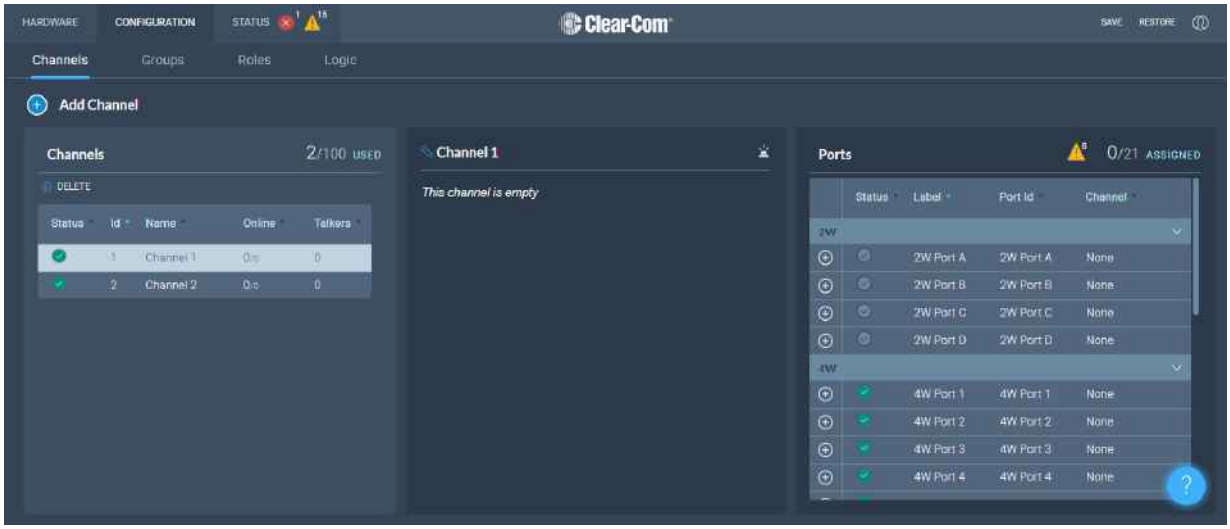
The Hardware page of the CCM is where you will initially set up your system. It gives an overview of the FS Edge Arcadia Central Station and the transceivers, beltpacks and ports that are present. From this page, you can use the **Add Resource** button to:

- View a list of both discovered and registered transceivers.
- Add any discovered transceivers to the system
- Remove any registered transceivers from the system
- Register beltpacks to the system

In the Hardware Resources page you can:

- Adjust settings on interface ports
- Configure network information (LAN ports and IP addresses) for the Arcadia Central Station and transceivers
- Upgrade firmware
- Find and change administrative details, such as
    - Administration PIN
    - OTA System ID
    - FreeSpeak Edge Wireless regions
    - Change or set FreeSpeak Edge 5 GHz channels
    - FreeSpeak II battery types and PINs

5.4 Configuration page



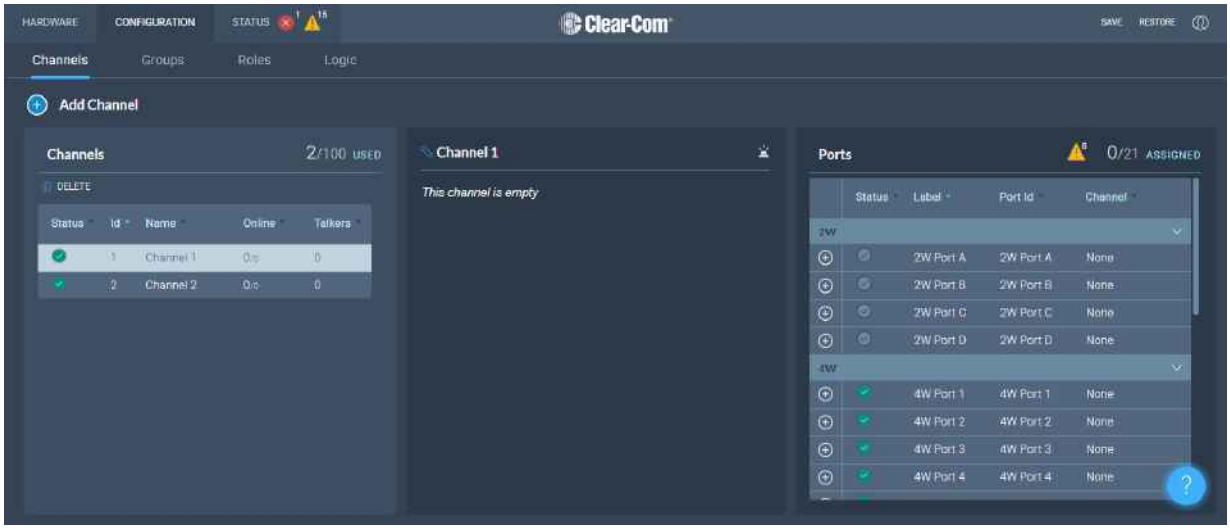
The **Configuration** page of the CCM is where you will configure the intercom aspects of your system (add audio to channels and set up talk and call keys). It consists of four areas:

- Channels
- Roles
- Groups
- Logic (GPIOs)

The **Configuration** page enables you to:

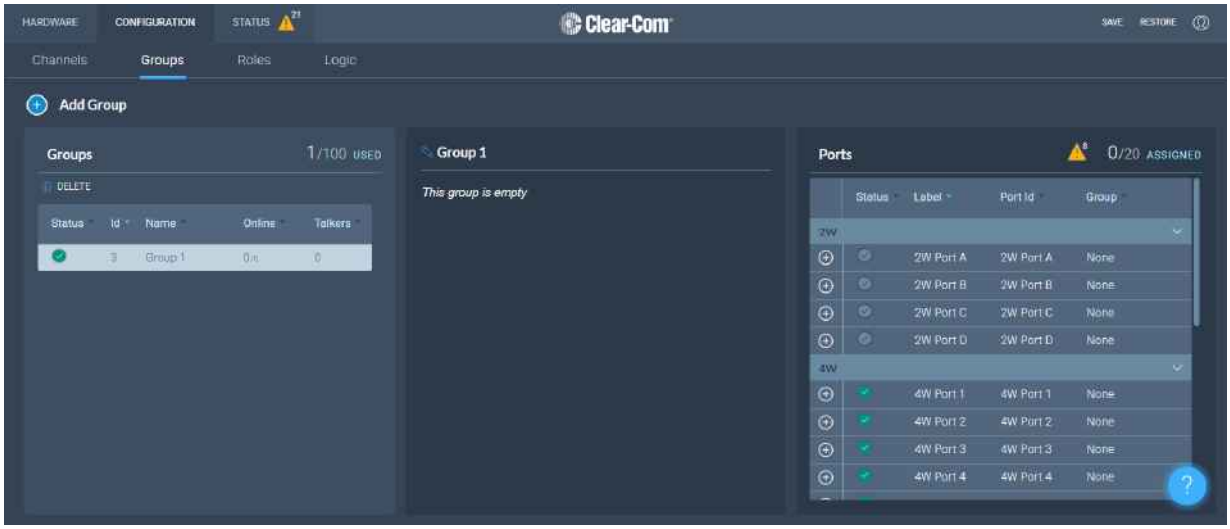
- View existing channels and add new channels.
- Add ports to channels.
- View existing groups and add new groups.
- View and edit roles.
- View and edit General Purpose Inputs (GPIs) and General Purpose Outputs (GPOs).

5.5 Channels



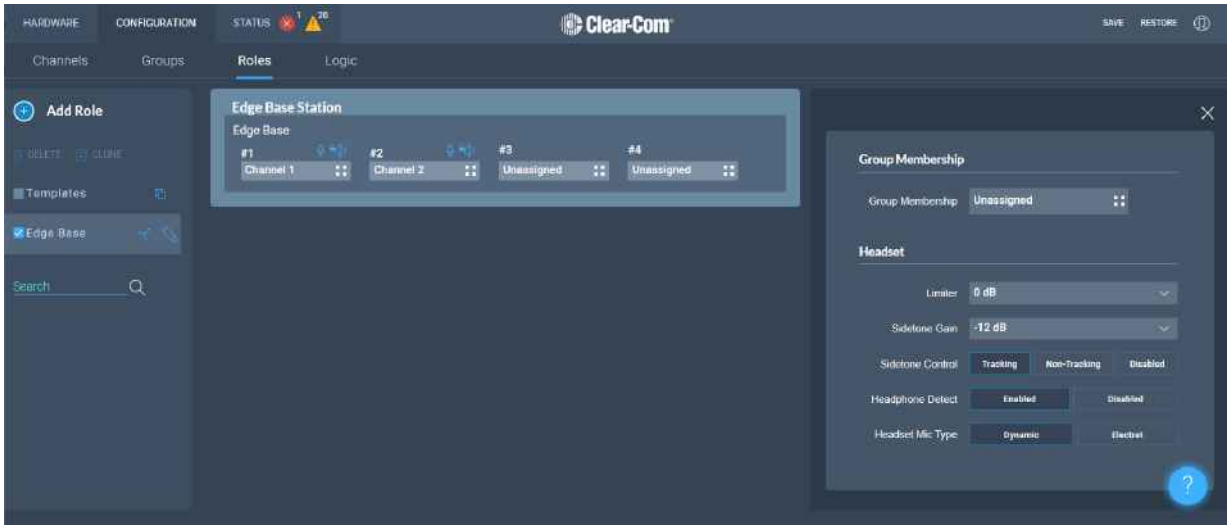
The Channels page enables you to views channel and add ports to channels.

5.6 Groups Page



The Groups Page allows you to view Groups and add members to Groups.

5.7 Roles Page



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

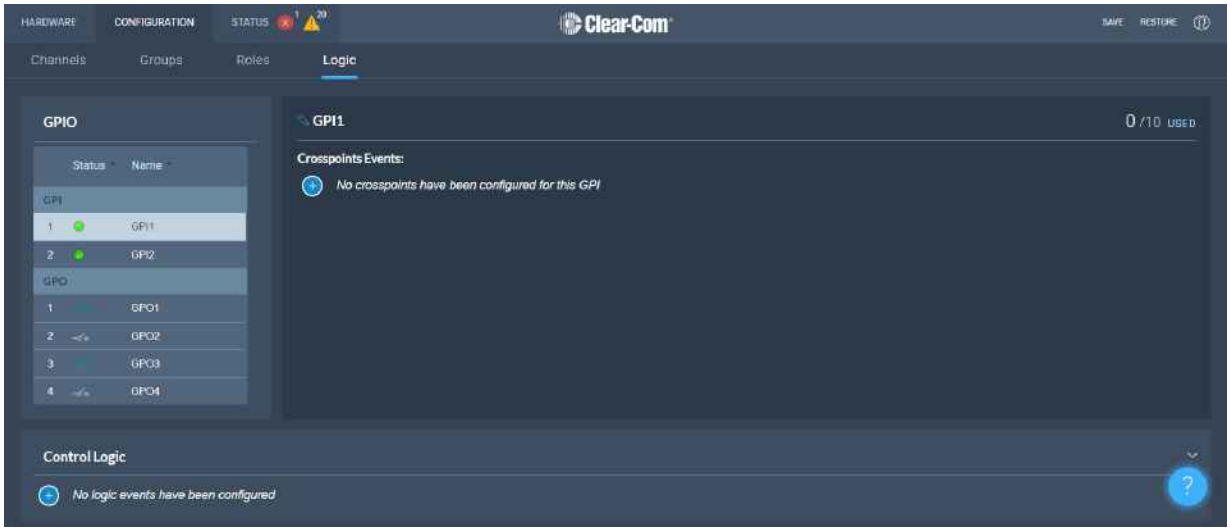
- View, edit, add and delete roles.

5.8 Logic Page

The Arcadia Central Station offers six fully configurable GPIOs, increasing the range and possible uses of controls and relays.

- 2 x GPIs. These can be used, for example, to allow the station operator to open an audio route to a Channel using a foot switch, or to route a program feed to a Channel, Group or beltpack when an on-air light comes on.
    - Up to 10 different audio routes can be generated on each GPI.
- 4 x GPOs. The most common uses for output relays are to turn on an on-air light, connect to a radio, or send an input to an external audio console.
    - Up to 10 different actions can be generated on each GPO.
- You can also set up extended control sequences in the **Control Logic** section.

Relays and GPIOs are configured in the **Configuration > Logic** page of the Core Configuration Manager (CCM) and can be viewed and tested on the **Status > Logic** page.



