User Guide

Station-IC User Guide
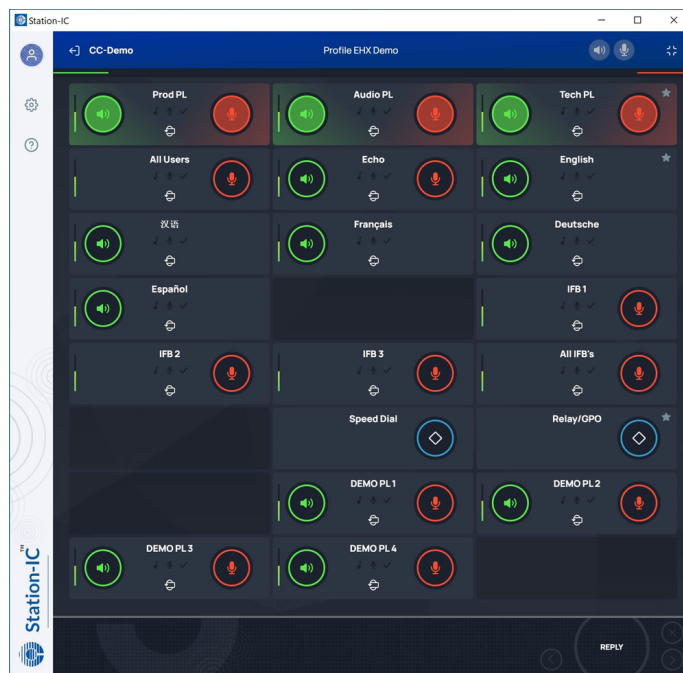
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Clear-Com®
AN HME COMPANY

Document reference

Station-IC™ User Guide

Part Number: PUB-00051 Rev C

Legal disclaimers

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Table of contents

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1   Introduction to Station-IC

Station-IC™ is a desktop application available for Microsoft® Windows® and Apple®macOS® computers which enables them to operate as a virtual intercom client for Eclipse HX (EHX) matrix systems and LQ Series interfaces.
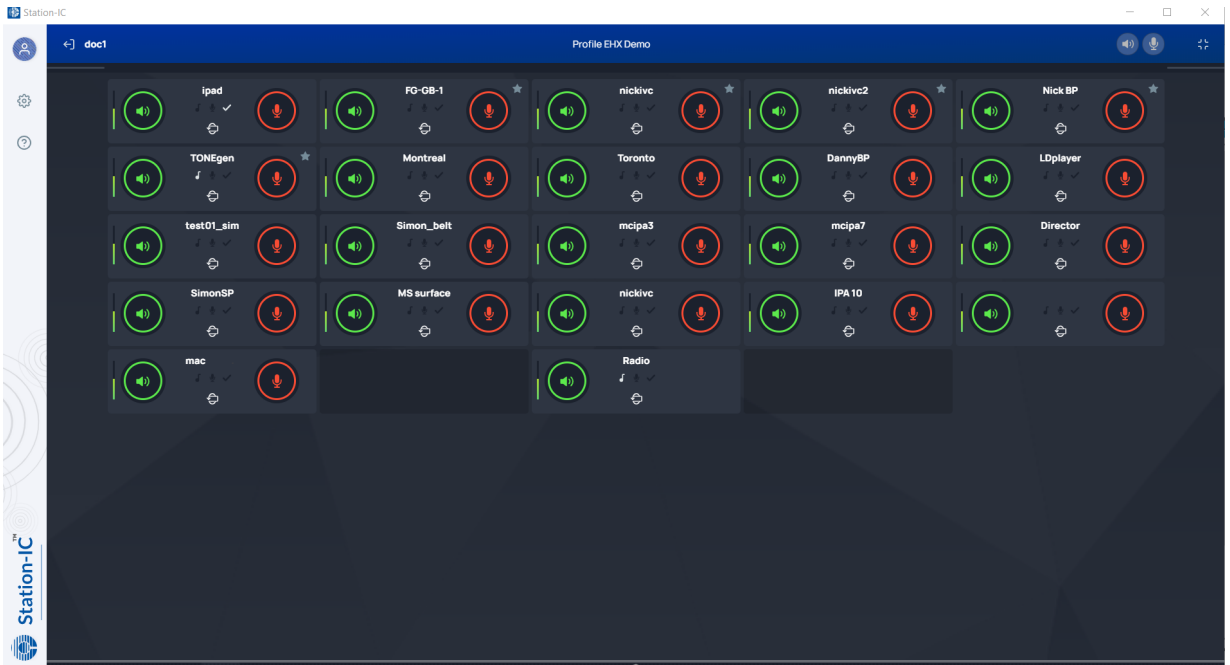
For information about the Station-IC software version, click , and then **About**.

A screen appears with software version information.

About Station-IC

Version: 1.0.0-build.38
Copyright © 2021 Clear-Com. All rights reserved.

OK
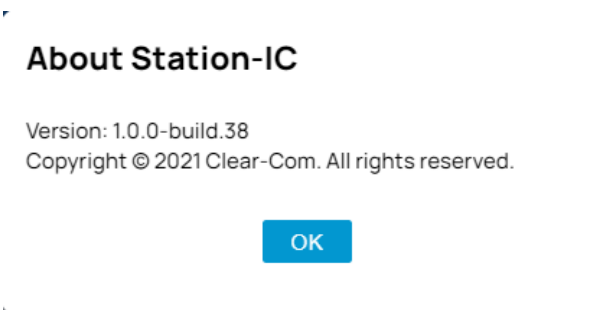
To access the Station-IC User Guide, click , and then **User Guide**.

Sign up to receive alert emails when new software or firmware is available
https://clearcom.me/softwarealerts
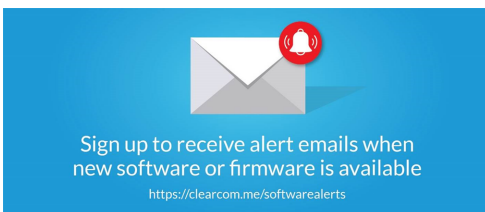
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2   Installing Station-IC

To install Station-IC on your PC or Mac, download it from the Clear-Com website and install.

Note: *Be sure to enable Station-IC to pass through the system firewall.*

Station-IC is in demo mode until you purchase and install a license, available from your Clear-Com partner.

See **Installing CodeMeter (License Manager) on page 8**

Before you can connect to the host intercom system with your virtual client, you must first setup connection details in the target software user interface. Station-IC connects to the host system using a profile. You will need:

User credentials:

- User ID

- Password

Network:

- IP address for the system you are connecting to.

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3   Station-IC Licenses

Event Licenses - for time limited use

- ST-IC-1W : 1 user, 1 week

- ST-IC-1M : 1 user, 1 month

Subscription Licenses - for ongoing operation

- ST-IC-1Y Subscription Initiation: 1 user, 1 year

- ST-IC-ADD1Y Subscription Extension: 1 user, +1 year

Subscription License Bundles - for use on multiple computers

- ST-IC-8-1Y Subscription Initiation: 8 users, 1 year

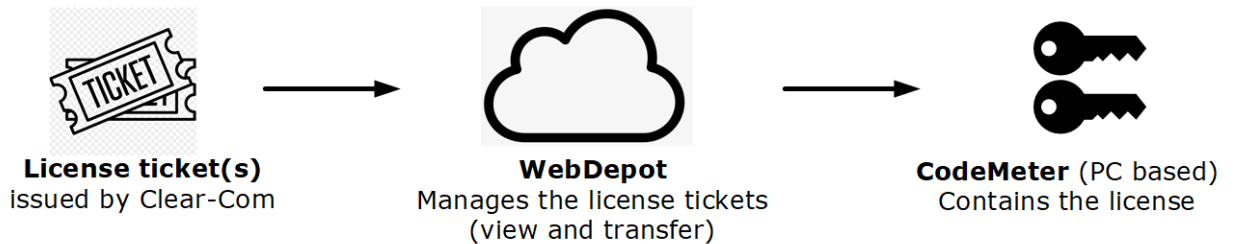- ST-IC-8-ADD1Y Subscription Extension: 8 users, +1 year

The following apply:

- Subscription licenses can be transferred between computers. Event licenses cannot be transferred.

- Event licenses activate and start depleting on first connection to the intercom system. Subscription licenses start depleting following initial activation. The remaining time does not stop while you transfer subscription licenses.

- An extension license will start from the time the subscription license lapsed.

- Multiple extensions can be installed at the same time. For example, for 3 years continuous use, install 1 Subscription Initiation and 2 Subscription Extensions. Subscription Initiation is installed before the extension.

- One event license can be installed on a computer at any one time, additional licenses will overwrite the first. If you wish to extend your event license, wait until it has expired and then install a new one.

- If you wish to use an event license on a computer that has previously hosted an initiation/subscription license, you must remove the subscription license before installing the event license. See

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3.1   Obtain a license

To obtain licenses for Station-IC, contact your Clear-Com partner. Once you have purchased your license(s), Clear-Com will send a license Ticket ID containing licenses codes to you.

Licenses are activated by you using a Cloud-based 'WebDepot' which transfers selected licenses from the license ticket to the 'CodeMeter' license manager (a software application) that runs on your computer. This process is described in the following section in this document.