5.9 Status Page

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

- Transceivers
- Beltpacks
- Interface ports

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:

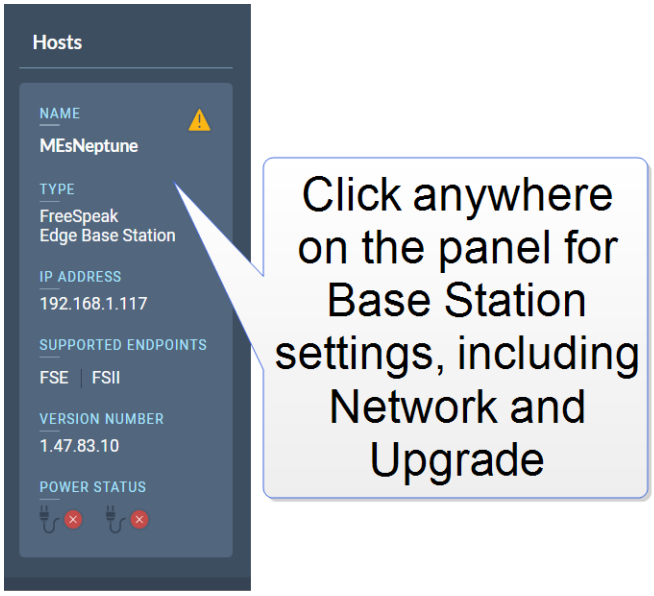
- Offline
- Online
- Initializing

6 CCM configuration

This chapter describes how to use the CCM to setup, configure and monitor your intercom system. It contains the following sections:

6.1 Setting up the Arcadia Central Station

Click anywhere on the **Hosts** panel under **Hardware > Resources** to configure the Arcadia Central Station.



Here you will configure:

- Network and IP
- Upgrade the Arcadia Central Station and connected resources
- Wireless beltpack system settings
    - 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 NiMNH type batteries
- Click the pencil icon to name your Arcadia Central Station 

6.1.1 Network and IP

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

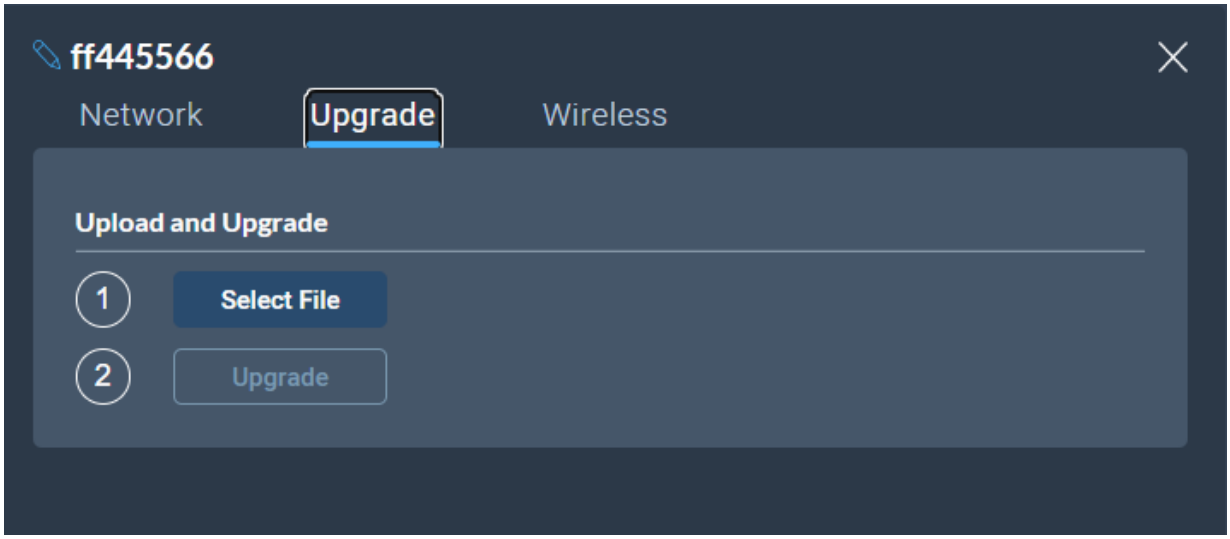
For information see: **Arcadia Central Station LAN Configuration Rules on page 38**

6.1.2 Upgrade

You can upgrade your Arcadia Central Station and connected resources from this page.

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: *The upgrade process can take up to seven minutes. The Arcadia Central Station will automatically reboot when upgraded.*



Device to upgrade	File extension
Arcadia Central Station, FS II IP TCVR, FS Edge IP TCVR	.ccf
FS II beltpack, FS II E1 TCVR	.fww
FS Edge beltpack	.ccu

6.1.3 Wireless Beltpack System setup

Select the **Wireless** tab. In this section you will set or view the following details:

- System
  - The administration pin for your wireless system
  - System ID
- 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.
- FreeSpeak II
  - Battery type. You can choose not to use the Li-ion batteries supplied with the beltpacks, 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 security number you need for over-the-air (OTA) registration of your FreeSpeak II beltpacks.

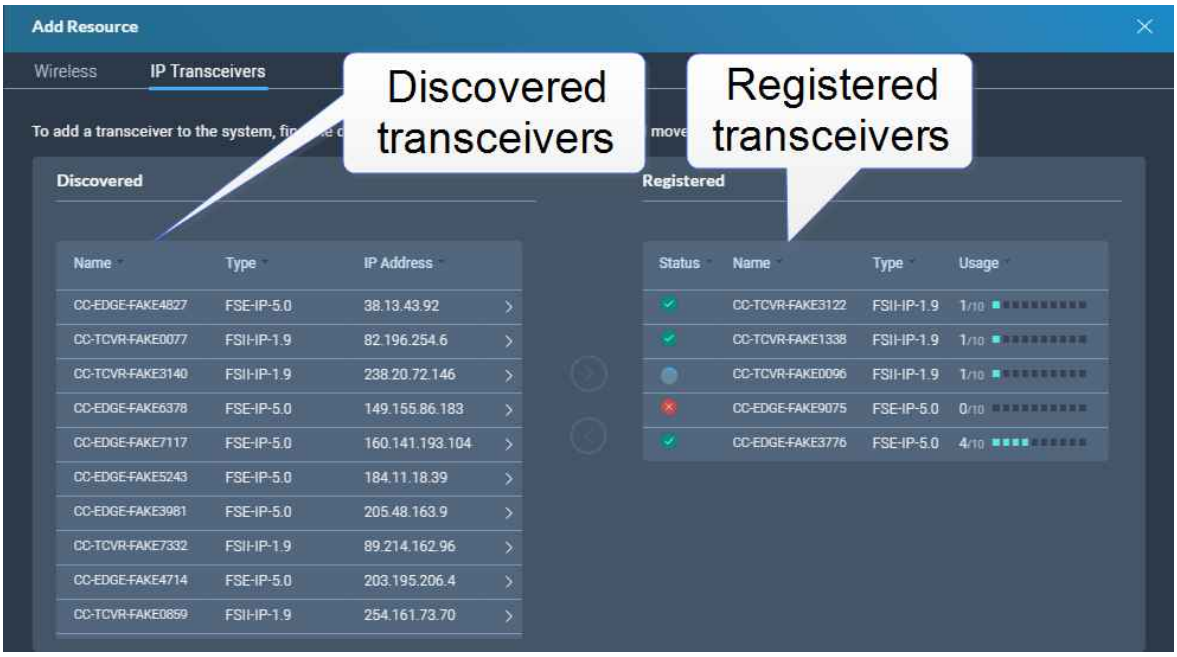
6.2 Adding IP Transceivers (FS Edge, FS II 1.9, 2.4)

To add E1 transceivers, see **Example connection with a splitter on page 28**.

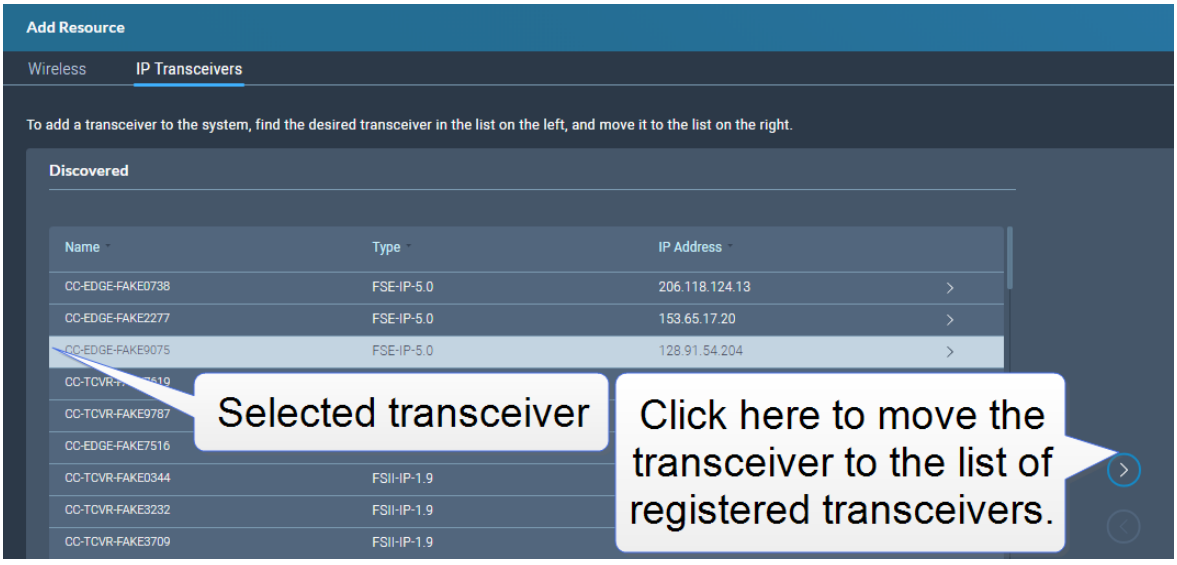
To add IP transceivers:

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.

6.3 Registering beltpacks

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

You can register a beltapack in two ways:

- By USB cable (recommended). When registering a beltpack in this way, a role that assignes keys to the beltpack is automatically created and fixed to 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.

6.3.1 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:

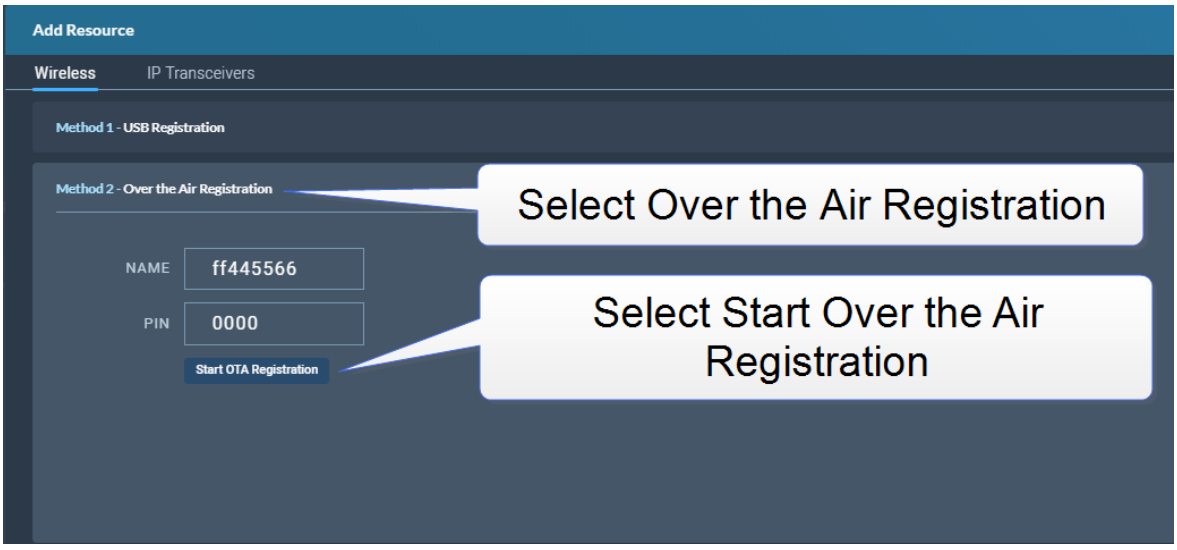
1. Connect a beltpack to Edge Arcadia Central Station using a USB A to micro USB B (FSII) / USB C (FSE) cable. The beltpack can be powered on either before or after connection. The Arcadia Central Station will show 'Beltpack [ID] is now registered' in the front menu screens.

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

6.3.2 Registering a beltpack OTA

To register a beltpack using OTA:

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



2. Click **Start OTA Registration**.

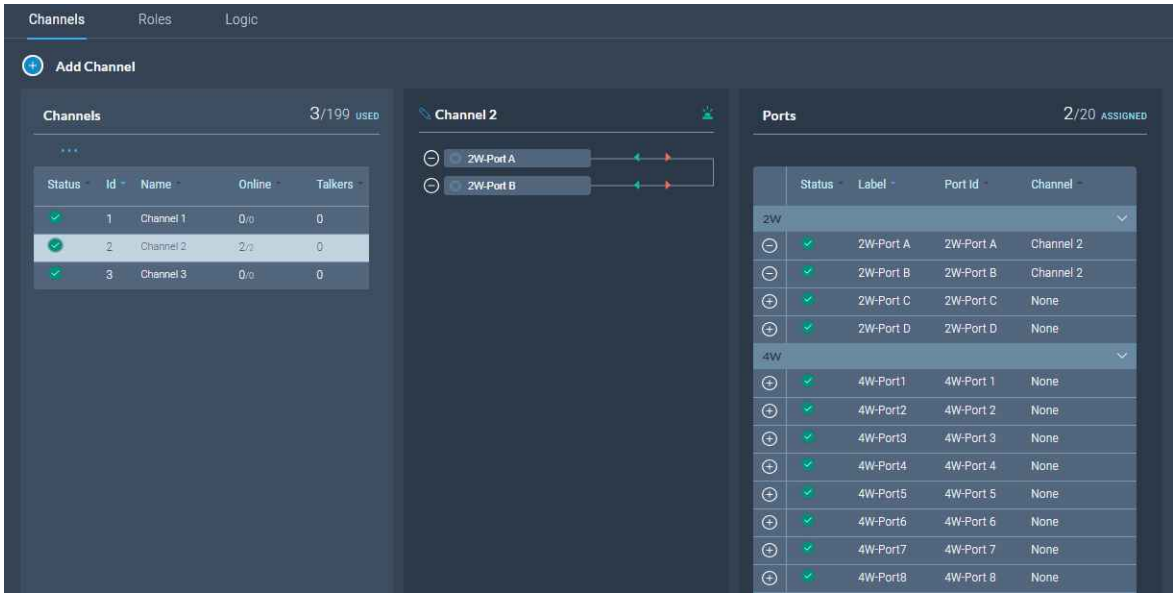
Note: *A timer is started indicating how long the system is open for registration. You can close OTA registration on the system at any point.*

6.4 Viewing and adding Channels

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

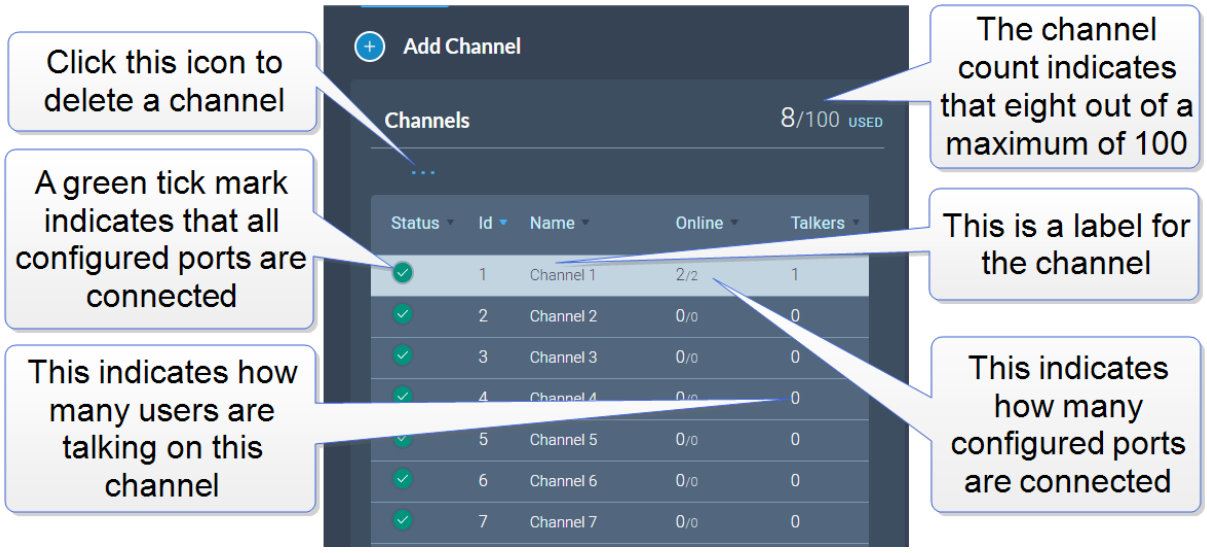
- View existing channels and add or remove new channels.
- View existing ports, and add or remove ports from the channel.

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



6.4.1 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.



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.

6.4.2 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.

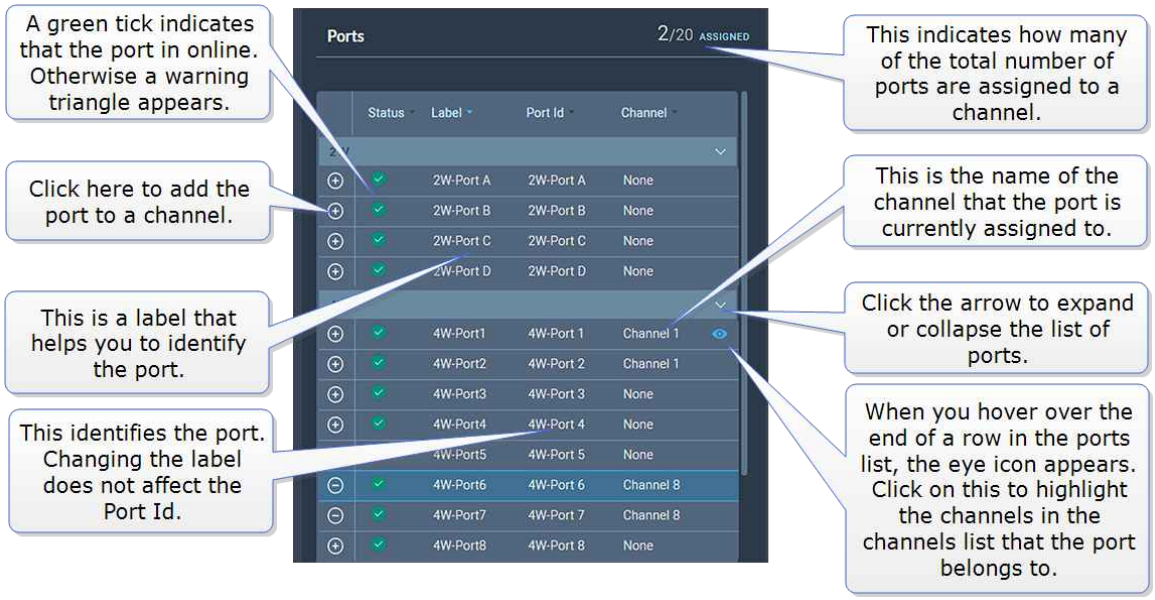
   Note: *You can only add new channels up to a maximum number.*

2. You can now add any required ports to the channel.

6.4.3 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.



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

6.4.4 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.

6.4.5 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.*

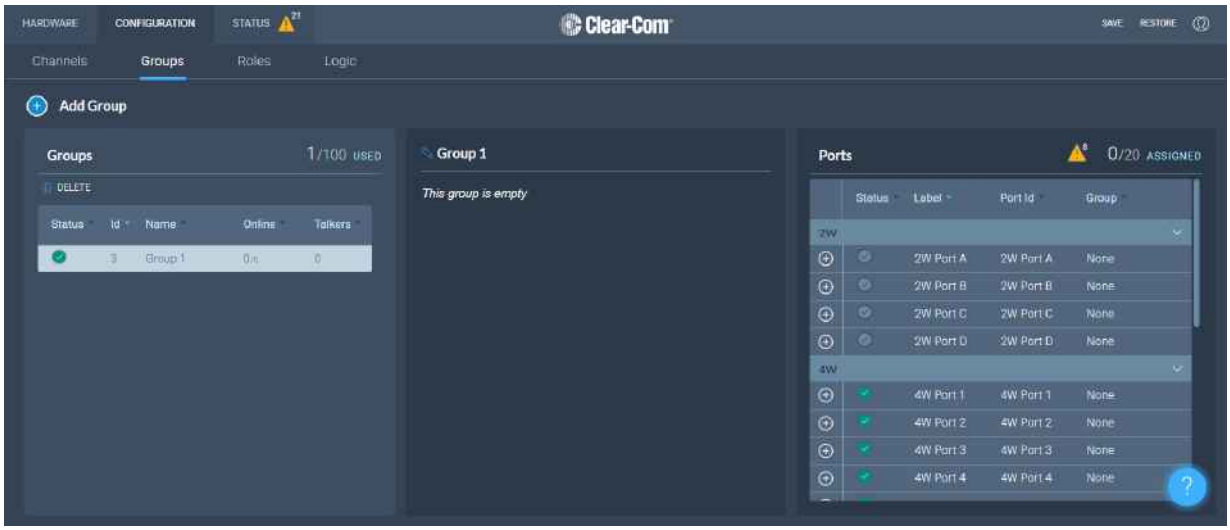
3. Click the **More Actions** icon ••• , and select **Delete**.

6.5 Viewing and Adding Members to Groups

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

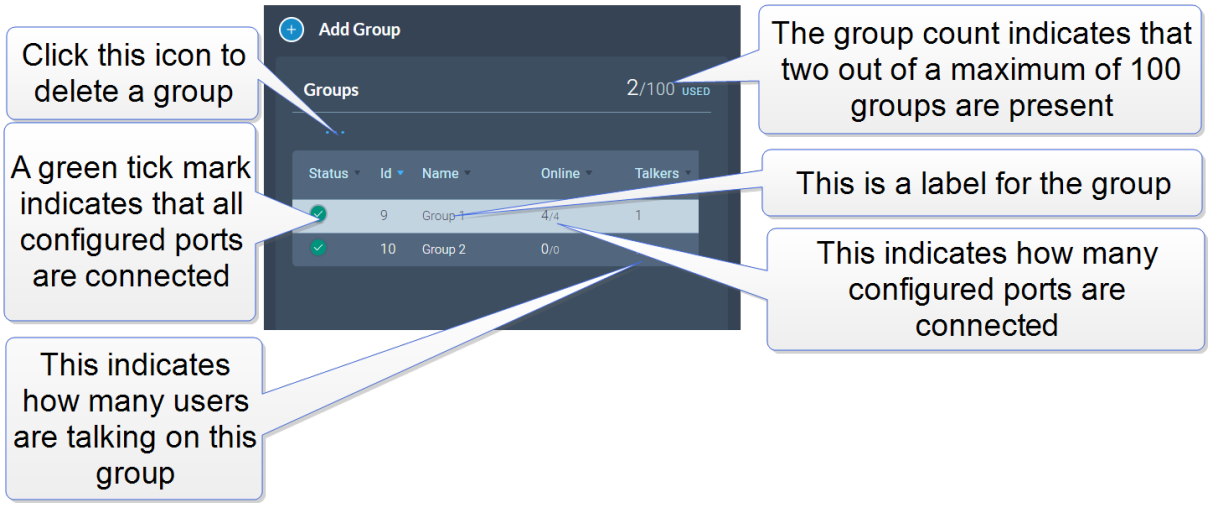
- View existing groups and add or remove new groups.
- View existing ports, and add or remove ports from the groups.

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



6.5.1 Viewing information about a group

When you open the **Groups** screen, the left-hand panel displays a list of all the groups that are currently present. 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 FS II beltpacks or logic-routed ports have active talk routes on this group.

6.5.2 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.