License ticket(s)
issued by Clear-Com

WebDepot
Manages the license tickets
(view and transfer)

CodeMeter (PC based)
Contains the license

3.2   Installing CodeMeter (License Manager)

1. Download Station-IC from the Clear-Com website. Station-IC will open in demo mode.

2. Install the license manager (CodeMeter) by clicking the install icon. CodeMeter runs in the background on your PC, holding your licenses.
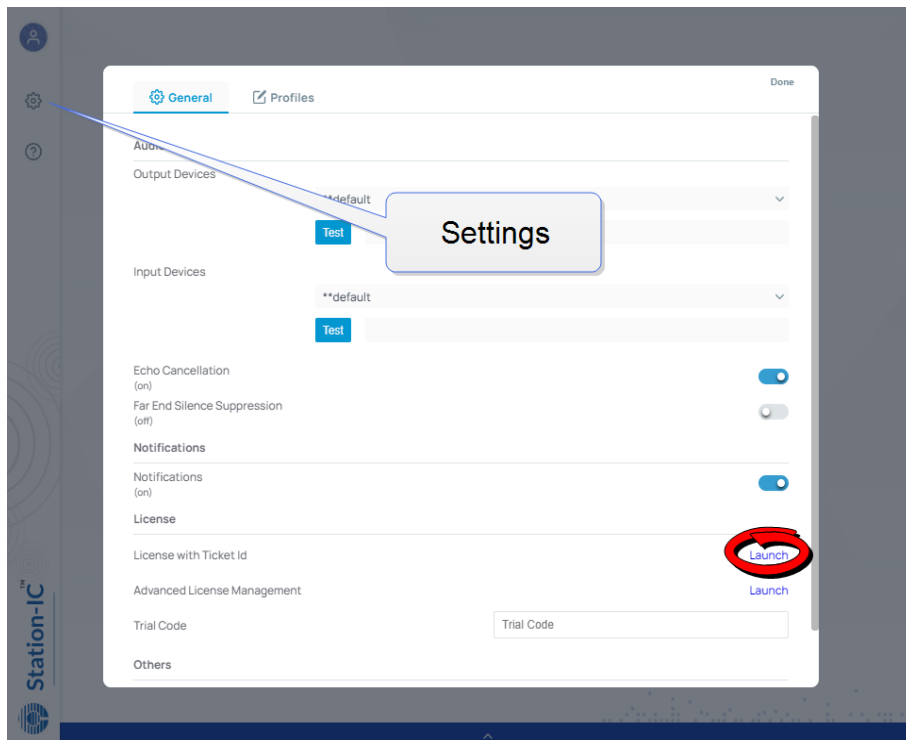
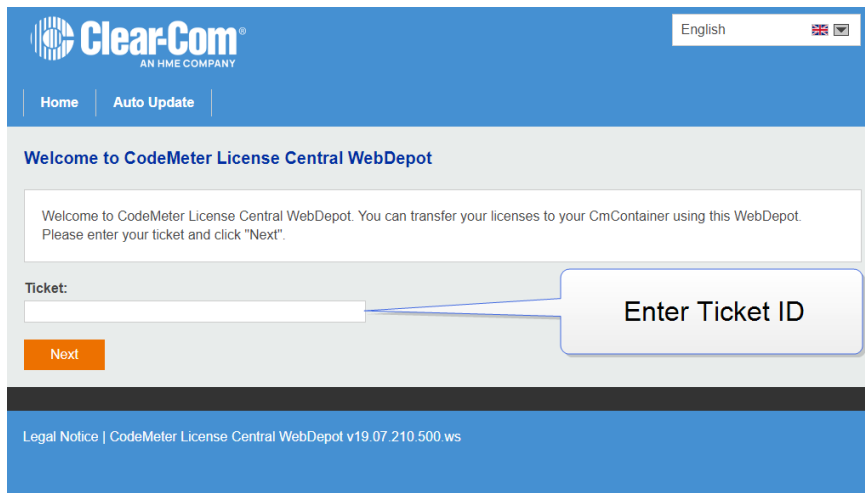   *Note: After CodeMeter is installed, the install icon is no longer visible.*
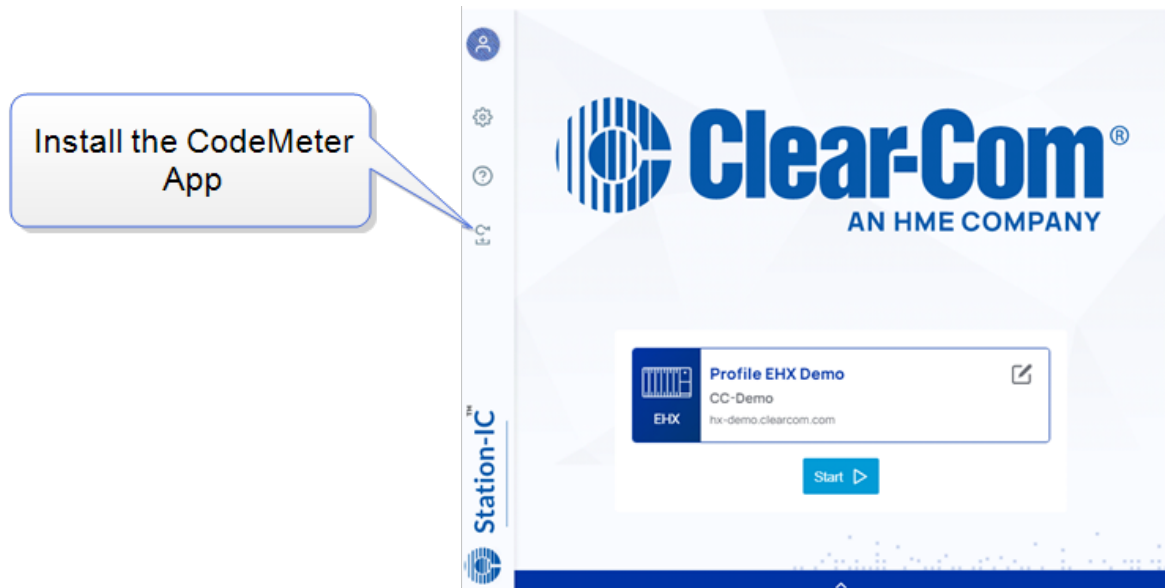
3.3 Installing and Applying Licenses Online (Recommended)

1. Once CodeMeter is installed on your computer, go to **Settings** in Station-IC and launch **License with Ticket ID**. (Trial Code is for factory service use only).

2. The online WebDepot opens. Copy and paste your Ticket ID, and click **Next.**

3. You will see the purchased licenses available to you on the license ticket. These licenses are managed by the WebDepot. Press **Activate Licenses**. Select the license(s) you wish to install on your computer, then select **Activate Selected Licenses Now**. Following the license transfer, Station-IC will be licensed and no longer in demo mode.

3.3.1   Re-Hosting a License

A license can be removed from a computer and returned to the license ticket using the WebDepot where it will be available to install on a different computer using the steps outlined above. The license ticket can then be used for another computer. To re-host a license go to **Settings>Launch with Ticket ID** (step 3). You will need your Ticket ID to do this.

3.4   Installing and Applying Licenses (file-based)

If your computer does not have internet access, it is possible to transfer the licenses using a license file exchange. You will obtain a container for the license files from CodeMeter, installed on the computer that needs to be licensed, and load it with a license from the license ticket using the WebDepot.

Computer to be licensed (offline)	File Transfer	Online computer	WebDepot
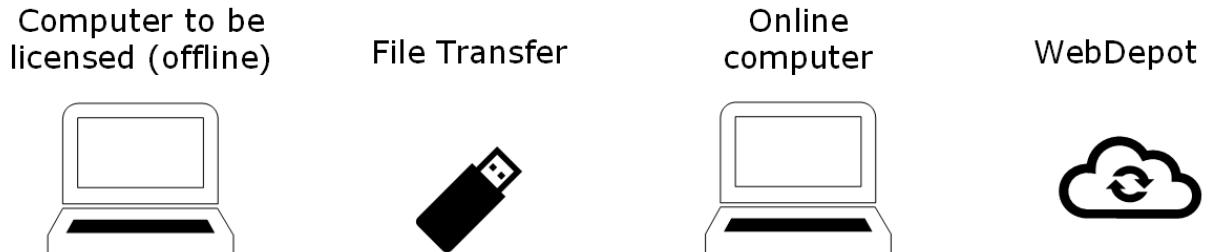
1. Activate license using file-based transfer

Obtain a .WibuCmRaC file from the computer to be licensed (CodeMeter). Go to WebDepot and activate the license using **File-based license transfer** option.

2. Install the license on the required computer

Take the file update file (.WibuCmRaC) back to the computer to be licensed. Install the license (CodeMeter).

3. Obtain a receipt and return to the WebDepot

Obtain a receipt from CodeMeter (.WibuCmRac) and return this to the WebDepot.