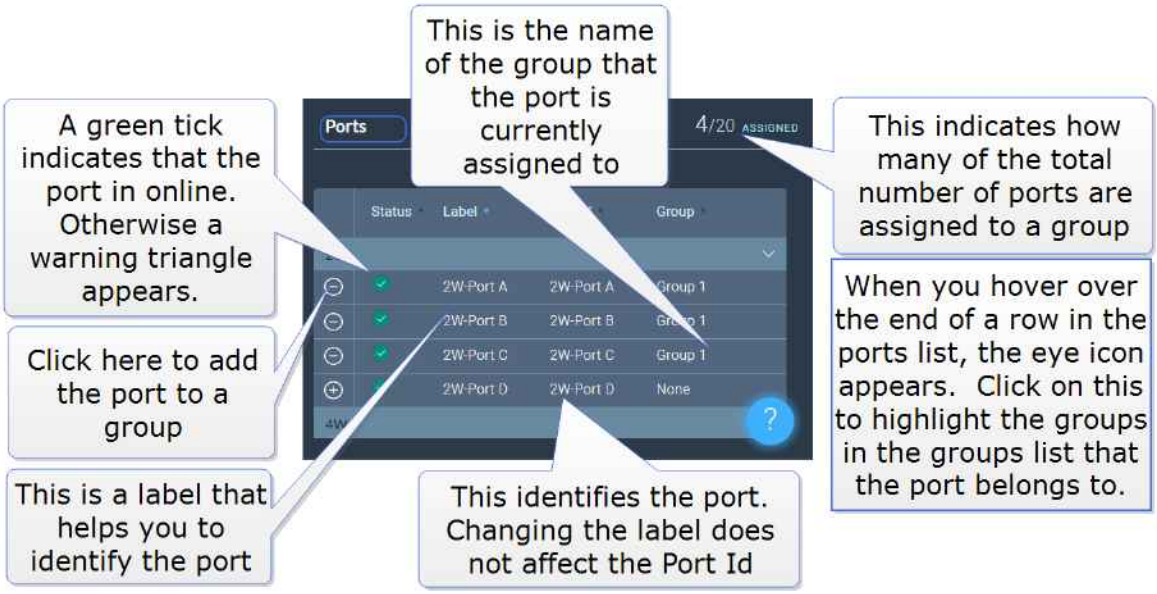
   Note: *You can only add new groups up to a maximum number (100).*

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

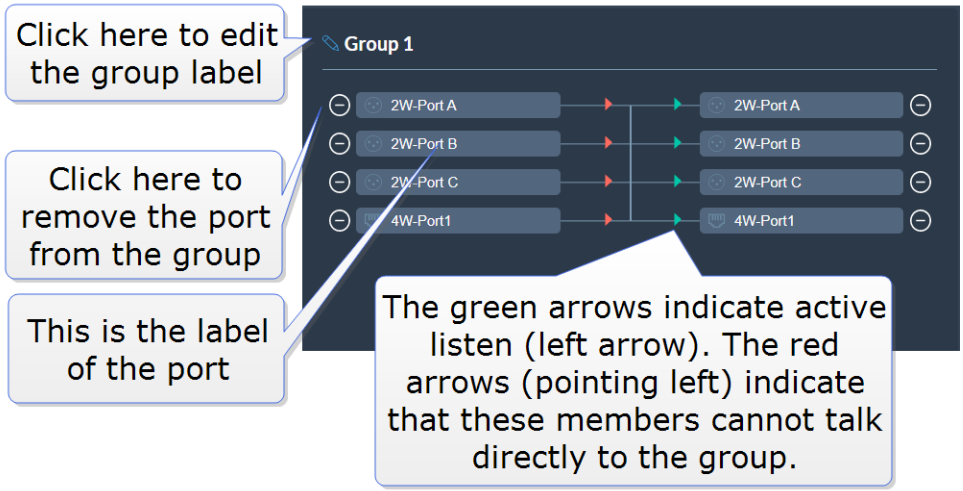
6.5.3 Adding ports to a group

To add 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.



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



6.5.4 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.

6.5.5 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.*

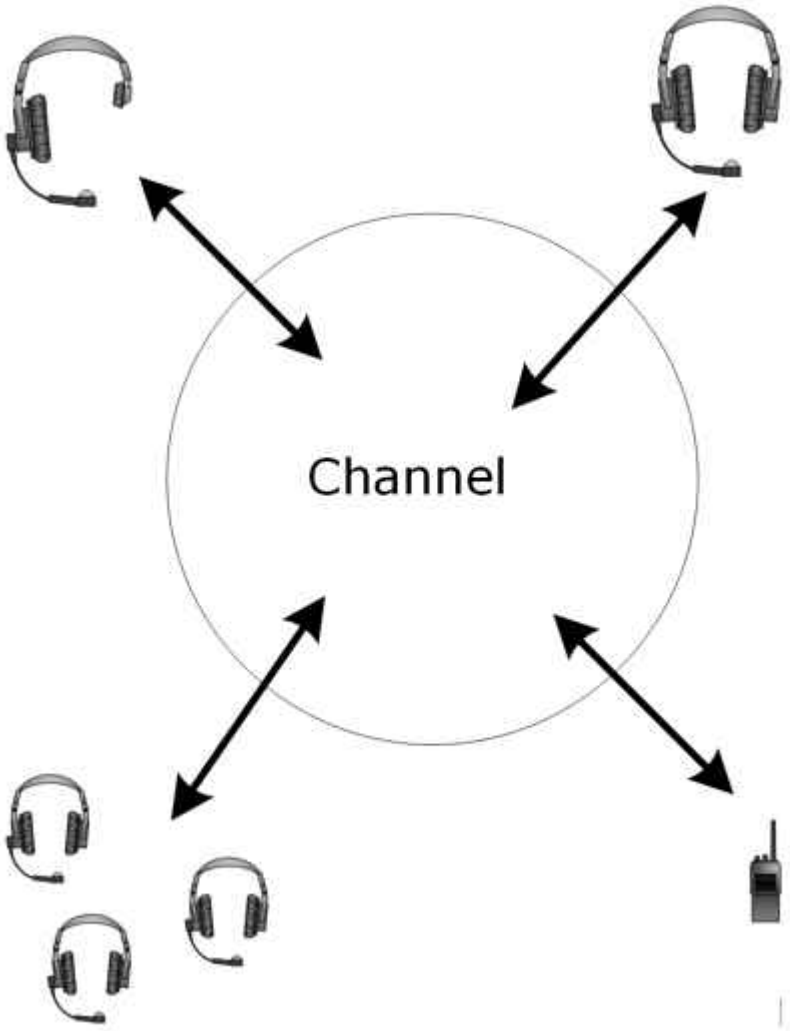
3. Click the **More Actions** icon  , and select **Delete**.

6.6 Channels or Groups?

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

6.6.1 What is a Channel?

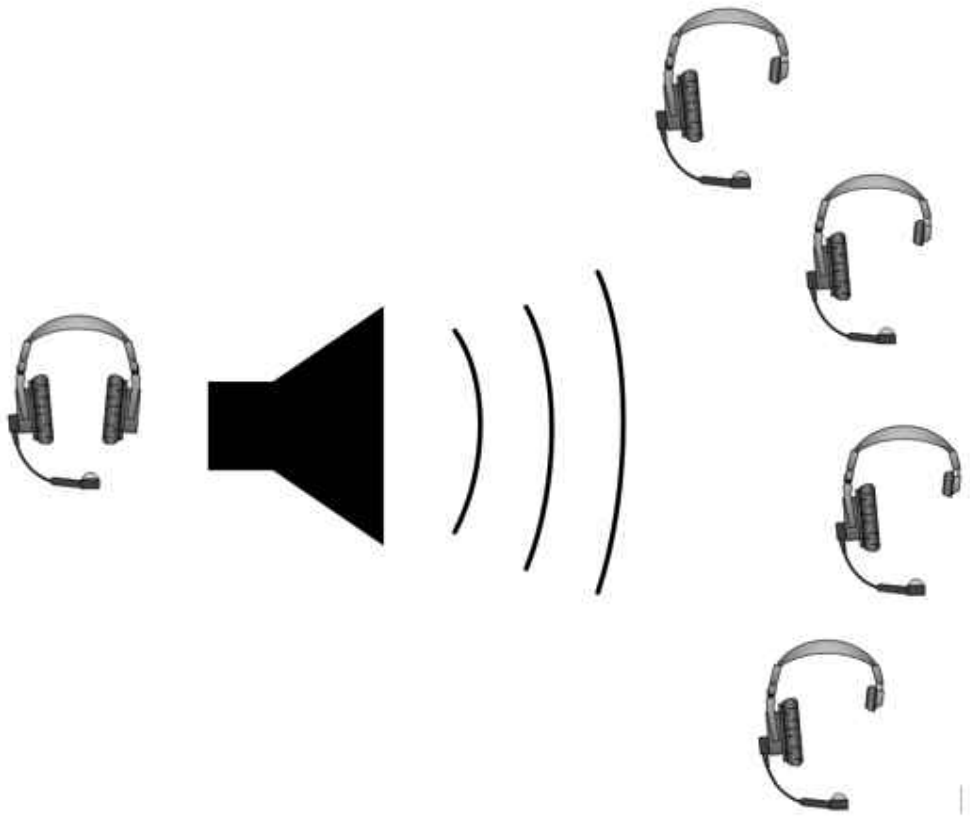
A Channel operates as an intercom Partyline or conference. All members can talk to and listen to all other members, as long as they have keys to do so.



The default key behavior setting for a member of a Channel **is Talk and Forced Listen**. See **Key Behavior** for more information.

6.6.2 Group

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.

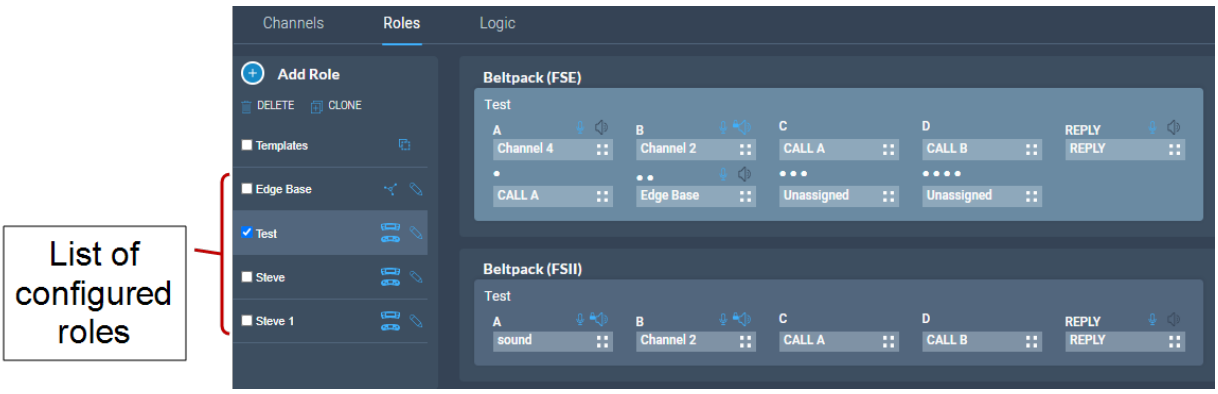
To set up a group, you must first put the members in the Group. Then, when the members are in the Group, you can set up a key or keys to talk to it.

6.7 Creating and Editing Roles

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

6.7.1 Viewing Roles

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

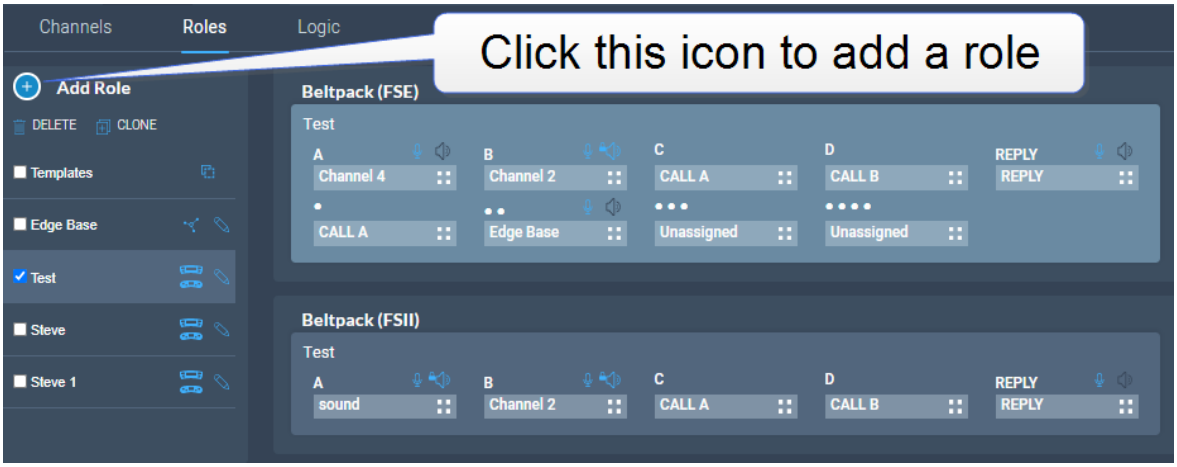


A list of roles appears on the left-hand side of the screen.