1. From CodeMeter Control Center, click **License Update**.
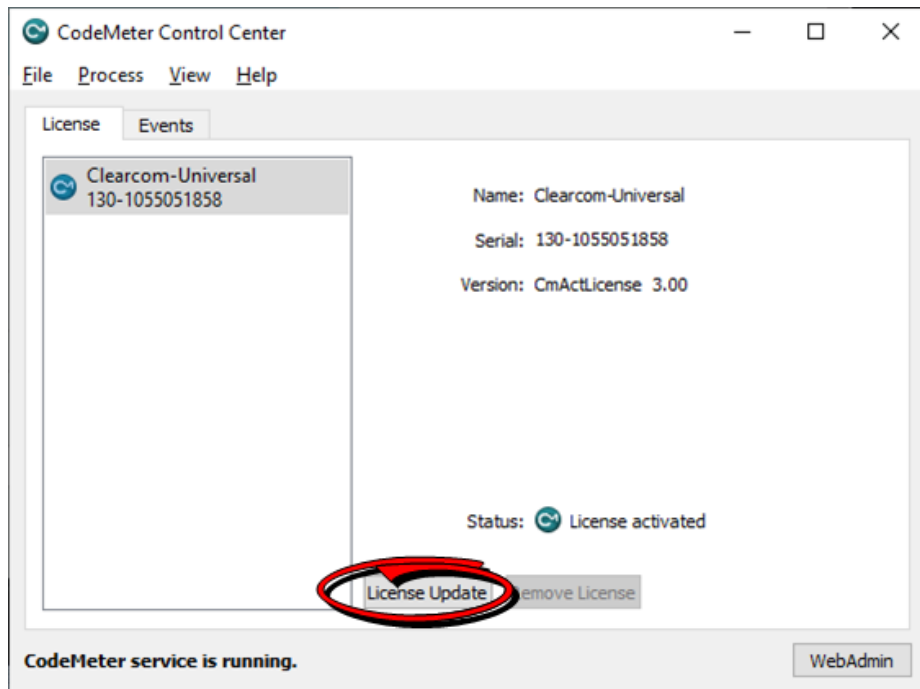
2. Click **Next**.
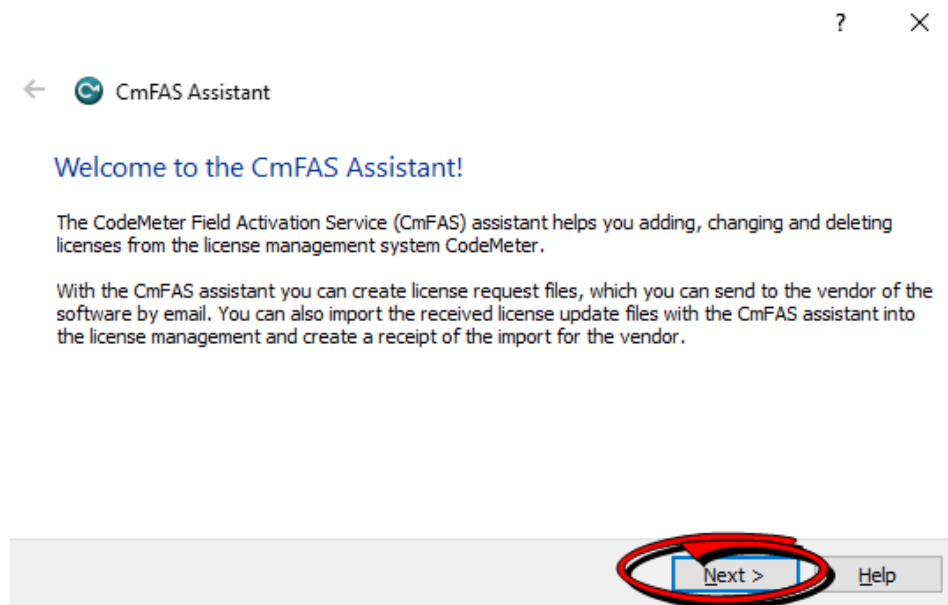
3. Select **Create license request**, and then click **Next**.
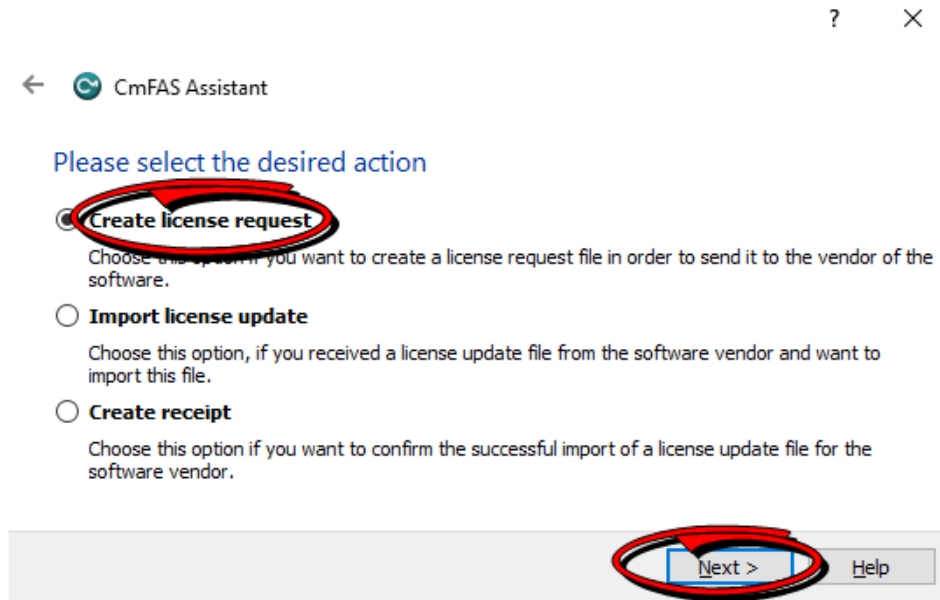
4. Navigate to a location where you want to save the file. Click **Commit**.
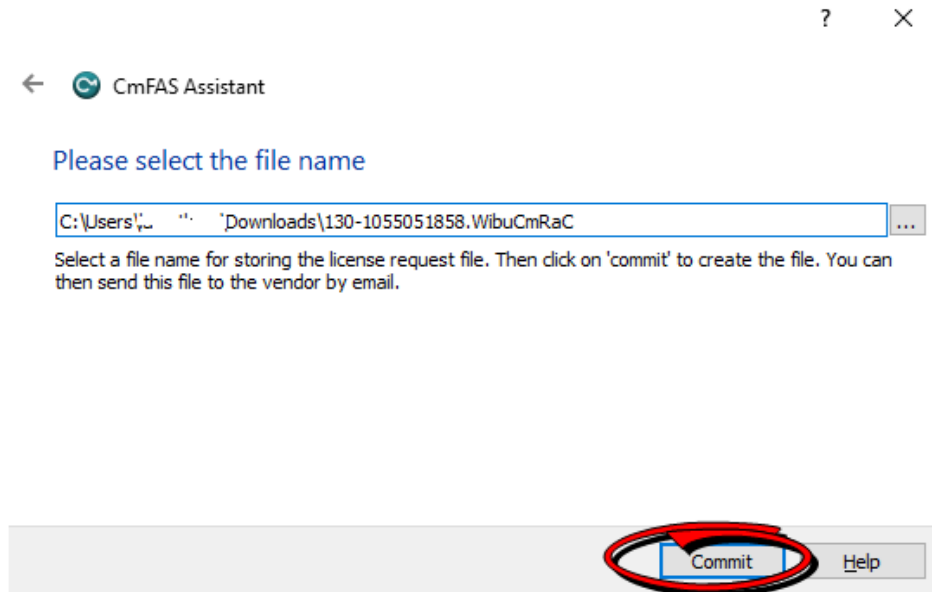
5. Click **Finish**.
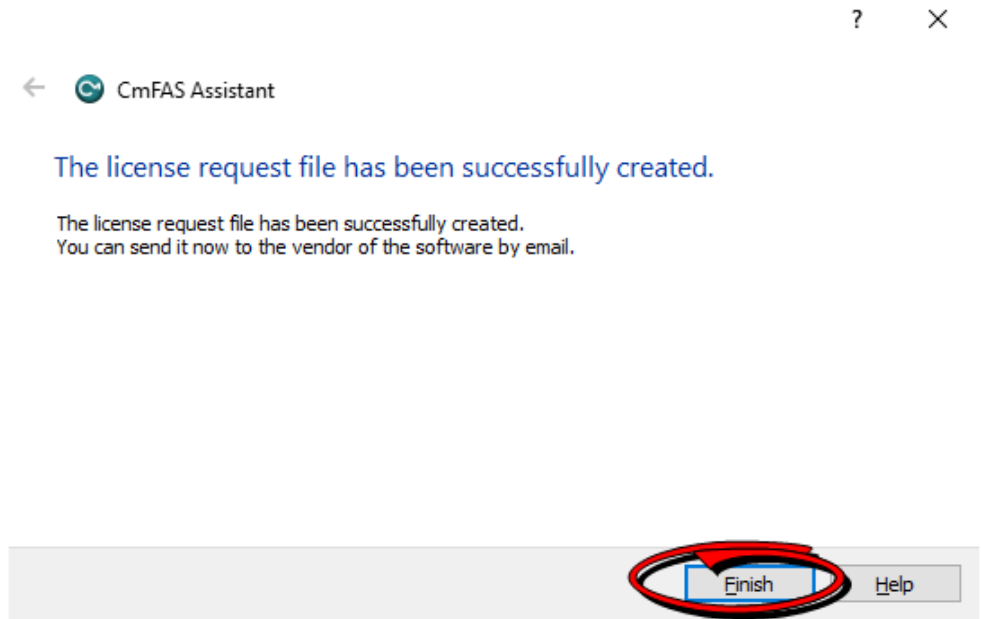
6. Enter your Ticket in **WebDepot**, and then click **Activate Licenses**.
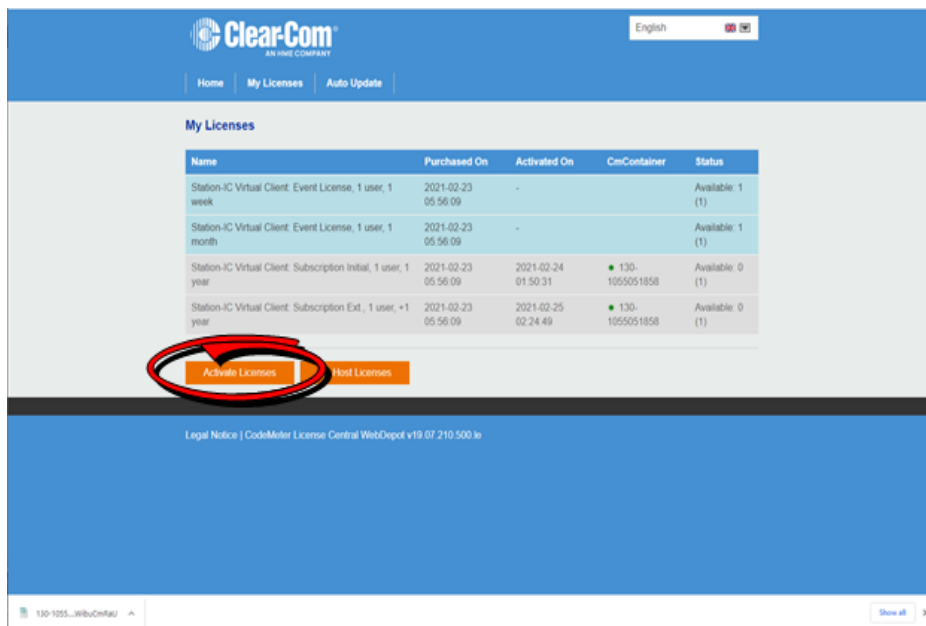
7. Click **File-based license**.
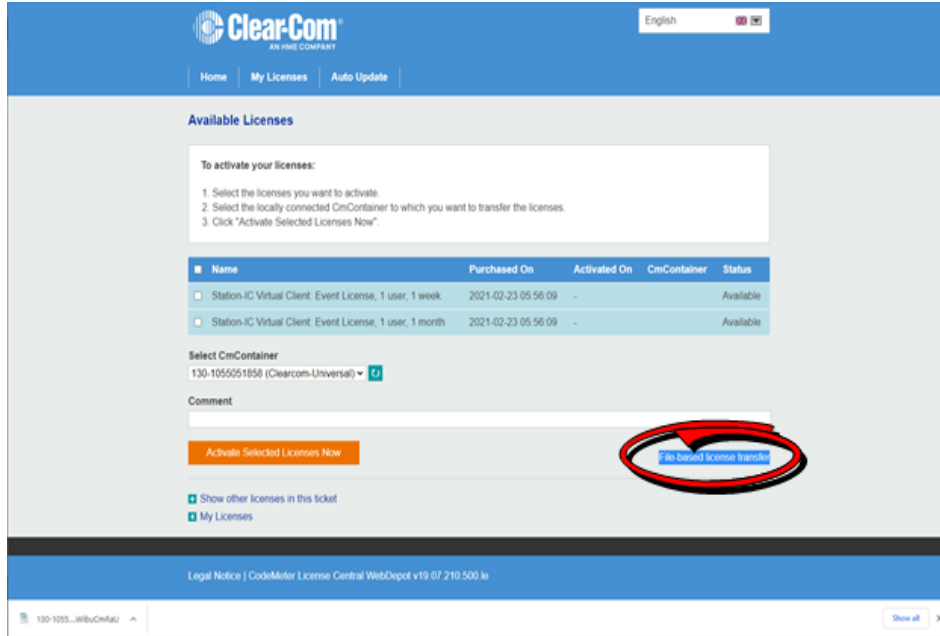