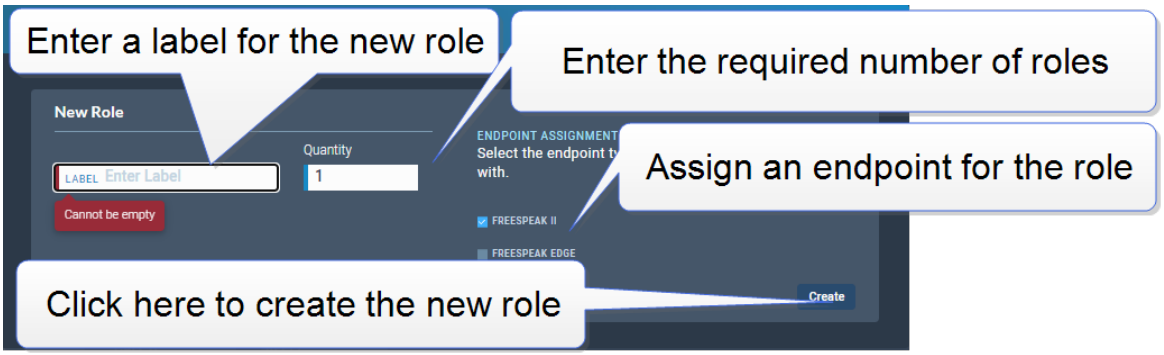
6.7.2 Adding Roles

To add roles:

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



2. Click **Add Role**s. The following screen appears.



3. Enter a label for the role, the number of roles required and the endpoint assignment.

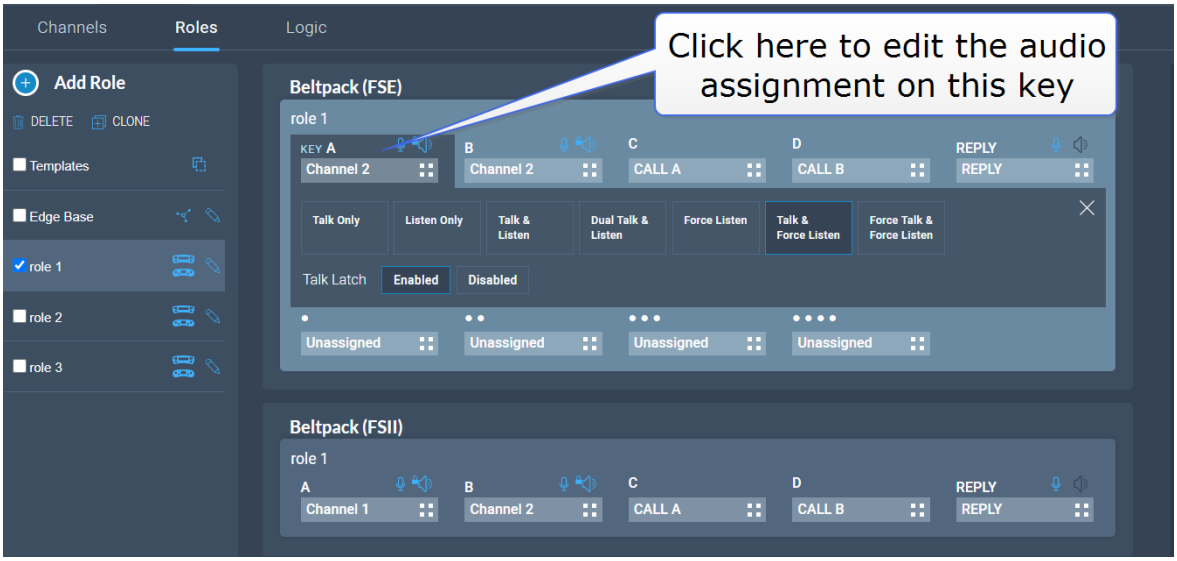
   Note: *When creating multiple roles, the system will add an incrementing numerical suffix to the role name. Roles names must be unique.*

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

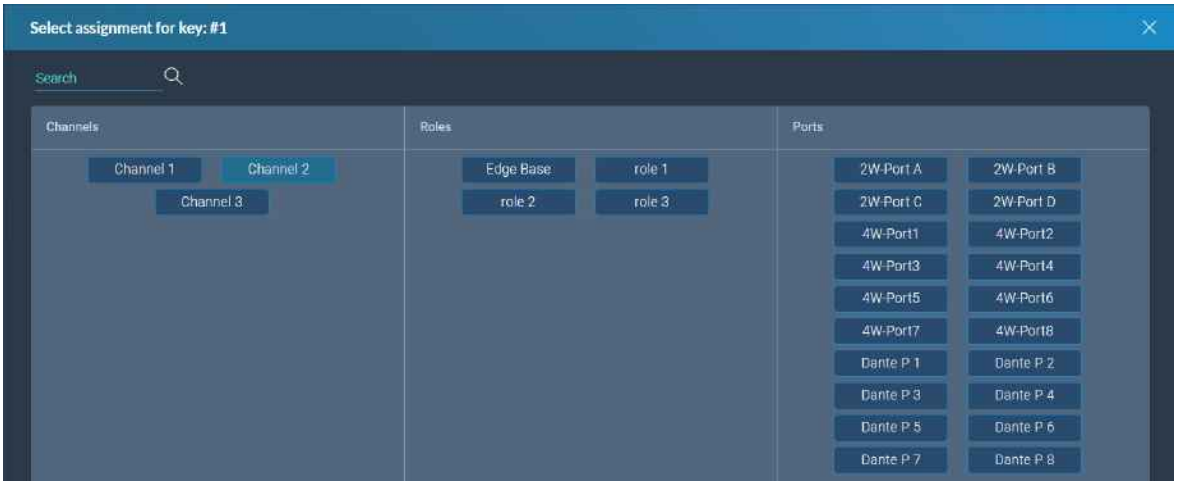
4. Click **Create**. The new role appears in the list of roles in the left-hand side of the **Roles** screen.

6.7.3 Edit 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.



3. The key assignment screen appears.



4. Click to select the required audio source.

6.7.4 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.

6.7.5 Cloning Roles

To clone roles:

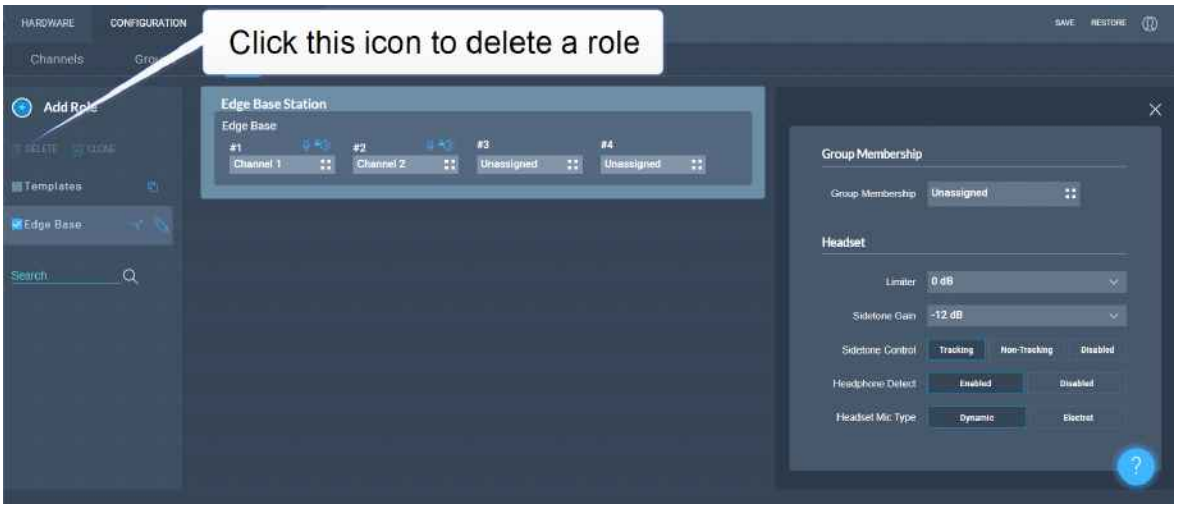
1. Navigate to **Configuration > Roles**, and select the role that you wish to clone from the list of roles in the left-hand side of the screen.
2. Click **CLONE**.

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

6.7.6 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.

6.8 Set up GPIOs and Logic Events

6.8.1 Overview

- 2 x GPIs
- 4 x GPOs
- Unlimited Logic Events
- Each GPI/GPO hosts up to 10 different events or actions. These actions can be turned off or on in the **Status > Logic** page of the CCM.
- 2 x DB 9F connectors on the rear of the Arcadia Central Station (**C**). **Rear panel connectors and indicators**
- For DB 9F pinouts see **Pinouts on page 98**

6.8.2 Example Uses, GPI

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

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

6.8.3 Example Uses, GPO

GPOs are triggered (sent to an external device) when a **Talk**, **Talk & Listen** or a **Call** comes into a named entity.

- When someone talks to stage announce, an output relay (GPO) is sent to the external stage announce speaker.
- When someone talks to a port 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.

6.8.4 How to configure GPIs

In this example you will open a talk route from the Arcadia Central Station 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.
2. Click the Add button in the center panel.
3. Click the Options button to select a **Source**. Select the **Edge Base**.
4. Click the Options button to select a **Destination**. Select the required Channel.
5. Click the blue check mark.
6. To label the GPI, click the pencil icon.
7. To test the GPI, or turn it on and off, navigate to **Status > Logic**.

6.8.5 How to configure GPOs

In this example you will sent an output trigger (for example to an external stage announce speaker) on GPO1 when **Talk** is activated on stage announce (**SA**).

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

6.9 Monitoring Your System from the CCM

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

- Overview
- Event Log

6.9.1 Overview

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

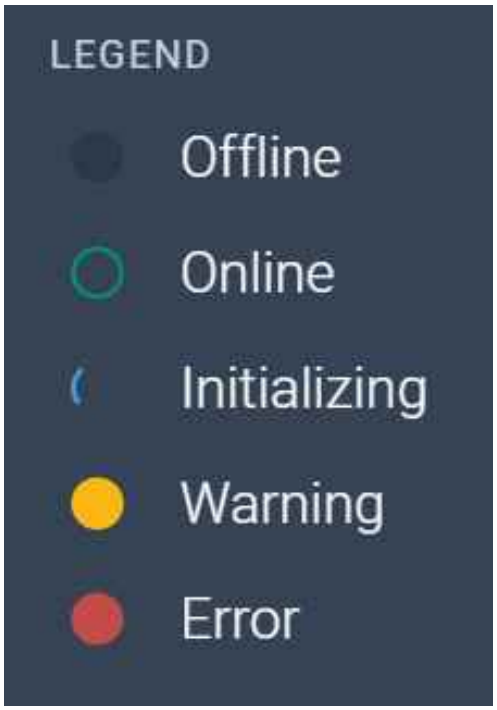
The **Overview** screen consists to two sections. There is an upper section that displays a list of system icons representing the ports, transceivers and endpoints and a lower section that gives detailed information about each connected device and about the Arcadia Central Station.