8. Select the license you want to activate, and then click **Choose File**.
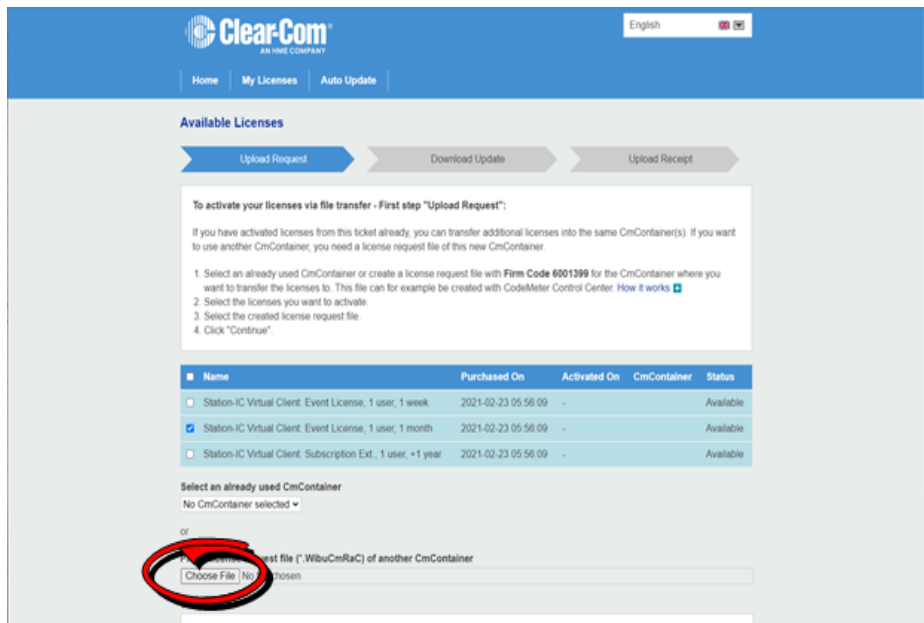
9. Select the *.WibuCmRaC* file that you saved earlier.
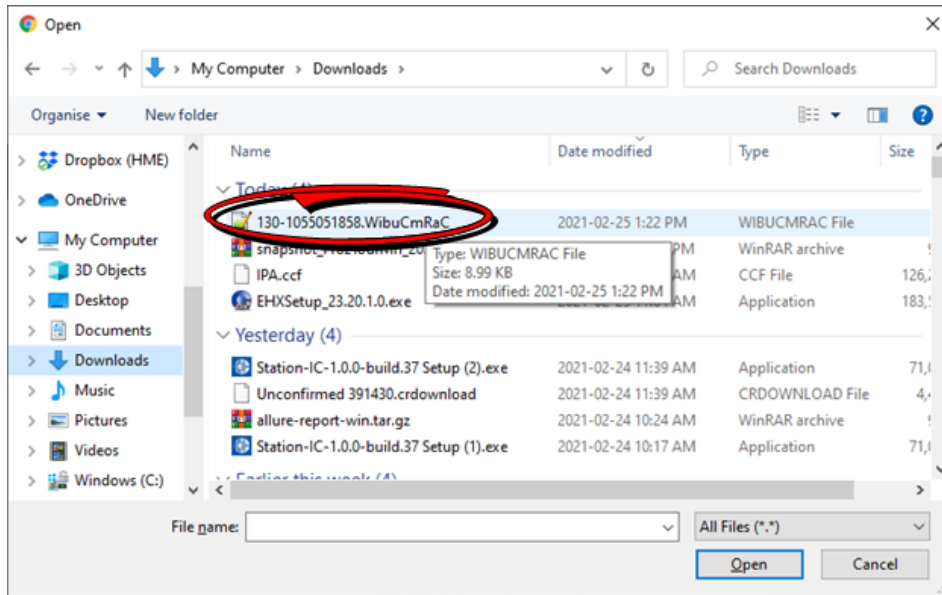
10. Click **Start Activation Now**.
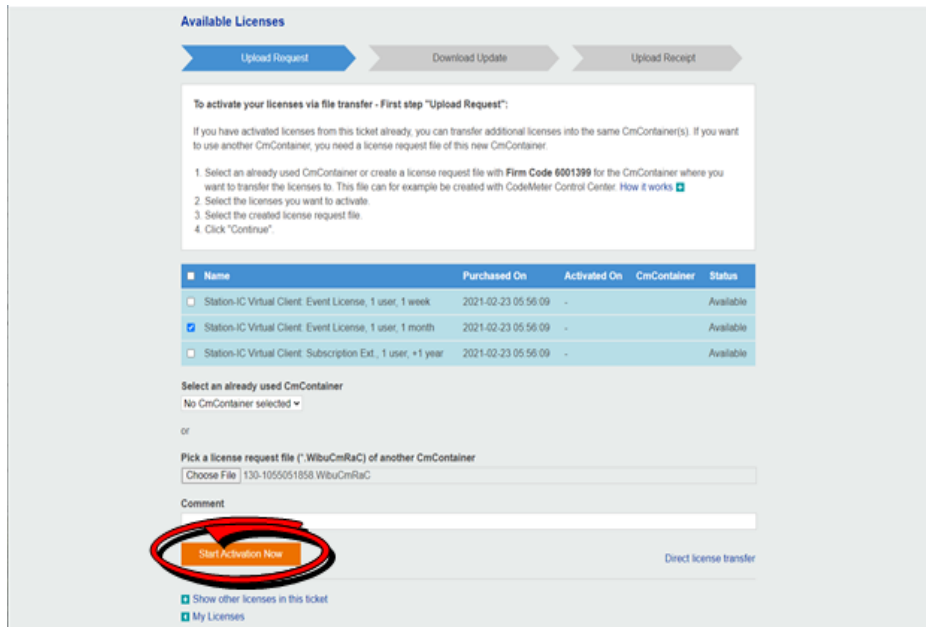
11. Click **Download License Update File Now**.
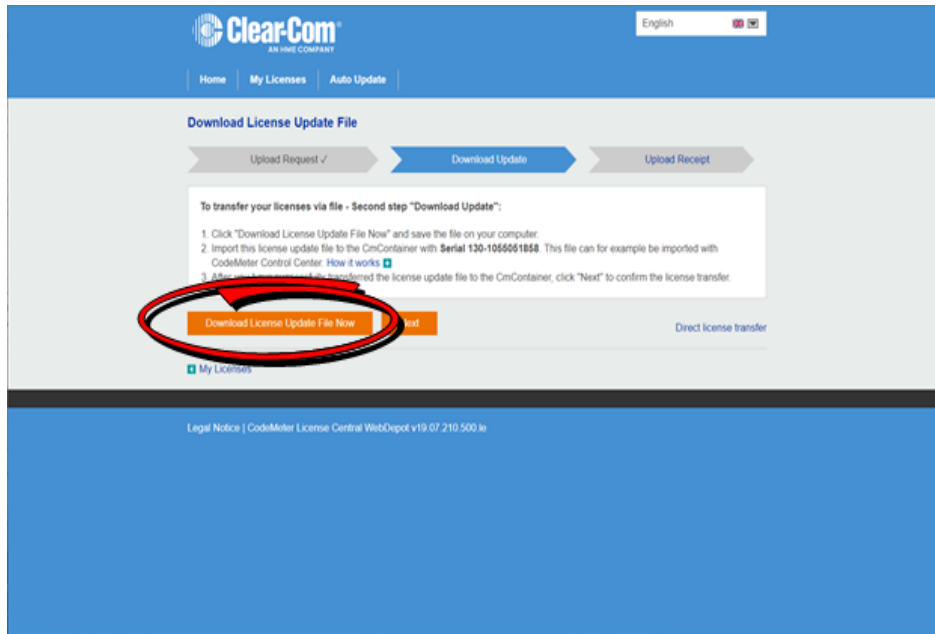
12. Click **Next**.
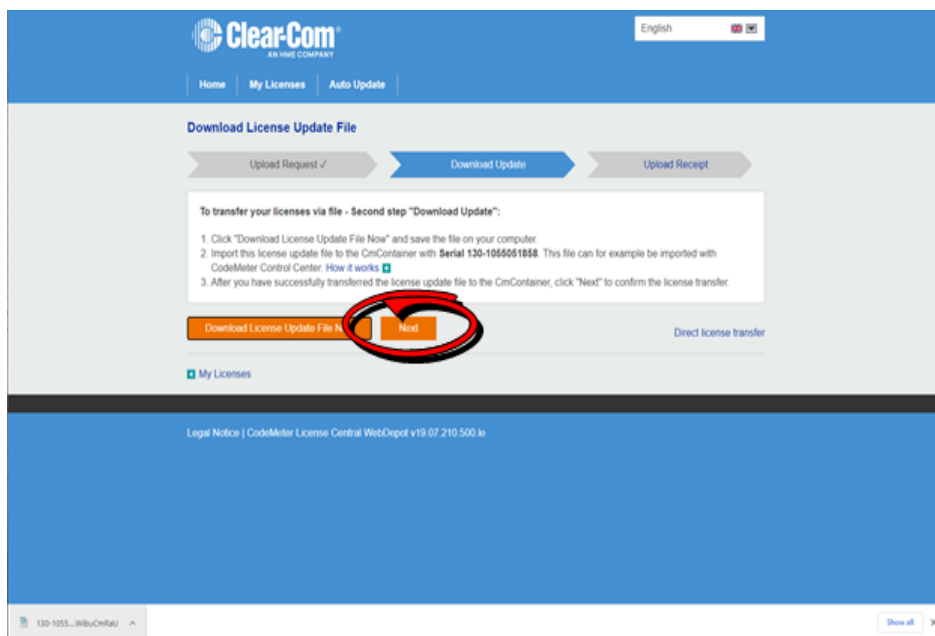
13. From CodeMeter Control Center, select **Import license update**, and then click **Next**.
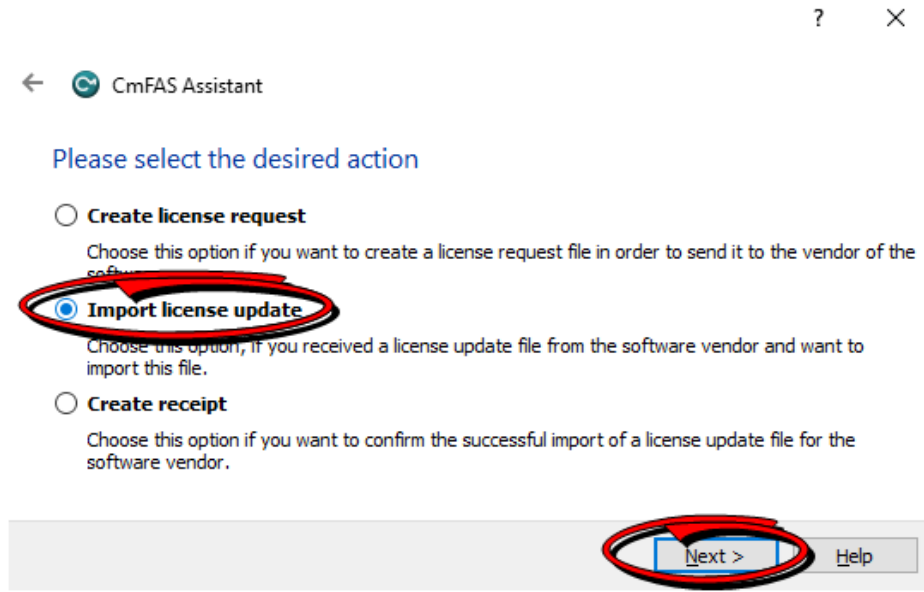
14. Select the .*WibuCmRaU* file that you downloaded in step 9, and then click **Commit**.