Note: *There is currently no detailed status for 2W, 4W and Dante.*

System Icons

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

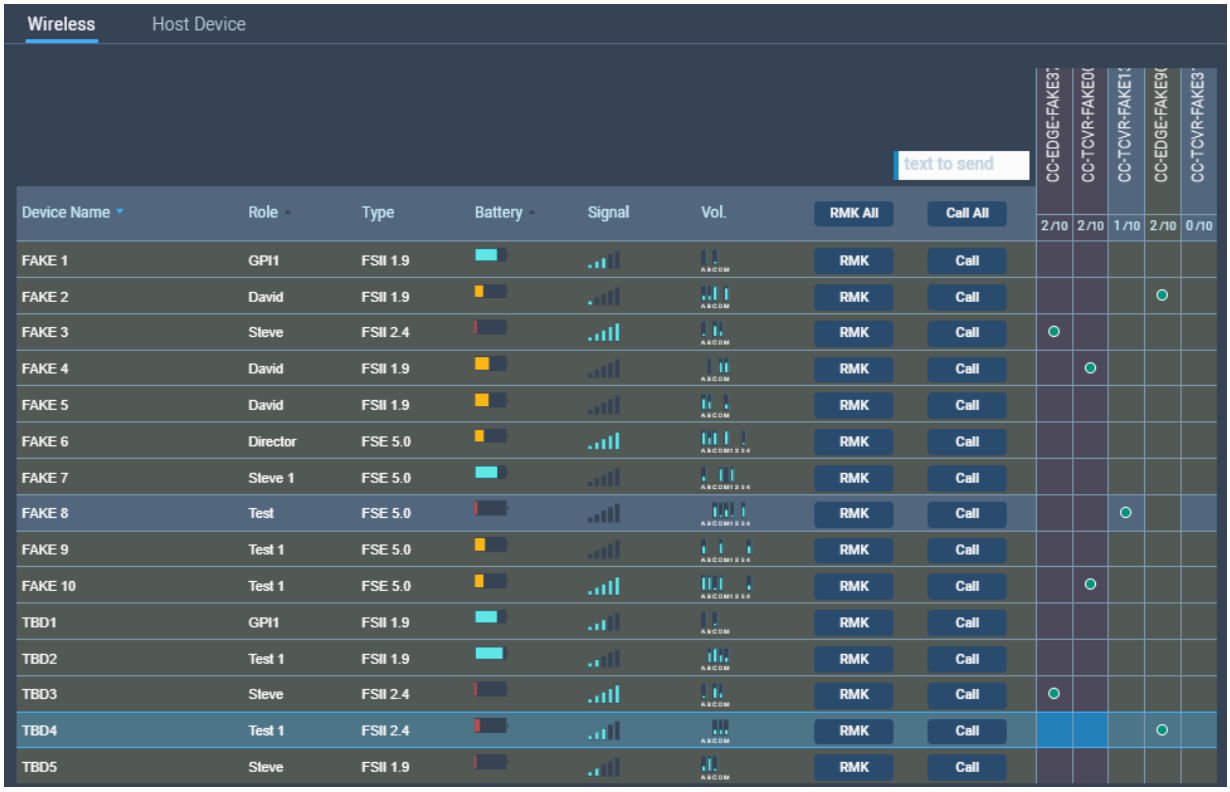
The following legend is used to indicate the status of each entity.



Wireless Devices

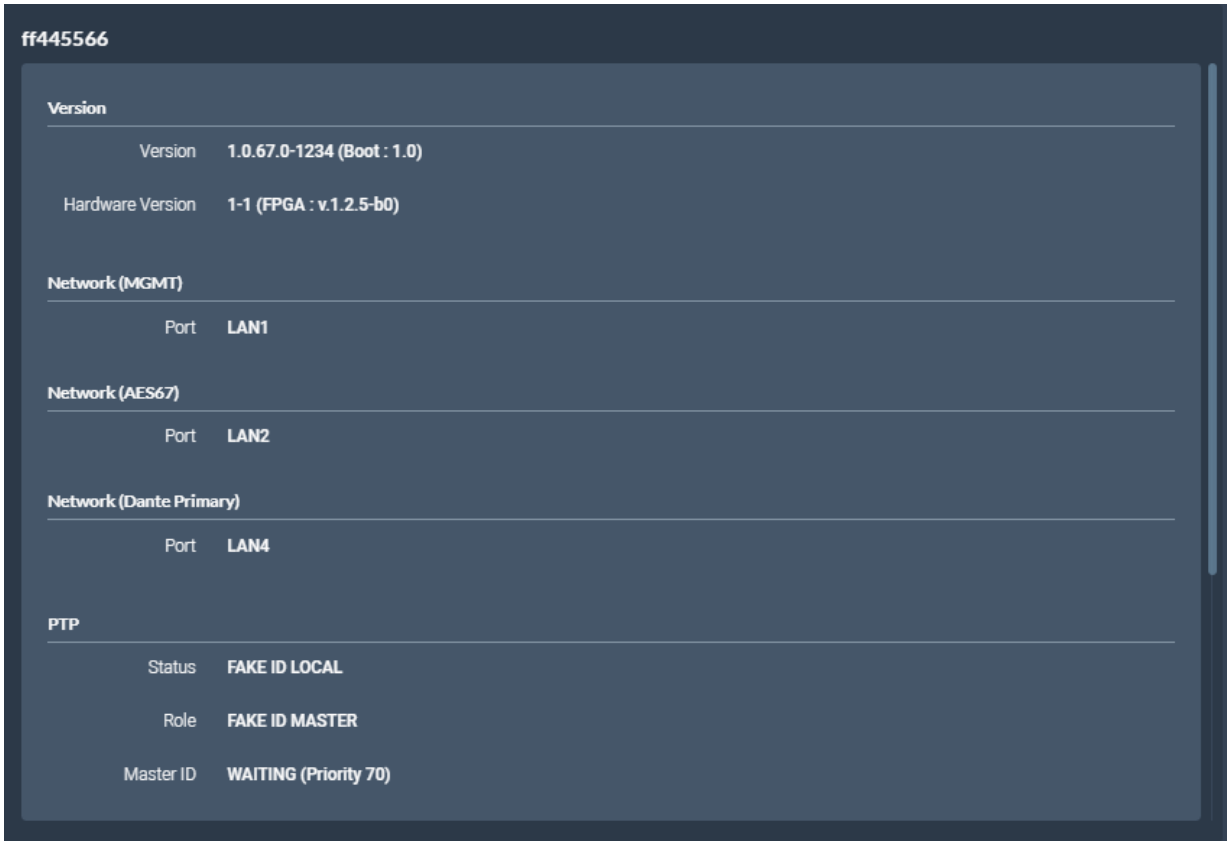
Navigate to **Status > Wireless**. This section of the **Overview** screen lists all the wireless devices connected to your system, and gives the following information for each device:

- 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 devices.



Host Device

Navigate to **Status > Host Device**. A screen appears that gives information about current software version and network.


ff445566
Version
Version
1.0.67.0-1234 (Boot : 1.0)
Hardware Version
1-1 (FPGA : v.1.2.5-b0)
Network (MGMT)
Port
LAN1
Network (AES67)
Port
LAN2
Network (Dante Primary)
Port
LAN4
PTP
Status
FAKE ID LOCAL
Role
FAKE ID MASTER
Master ID
WAITING (Priority 70)

7 Security

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

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

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.*

7.1 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 encruption and Public Key Cryptography to create a secured channel.

7.2 Why use HTTPS with your Arcadia Central Station?

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 Arcadia Central Station using the **Force HTTPS** feature.

7.3 The Force HTTPS feature

The Arcadia Central Station 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 Arcadia Central Station you must:

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

This creates a certified and encryped connection between the Arcadia Central Station and the PC accessing the CCM.

7.4 Warning

If you turn off port 80 without ensuring that you can reach the CCM using port 433 (test the authorizing certificate), it is possible to get locked out of your CCM. If this happens, you must reset the Arcadia Central Station from the front panel menus. This will remove all configuration, including network details from your Arcadia Central Station. For this reason, the Force HTTPS feature cannot be enabled until you have tested the secure connection.

7.5 Security Certificates

There are 3 types of security cerficate available for use. Chose the certification option that is best suited to your security requirements:

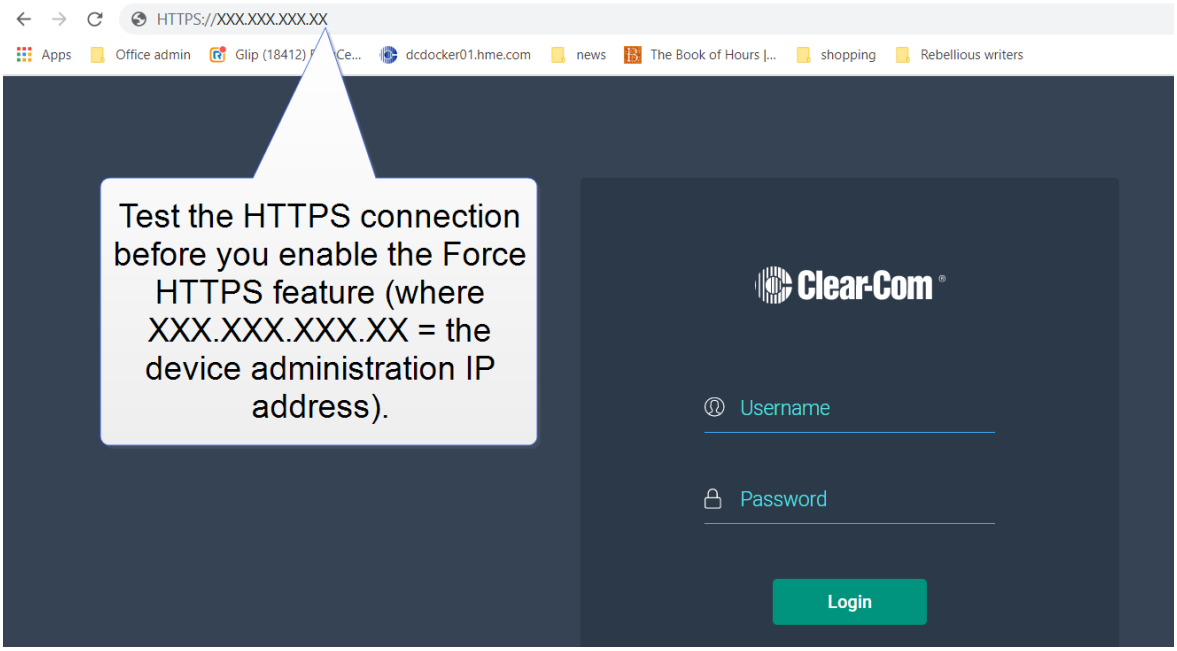
- A certificate of your own choosing (fullchain and private key)
- An EasyDNS authorized certificate for *.clearcomdevices.com (this option requires you to register your FS Edge Arcadia Central Station with a DNS server) and cannot be used unless your Arcadia Central Station has internet access
- The 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 Arcadia Central Station. This option requires specialized knowledge about how to obrain a fullchain 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 FS Edge Arcadia Central Station.
2. **The EasyDNS certificate**. This is a commercial certificate. When using the EasyDNS certificate you have to have a DNS server address for Arcadia Central Station 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, that is used to verify internal Clear-Com traffic (for instance, Agent-IC) can be downloaded and installed for use with an HTTPS connection. 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 are not set up to recognize self-certification. Using this certificate is likely to cause your browser to issue a warning.

7.6 How to Force HTTPS

1. Chose and install a security certificate on the PC or browser used to reach the CCM of the Arcadia Central Station. 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.



3. This step allows you to enable the **Force HTTPS** feature.

4. 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.

8 Configuring from the Front Panel

This chapter describes how to configure the Arcadia Central Station from the front panel. It contains the following sections.

There are a number of configuration and monitoring functions that are available from the front panel.

Some common tasks you might perform from the front panel menus are:

- See/configure the Arcadia Central Station IP address
- See the default CCM password
- Null your 2-wire audio sources
- Reset the Arcadia Central Station to factory settings
- Reset the CCM password

To enter the Arcadia Central Station menu system, press the **Menu** button on the front panel. Navigate through the hierarchical menu using the rotary controllers. To select or commit a menu item, press the rotary encoder next to it.

To exit the menu system, press the Menu button again, or leave the device to time-out of menu mode (17 seconds).

8.1 Front Panel Menus

8.1.1 Audio Settings

Headset Limit. This allows the user to set the headset limiter for the front panel headset.

- -12 dB to +8 dB/ OFF

HS Mic Type

- Dynamic (default)
- Electret

Sidetone Gain

- -15 dB to +8 dB (-12 dB default)

Sidetone Control

- Tracking (default)
- Non-Tracking
- Disabled

8.1.2 Host Settings

Host Name. Pushing the fourth rotary will open the on screen keyboard to allow the user to enter a new name for the device (touchscreen). [**OK**] when done.

Display

- Screen Brightness. High, Medium (default), Low, Very Low
- Screen Dimming. The screen will dim to Very Low when there is no activity. Timeout time: 1,2 (default),3,5,10 or 15 minutes.

8.1.3 2W Audio (A,B)

Configure power settingsfor 2-wire audio sources and perform nulling.

- Interface - power settings
  - Power detected? Yes/No
  - Power Enabled/Disabled (default = disabled)
  - Mode Clear-Com/RTS (default = Clear-Com)
- 2W A and 2W B.Press the rotary control (Start) to perform autonull. Nulling is only available if power is detected.