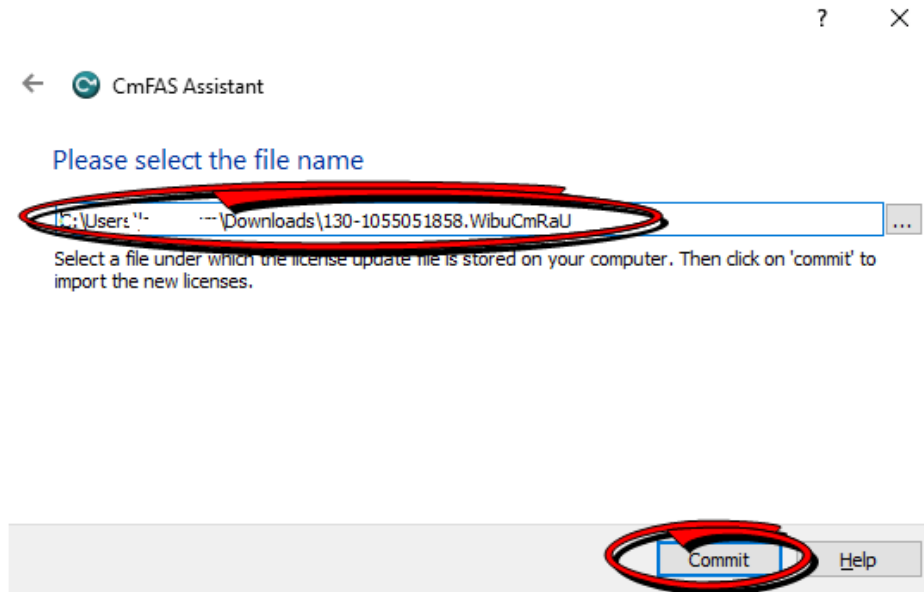
15. Click **OK**.
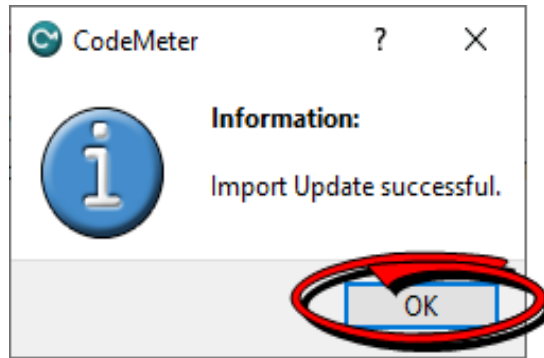
16. Click on the highlighted link.
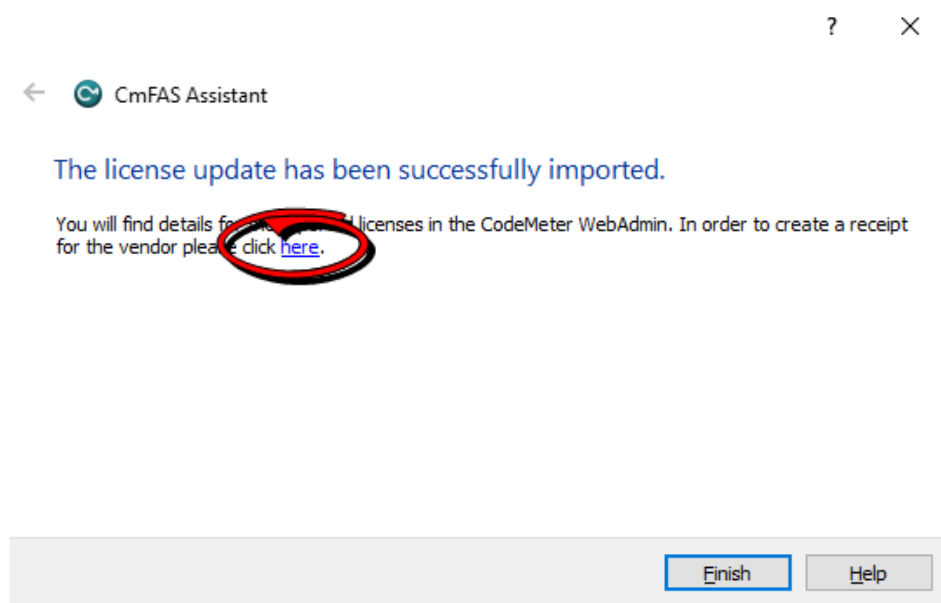
17. Save this new *.WibuCmRaC* file, and then click **Commit**.
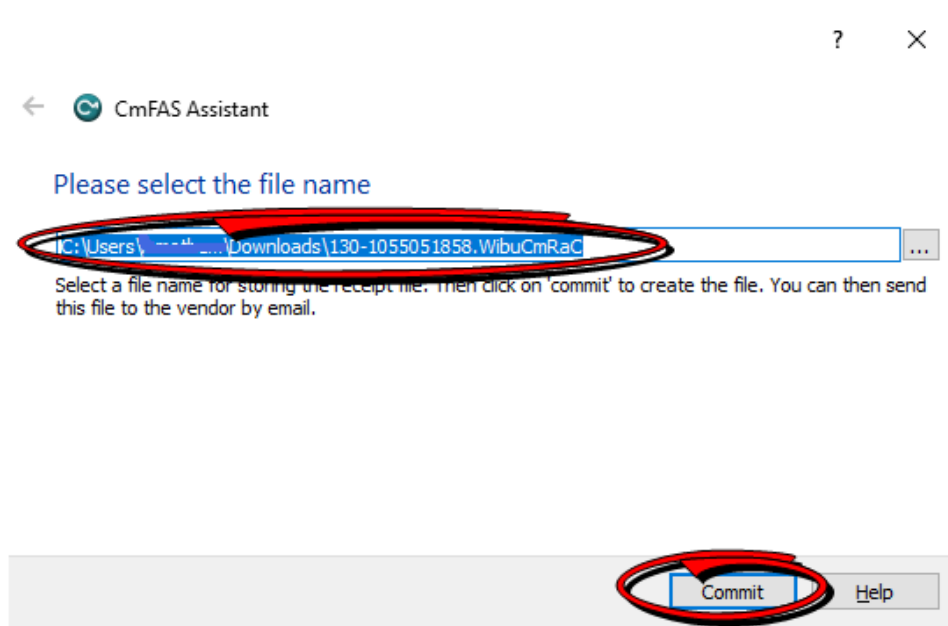
18. Click **Finish**.
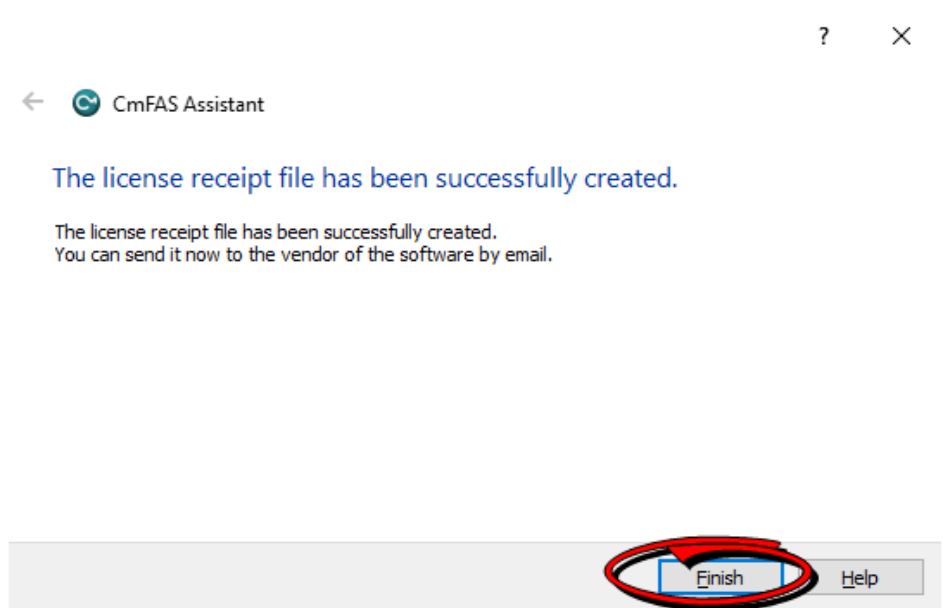
19. From the WebDepot Control Center, click **Choose File** and pick the last *.WibuCmRaC* file. Click **Upload Receipt Now**.
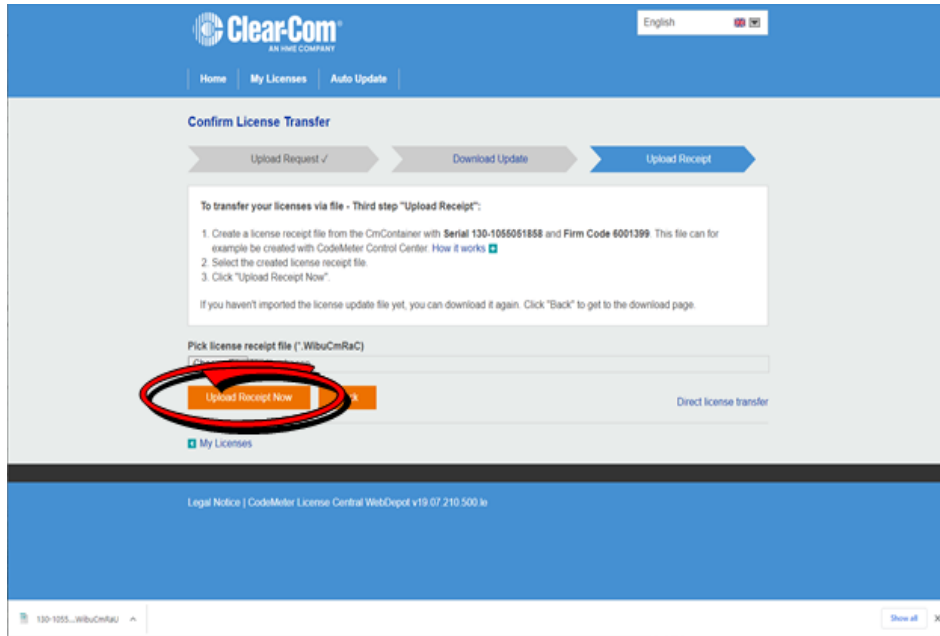
20. A final confirmation screen appears.
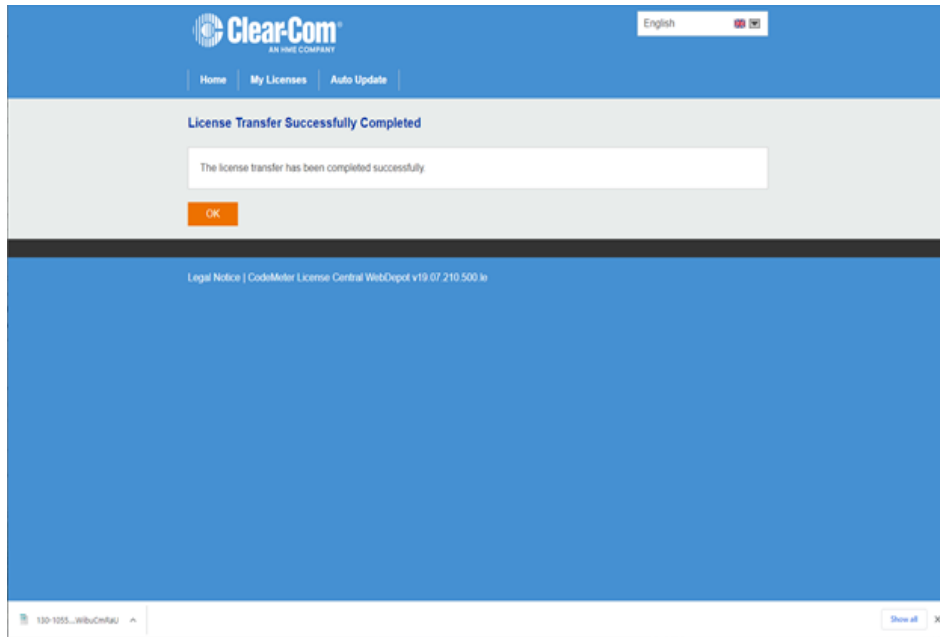
4   The Startup Screen

When you open Station-IC, the **Startup** screen appears:

> About button. Enables you to view software release information, and access the User Guide.

> Settings and connection profiles.

> Download the CodeMeter license software to your computer. Once installed, this button disappears.

> The selected active profile

> Click here to view other defined profiles.
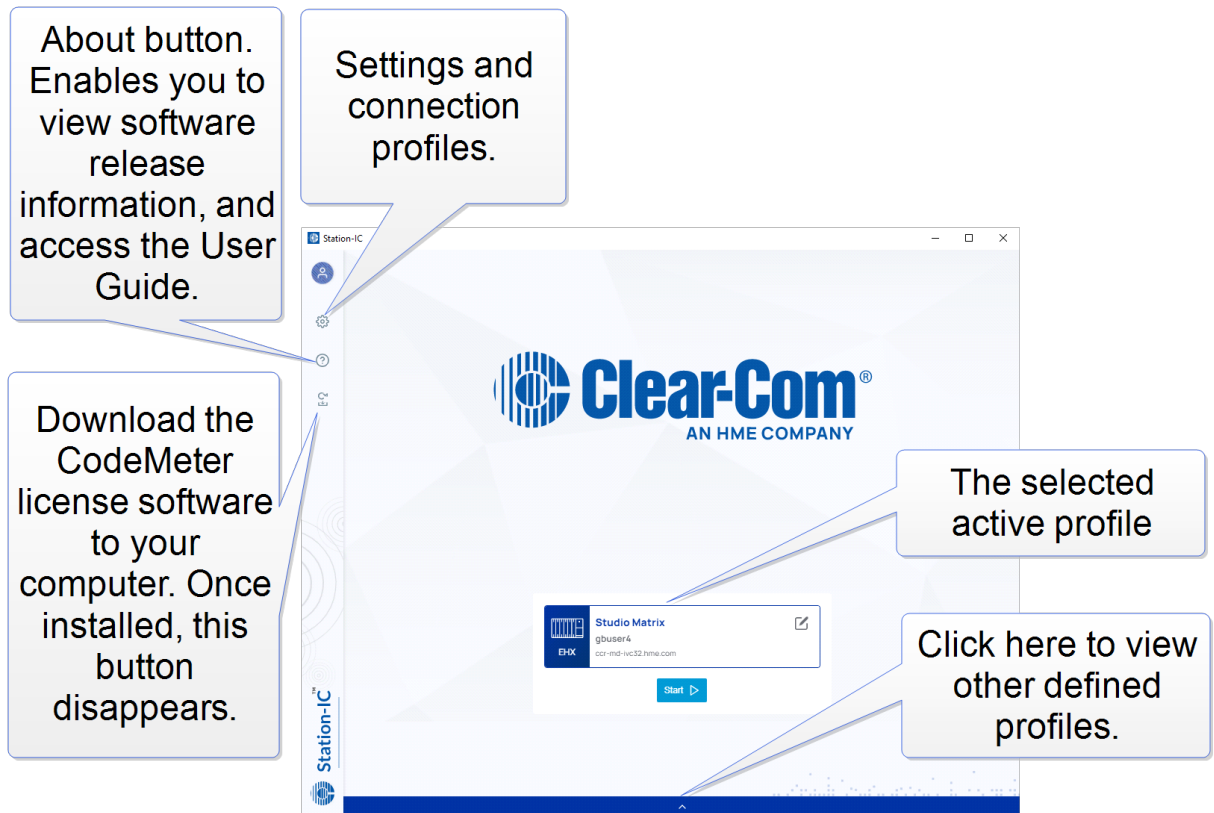
4.1   To begin using Station-IC:

Select **Start**. You will connect to the device specified by the selected profile. On first connection this will be the Clear-Com demo system or, in normal usage, the system last connected to.