8.1.4 2W Audio (C,D)

See 2W Audio (A,B)

8.1.5 Discovery

- Discover FSII TCVR.
  - Lists all FSII transceivers visible on the network. Select the transceiver you wish to register (third rotary). Select **Register** and push the rotary (fourth rotary) to begin the connection sequence.
- Discover FSE TCVR.
  - Lists all FS Edge transceivers visible on the network. Select the transceiver you wish to register (third rotary). Select **Register** and push the rotary (fourth rotary) to begin the connection sequence.

Deregister will remove the transceiver from the system. You will only see the **Deregister** option if the transceiver has been registered.

8.1.6 Transceiver

Lists all registered transceivers. You can view and edit **Label** and **Cable Comp** here. Pushing the fourth rotary will open the onscreen keyboard (touchscreen). [**OK**] when done.

- FSII IP. Version, Label.
- FS Edge. Version, Label.

- FSII E1. Version , Label, Cable Comp.

8.1.7 Networking

Configure and view:

- LAN Port Assignment
- DHCP Enabled/Disabled
- IP Address (read only when DHCP is Enabled)
- Subnet Mask (read only when DHCP is Enabled)
- MAC Address (read only)

Push the fourth rotary to open the on screen toucnscreen keyboard to change IP and Subnet. [**OK**] when done. The keyboard is only available when DHCP is disabled.

Note: *When changing from DHCP **Enabled** to DHCP **Disabled**, the address previously assigned by the DHCP server will be set as the static address. This can cause IP conflicts so you must change the address to one not provisioned by the DHCP server.*

8.1.8 AES67 (for IP transceivers)

The section of the menu is read only and only shown if the AES67 connection has been configured with a LAN port from the CCM. It shows:

- LAN Port Assignment
- DHCP Enabled/Disabled
- IP Address
- Subnet Mask
- MAC Address

Note: *When changing from DHCP **Enabled** to DHCP **Disabled**, the address previously assigned by the DHCP server will be set as the static address. This is can cause IP conflicts, so you must change the address to one not provisioned by the DHCP server.*

8.1.9 Administration

- Beltpacks
  - Over the Air: Press rotary four to **Start OTA**. Put the Arcadia Central Station in pairing mode for OTA registration of beltpacks (600 seconds).
  - BP Role List Sorting:

        - Role Number
        - Alphabetical
    - Battery type: use this setting if the beltpacks are not using the supplied Li-ion batteries.
        - Alkaline (default)
        - NiMh (for use in high pressure environments)
- Software
    - Current version
    - Update software from a file on a USB (insert into USB C on front of Arcadia Central Station)
- License (you will not see this menu item on an Edge Base)
    - Connections - current connected ports on this Base
    - Licensed Ports
- Reset
    - Reboot
    - Reset to Default. Reset here will reset role, channel and network details. You will need to **Add** your transceivers back into the system after reset.
    - Reset CCM Password
- Support Info
- Settings
    - Save
    - Restore
- CCM Access
    - Username
    - Default password
- Hardware (view only)
    - Electronic main board serial number

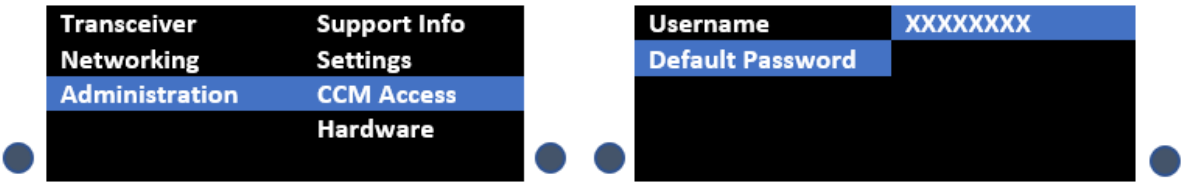
8.2 Passwords, Addresses and Reset to default settings

8.2.1 Find the Arcadia Central Station IP address

1. Press the **Menu** button on the front of the Arcadia Central Station.
2. Navigate to **Networking > Management > IP Address** using the rotary controllers.
3. You will see the device IP address.

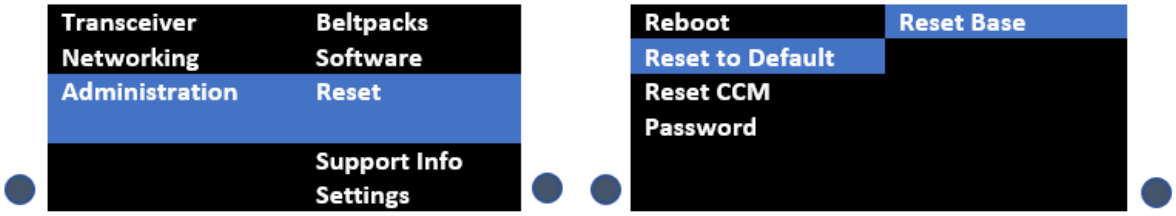
8.2.2 Find the default password for the CCM

1. Press the **Menu** button on the front of the Arcadia Central Station.
2. Navigate to **Administration > CCM Access > Default Password** using the rotary controllers.
3. You will see the default password in the right hand menu screen.



8.2.3 Reset the device to default settings

1. Press the **Menu** button on the front of the Arcadia Central Station.
2. Navigate to **Administration > Reset > Reset To Default > Reset Base**.
3. The Arcadia Central Station will reset to factory settings.

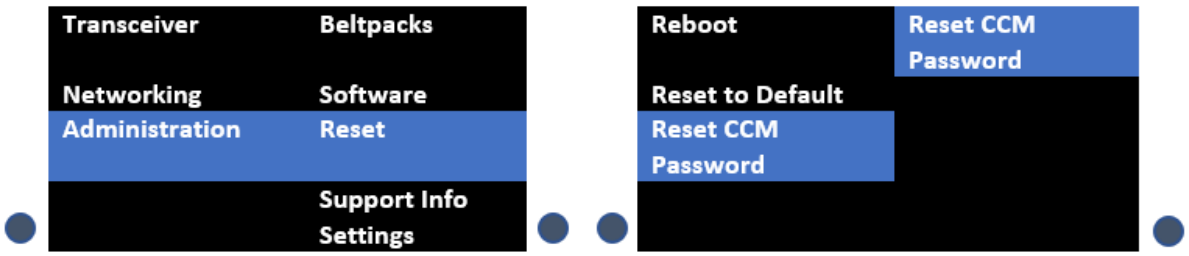


Note: *When resetting the base to default settings using the front panel menu system, all the system configuration details, including network settings are reset. When resetting to default from the CCM, the network settings are NOT reset.*

Note: *When you reset the Arcadia Central Station to default settings, you must **Add** the transceivers to the system again. See* ***Adding IP Transceivers (FS Edge, FS II 1.9, 2.4) on page 54***

8.2.4 Reset the CCM password

1. Press the **Menu** button on the front of the Arcadia Central Station.
2. Using the right hand rotary controller select **Administration > Reset > Reset CCM Pass**.
3. Press the right hand rotary controller.
4. The password will reset to its default setting.



8.3 Key Behavior

Audio keys can be set to different Talk and Listen states. These key behavior states apply to the keys on the Arcadia Central Station and beltpacks and panels. Key behavior is configured in the **Roles** tab in the CCM. See **Creating and Editing Roles on page 65**section 6.7.3 Edit Role Key Assignment.

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	Press key to talk and listen.
Dual Talk and Listen	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.

Key Behavior Options	Resulting Audio Behavior
Force Listen	Permanent listen.
Talk and Forced Listen	Permanent listen, push key to talk.
Force Talk and Force Listen	Permanent listen and talk.

9 Spare parts

List of spare parts with their part numbers.

Links to sales contacts.

10 Terminology/glossary

Term	Description
4-wire direct	A 4-wire connection is characterized by two pairs of twisted copper wire which transmit in opposite directions. A 4-wire circuit gives a full-duplex interface which is often used to connect to third party devices. When used with the LQ Series, a 4-wire direct connection (as opposed to a channel) provides point-to-point and panel connections over IP. The 4-wire direct interface will pass panel data as well as audio. 2-wire connections are inactive in the 4-wire direct tab of the Assignments page in the CCM and cannot be used in this context.
CCM	Core Configuration Manager. This is the browser-based configuration tool that each LQ device is supplied with. It can be accessed by entering the IP address of your device (shown on the device front panel) into the address field of a Web browser.
Channel	In the context of the LQ product, a Channel represents a conduit or holder for routing audio and data (including GPIO triggers) through your intercom system. As well as routing audio, a Channel also connects audio and data sources. To use Channels, connect audio to the port connectors on the device, and assign the port or ports to one or more Channels. LQ uses two different types of Channel; a regular Channel and a 4-wire direct Channel. A regular Channel operates like virtual party or conference line. It comprises audio from multiple audio interfaces on the devices (ports A-F) that have been assigned to it. Within a regular Channel, all parties can hear and speak to each other. A 4-wire direct Channel is made up of only two audio sources in a one-to-one connection.
Networked Control Events	Network Control Events are settings on a port that allow GPIO signals and controls to be passed through your intercom system. GPIO signals are converted to digital signals and then passed across the IP infrastructure (as with a 2-wire call signal).There are three Network Control Events to choose from: 1, 2 and Call.
Host device	The LQ device whose browser-based configuration tool (CCM) your browser is currently directed to.
Linking	The act of joining multiple LQ devices together in one group.
Link-Group	A set of devices linked together forming their own isolated network.

Term	Description
Link-Master	Role of a device within a Link-Group that provides central reachability within the group as well as ownership of both configuration and distribution of information.
Link-Member	Role of a device within a Link-Group that shares client privileges within the group.
Partyline	In a Partyline, all the participants on the line are involved in the same conversation, and they can hear and talk to all members. In some contexts a Partyline is known as a conference line. Partylines can be 2-wire or 4-wire.
Proxy device	A device within a Link-Group that can be configured via the browser-based configuration tool (CCM) of another unit in the group.
Virtual Partyline	A virtual Partyline is a digital audio channel that is made up of several different audio sources. In terms of audio, a virtual Partyline behaves in the same way as a Partyline; all participants can hear and talk to each other.

11 Front Panel Menu Reference Tables

This chapter lists the front panel menu options. It contains the following sections:

Note: *Default values are shown in* ***bold.***

11.1 Audio Settings

Level 1	Level 2	Level 3	Level 4
Audio	Headset	Headset Limit	8 to -12 dB/Off Default = 0 dB
		Headset detect	**Enabled**/Disabled
		HS Mic Type	Electret/**Dynamic**
		Sidetone Gain	8 to -15 dB Default = -12
		Sidetone Control	**Tracking**/Non-Tracking/Disabled

11.2 Host Settings

Level 1	Level 2	Level 3	Level 4
Host Settings	Host name	Edit	Press controller 4 to open a touchscreen keyboard.
	Display	Screen Brightness	High/ **Medium**/Low/Very Low
		Screen Dimming	1 to 15 minutes Default = 2 minutes

11.3 2 W Audio (A/B) (C/D)

Level 1	Level 2	Level 3	Level 4
2W Audio (A / B)	Interface	Power detected	Yes/No
		Power	Enabled/**Disabled**
		Mode	**Clear-Com**/RTS

Level 1	Level 2	Level 3	Level 4
	2W A	Nulling	The nulling function is only available if power is detected.
	2W B	Nulling	as above
Audio (B / C)	Same as Audio (A / B)		

11.4 Discovery

Level 1	Level 2	Level 3	Level 4
Discovery	Discover FSII TCVR	Discovered FSII TCVRs	Register/Unregister
	Discover FSE TCVR	Discovered FSE TCVRs	Register/Unregister

11.5 Transceiver

Level 1	Level 2	Level 3	Level 4
Transceiver	TCVR 1 ... XX How many TCVRs you see here depends on Base model and license	Version	
		Label	
		Cable Comp	**0 - 69 m**, 70 - 139 m, 140 - 209 m, 210 - 279 m, 280 - 349 m, ... (increments of 70 m) up to 1540 - 1609 m

11.6 Networking

Level 1	Level 2	Level 3	Level 4
Networking	Management	LAN Status	Up/Down (available for each port)
		LAN Port	LAN Ports 1 - 4
		DHCP	**Enabled**/Disabled
		IP Address	
		Subnet mask	
		MAC	
	AES67	LAN Status	Up/Down
		LAN Port	Shows which of the 4 IP ports is configured for AES67 By default management and AES67 are configured to LAN 1. This can be changed in the CCM.
		DHCP	Enabled/Disabled
		IP Address	
		Subnet mask	
		MAC	MAC address