4.2   Changing profiles

Click the profile selection drawer to see other profiles. Available profiles: 2 x Eclipse, 2 x LQ.
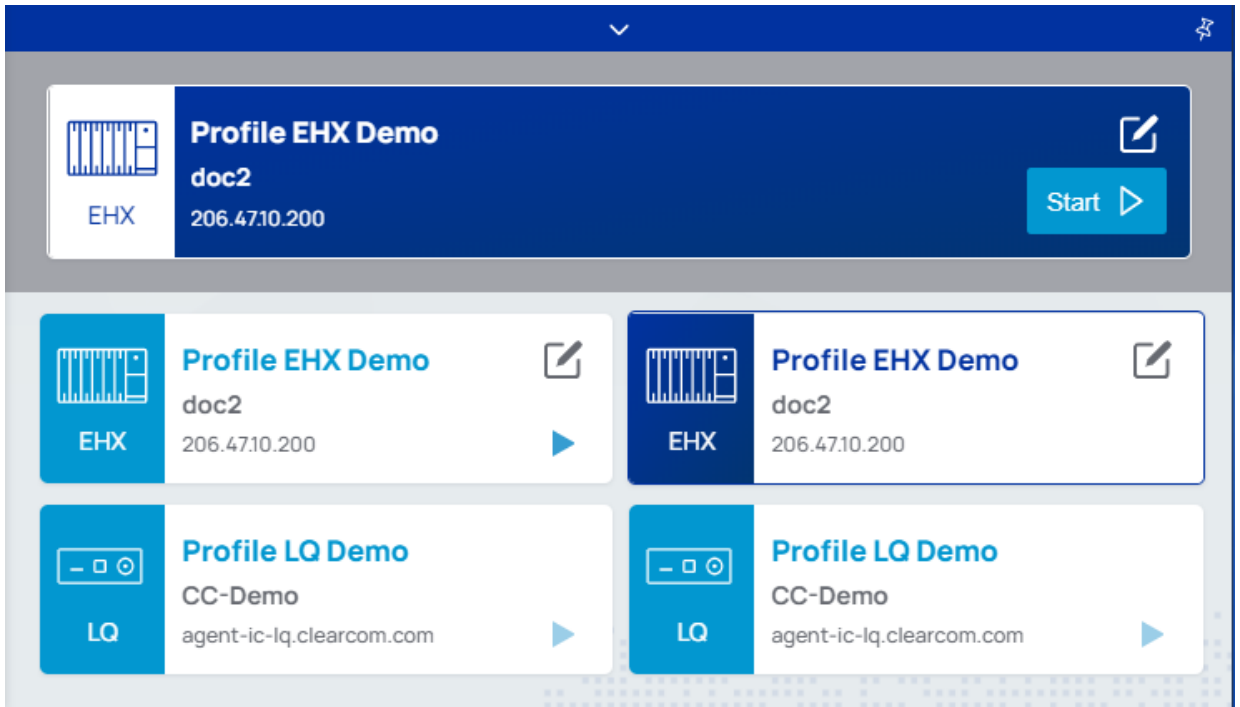
Note: *You may wish to edit the selected profile. See **Configuring Station-IC on page 24** .*

5 Configuring Station-IC
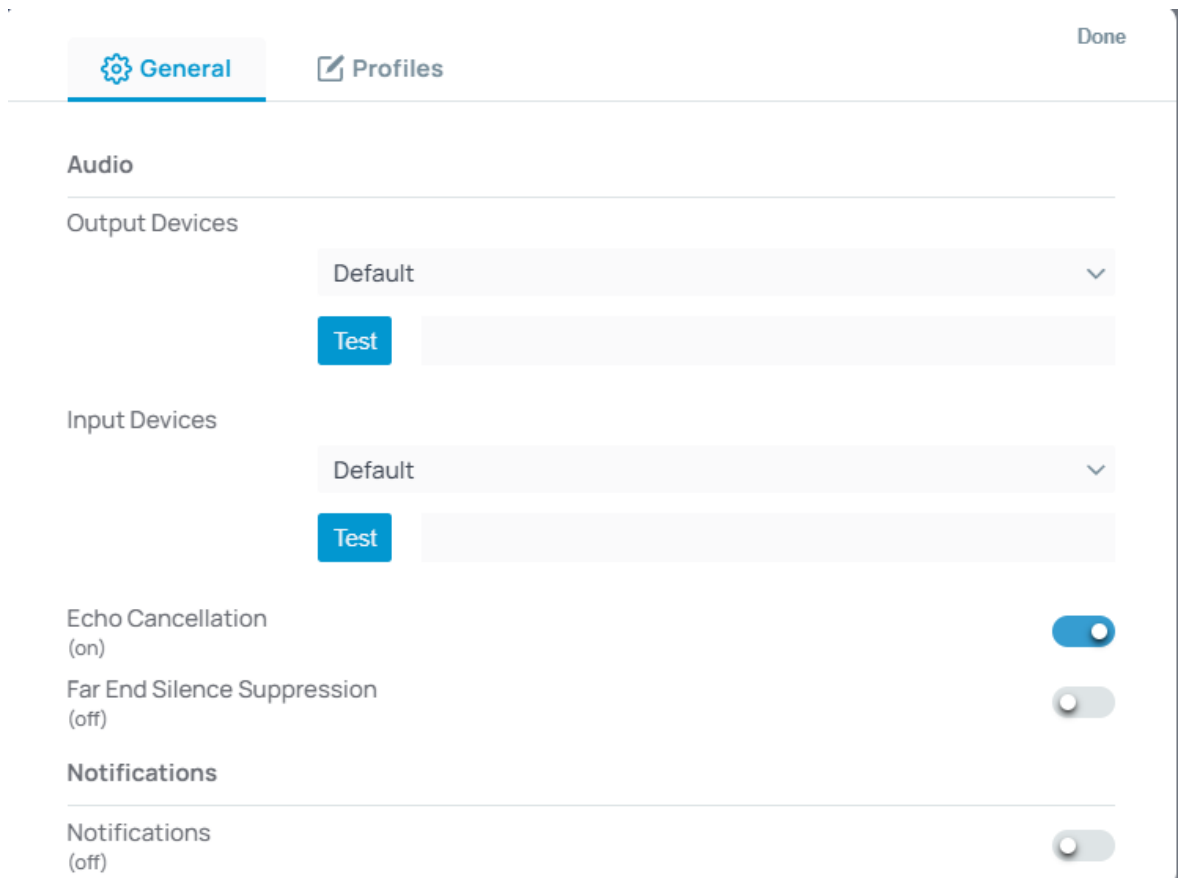
You can configure Station-IC as follows:

- General Settings. This includes audio input and output devices such as microphones and loudspeakers. It also includes audio quality settings, notifications, links to licensing tools and data usage diagnostics.

- Profiles. A profile is a collection of settings including user credentials, network address and port number, that enable you to connect with the required intercom host system. Profile settings must match corresponding settings in the host intercom system. Profiles are available for EHX and LQ.

5.1 Configuring General Settings

To configure Station-IC general settings:

1. Click on the Settings icon, ⚙ The Settings dialog screen appears

2. Ensure that the **General** tab is selected. Edit the settings as required, and then select **Done**.
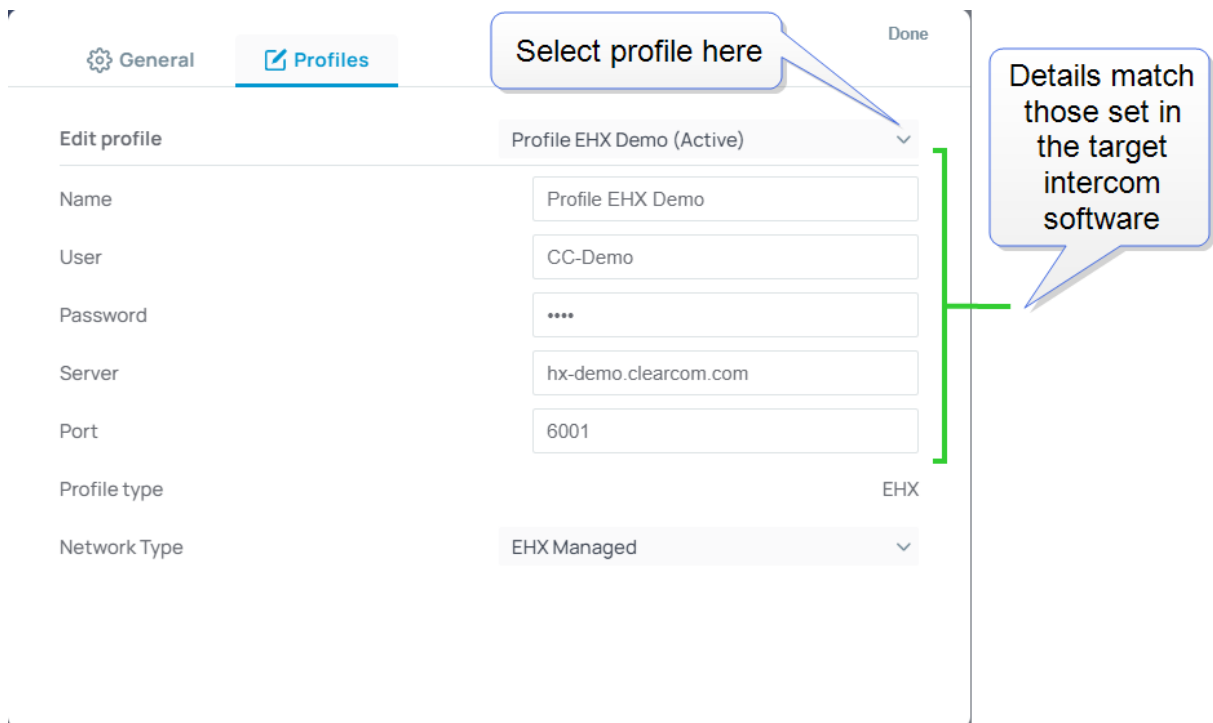
Note: *Click the dropdown arrow to select Input and Output audio devices from those available on your PC. Click **Test** to make sure that the audio devices are functioning.*

Note: *Echo Cancellation can reduce echo and thus improve audio quality.*
Far End Silence suppression, by stopping transmission when there is no audio on the line, can reduce your bandwidth consumption to the host intercom system.