11.7 Administration

Level 1	Level 2	Level 3	Level 4
Administration	Beltpacks	Over The Air	Start OTA
		BP Role List	Sort by **Role**

Level 1	Level 2	Level 3	Level 4
		Sorting	**Number** /Alphabetical
		Battery Type	**Alkaline**/NiMh (for use when not using the supplied Li-ion type batteries)
	Software	Current	View current version
		Update	Use this to update the Base using a USB stick.
	License	Connections	View connected ports
		Licensed Ports	View licensed ports: • Total Ports • Wireless Ports • Dante Ports • Any Ports
	Reset	Reboot	Press rotary 4 to reboot now
		Reset to Default	Reset Base. When you reset the Base here, as well as system setup details (channels and roles), network details (IP addresses) are also reset. This is not the case when resetting the Base in the CCM. After resetting you must Add

Level 1	Level 2	Level 3	Level 4
			transceivers again.
		Reset CCM Password	Press rotary 4 to reset CCM password to the default setting. Once reset, the password can be viewed under **CCM Access** in this list.
	Hardware	Electronic main board serial Number	

12 Specifications

12.1 Arcadia Arcadia Central Station Not yet done!

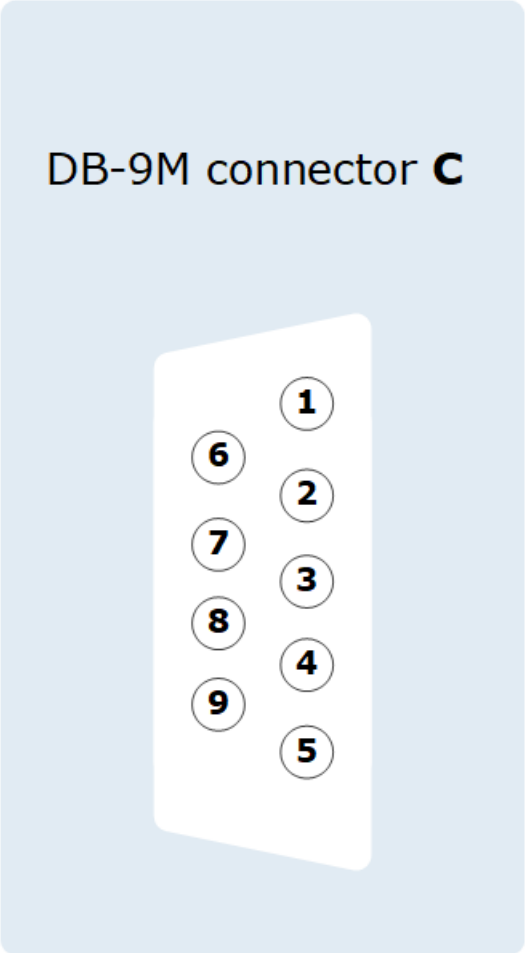
Specification	Value
Arcadia Central Station to beltpack frequency response	• FreeSpeak II beltpacks: 100 - 7.1 kHz • FreeSpeak Edge beltpacks: 12 kHz
Number of FS II beltpacks per Arcadia Central Station	Up to 16 beltpacks in total, made up of either FreeSpeak II or FreeSpeak Edge beltpacks
Number of transceivers supported by Arcadia Central Station	16 in total • 6 IP transceivers (FreeSpeak II or FreeSpeak Edge) • E1 transceivers, 2 connected directly to the Arcadia Central Station, 10 via a splitter
Number of transceiver ports	• E1 connections: 2 x RJ45 & 2 x Fiber (2 active at any time) • IP transceiver connections 4 x LAN ports (configurable, default = LAN 1)
Programming port	4 x LAN
GPIO port	2 x DB 9 connectors each hosting: • 2 x relay outputs, normally open and normally closed wiring • 1 x GPI
Partyline: A,B,C,D	• XLR-3F, **ON**/**OFF** termination control. • Power **ON**/**OFF** (A/B, C/D paired) • RTS or Clear-Com
4 -wire	8 X RJ45
Program input and Stage Announce output	A split cable is issued with the Arcadia Central Station for connection to 4-wire port 8. • XLR-3F, transformer isolated, line-level input, independent Program Input level control via rotary encoder

Specification	Value
	• XLR-3M, transformer isolated, line-level output Dedicated PGM and SA talk keys are situated in the second menu level of the left menu touchscreen.
Radio frequency (RF) sync	Rear RF input and output sync connectors
Power	The Arcadia Central Station has two power supplies, one internal and one external, which can be used together to provide power redundancy. • AC mains input. IEC C14 connector. Input 100-240V AC, 50 – 60 Hz, 160W Max • DC low voltage input. Input 12V DC, 12A Max
Power supply	External power supply with sleeve-locking connector (provided, part no. 453G020-1). • Input 100 - 240V AC, 50 - 60 Hz, 2.2A Max • Output 12V DC +/- 5%, 12.5A
Front panel headset	4-pin male connector. Automatic mic detect.
4 x programmable front panel keysets	• 128 x 64 OLED • Talk and Call keys situated within the front panel touchscreens • Listen key on rotary encoder for level control
Front panel buttons	• Headset mic ON/OFF • Configuration **Menu** **SA**, **All Talk** and **RMK** buttons are situated in menu level 2 on the left touchscreen.
Front panel rotary encoders	4 Program input level control (also used as a listen key and for navigation through the menu system).
Dimensions	1 RU: 44 x 442 x 250 mm (1.75 x 17.4 x 9.8 inches)
Weight	Approx 2.3 kg (5 lb)

13 Pinouts

This chapter describes the pinouts of the connectors on the Arcadia Central Station. It contains the following sections:

13.1 4-wire GPIO pinouts (connector C)

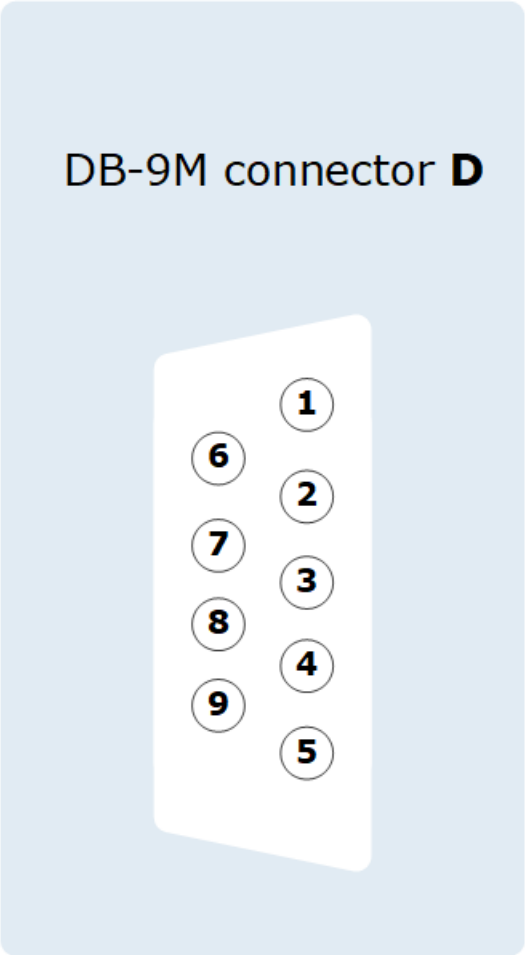


1. Relay 1 Common
6. Relay 2 Common
2. Relay 1 Normally Closed
7. Relay 2 Normally Closed
3. Relay 1 Normally open
8. Relay 2 Normally Open
4. Input A1
9. 12V
5. Input B1

Shield 0V

13.2 2-wire pinouts (connector D)

13.2.1 Clear-Com 2-wire XLR pinout

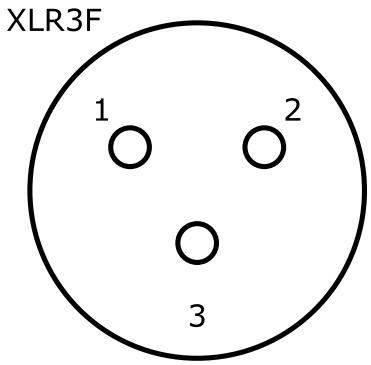


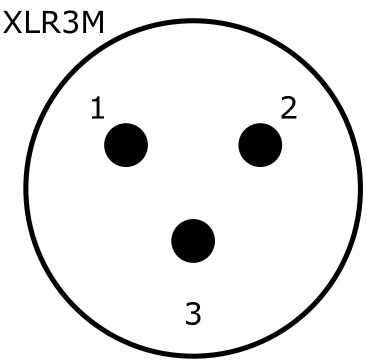
1. Relay 3 Common
6. Relay 4 Common
2. Relay 3 Normally Closed
7. Relay 4 Normally Closed
3. Relay 3 Normally open
8. Relay 4 Normally Open
4. Input A2
9. 12V
5. Input B2

Shield 0V

13.2.2 RTS 2-wire XLR pinout

1. Ground
2. DC power (30V)
   Duplex audio 1
3. Duplex audio 2





13.3 4-wire pinouts (connector E)

Pin	To panel	To matrix
Pin 1	RS-422 input + (into matrix)	RS-422 output + (from panel)
Pin 2	RS-422 input – (into matrix)	RS-422 output - (from panel)
Pin 3	Audio input + (into matrix)	Audio output + (from panel)
Pin 4	Audio output + (from matrix)	Audio input + (into panel)
Pin 5	Audio output – (from matrix)	Audio input – (into panel)
Pin 6	Audio input – (into matrix)	Audio output – (from panel)
Pin 7	RS-422 output + (from matrix)	RS-422 input + (into panel)
Pin 8	RS-422 output – (from matrix)	RS-422 input – (into panel)

13.4 DECT Sync (connector F)

Pin	Sync In	Sync Out
Pin 1	DECTSYNC +	DECTSYNC +
Pin 2	DECTSYNC -	DECTSYNC -
Pin 3	8 KHZ+	8 KHZ+
Pin 6	8 KHZ-	8 KHZ-

Caution: Shielded Cable Requirement

Shielded Cable is required for ALL FreeSpeak eGPIO Port connectivity. Shielded Cable must be used to assure compliance with domestic and international emissions standards. Customers, Installers and or qualified Personnel failing to use shielded cables may cause radio interference in which case the user may be required to take adequate measures.

14 Regulatory compliance

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.

14.1 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.

14.2 FCC/IC/EC RF Exposure Warning

- This product complies with FCC/IC/EC radiation exposure limits set forth for an uncontrolled environment.

- This product may not be co-located or operated in conjunction with any other transceiver or transmitter.

- The beltpack has been tested to comply with FCC/IC/EC RF Exposure requirements in body-worn position. Use of third party clips or holsters with the beltpack may not ensure compliance with FCC/IC/EC RF exposure requirements and should be avoided.

- To comply with FCC/IC/EC RF exposure requirements, the Antenna/Transceiver unit must be installed and operated at least 20 cm (8 inches) from any person.

14.3 Industry Canada Compliance Statement

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

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est soumise aux deux conditions suivantes:

(1) cet appareil ne doit pas provoquer d'interféence, et

(2) cet appareil doit accepter toute interféence radioéectrique subie, mêe si l'interféence est susceptible d'en compromettre le fonctionnement.

Cet éetteur exempt de licence est éuipéd'une antenne intéré. Cet éetteur exempt de licence n'est pas autoriséàfonctionner avec une autre antenne.

Cet appareil numérique de la class[*] est conforme à la norme NMB-003 du Canada.

14.4 Korean Notice

A급 기기 (업무용 방송통신기자재)

이 기기는 업무용(A급)으로 전자파적합기기로

서 판매자 또는 사용자는 이 점을 주의하시기

바라며, 가정외의 지역에서 사용하는 것을 목

적으로 합니다.

14.5 KCC 2.4Ghz warning

해당 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없음

14.6 European Union (CE mark)

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

Directives:

- Radio Equipment Directive 2014/53/EU

- Electromagnetic Compatibility Directive 2014/30/EU

- Low Voltage Directive 2014/35/EU

- RoHS Directive 2011/65/EU

Standards:

- EN55022/EN55032

- EN55024

- IEC/EN60950-1

- EN300328

- EN301406

- EN301489

- EN50581

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.

14.7 Waste Electrical and Electronic Equipment (WEEE)

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.