5.2   Configuring an EHX Profile

To configure an EHX profile:

1. Click on the Settings icon,   ⚙   The Settings dialog screen appears:

2. Ensure that the **Profiles** tab is selected.

3. Edit the settings as required by the host intercom system, and then select **Done**.

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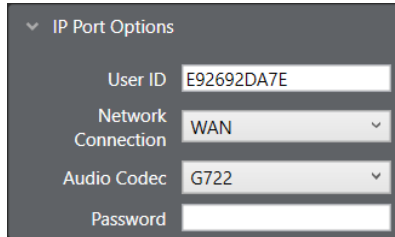
5.2.1 Network Type

Network type	Description/comments
LAN	LANs (Local Area Networks) usually cover a small area, such as an office, single building or business.
WAN	WANs (Wide Area Networks) cover a broad area and may include any number of local area networks (LANs).
Internet	Global network that may be used to connect local networks in various locations around the world.
EHX managed	Station-IC follows the port settings set in the EHX configuration software.

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5.2.2   Example EHX configuration:

Configuration is required in the host intercom software. This section contains a brief overview of required configuration. In the EHX configuration software you will set:

IP port options (User ID and Password)

Note: *The port type must be **Virtual Client** in the host EHX software.*

E-IPA Card Properties (IP address)
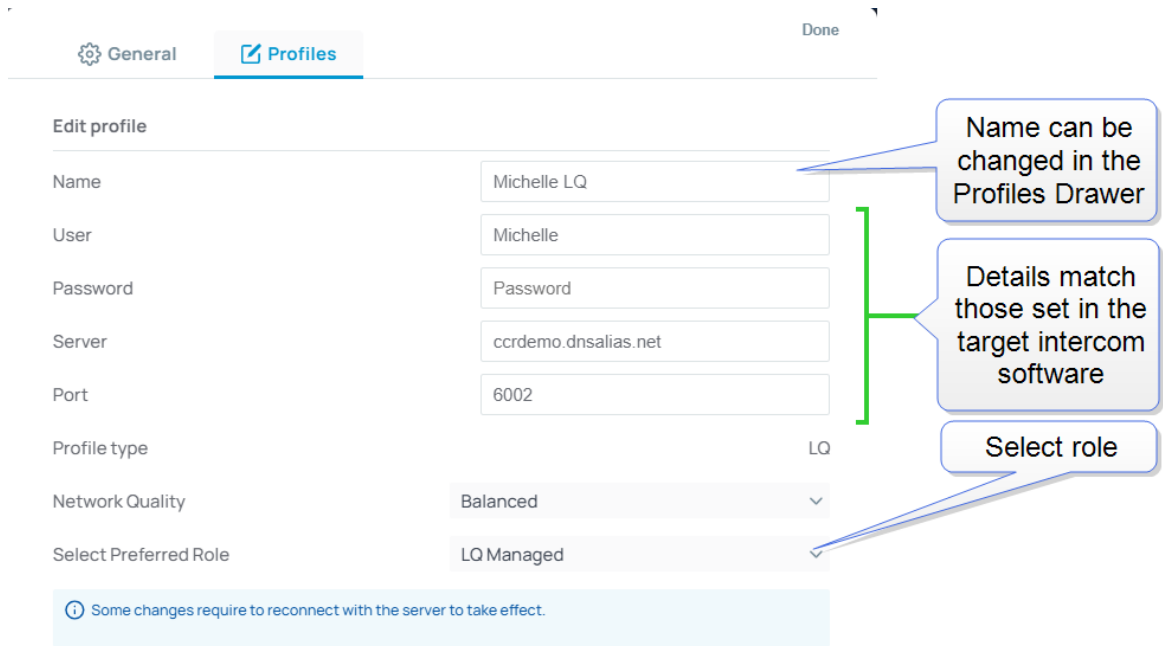
For more information please refer to the latest *Eclipse EHX Configuration Software User Guide*

5.3   Configuring an LQ Profile

To Configure an LQ Profile:

1. Click on the Settings icon, ⚙ The Settings dialog screen appears.

2. Ensure that the **Profiles** tab is selected:

3. Edit the settings as required by the host intercom system.

4. Select a role, and then select **Done**.

Note: *The role can be fixed by the LQ CCM interface. In this case, you will not be able to select a role as it will be allocated automatically by the host intercom system.*

Once you have accessed the system, a user selectable role is indicated by a star in the Station-IC keysets screen:

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Note: *If the role for your intercom client has been configured as fixed in the LQ CCM, you cannot select a different role. If you try to select a different role, you will see an exclamation mark in a triangle next to the role selection drop-down. This indicates that the role you have tried to select will not be applied to Station-IC.*

Network type	Description/comments
High	LAN only
Balanced	LAN or WAN
Low	Internet

5.3.1   Example LQ CCM Configuration

Configuration is required in the host intercom software. This section gives a brief overview of configuration details.

User credentials are configured in the **Accounts** page of the LQ CCM:

For more information on setting up the host system for Station-IC see:

- The Station-IC Knowledge Center (https://www.clearcom.com/station-ic-knowledge-center)

- The *LQ Series User Guide* available from the Clear-Com website.

6   Using Station-IC

Station-IC operates as a virtual intercom client to two Clear-Com systems.

- Eclipse HX (EHX) matrix systems

- LQ Series interfaces

The key display and operation is slightly different on the two systems.

Using Station-IC with EHX on page 31

Using Station-IC with LQ on page 39

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6.1   Using Station-IC with EHX

6.1.1   The Keysets Screen

When you connect to the device specified in your selected profile, the **Keysets** screen appears.
You can have up to 23 keysets.

6.1.2   Select Operation Mode

You can use Station-IC in two modes:

Normal Mode - you can resize the screen to any required size. The keysets will responsively adjust to fit the screen size.

Compact Mode - a small screen containing up to six keysets floats on top of the programs on the user's desktop. You can position the compact screen as required. This enables you to use Station-IC while you use your main screen for other applications. This screen appears on top of any other applications that are open.
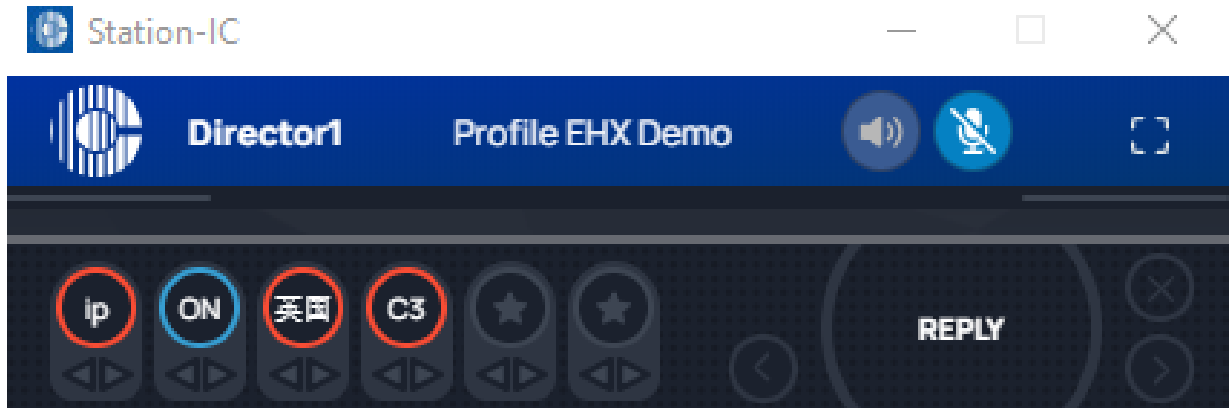
To select Compact Mode, click the [icon] icon.

To return to Normal mode, click the [icon] icon.

6.1.3   Using Keysets

A keyset is a set of controls associated with an audio assignment that enables you to communicate with an endpoint user or a conference/partyline. For example, you can talk or listen to an intercom panel, or take part in a conference (partyline) group. Keysets can also be used to talk to interruptible foldbacks (IFBs), controls such as call signals, GPIO and logic functions, and direct interface ports.

Each keyset can have:

- A green Listen key

- A red Talk key

- A volume indicator

- A label that identifies the keyset

Front View of Keyset

Listen

Audio volume level

Favorite icon

Camera 3

Rotate keyset

Label

Talk button

Back View of Keyset

Keyset Type

Label

Add or remove favorite

PL

Studio 4

Call

Audio volume

Rotate keyset

Call button

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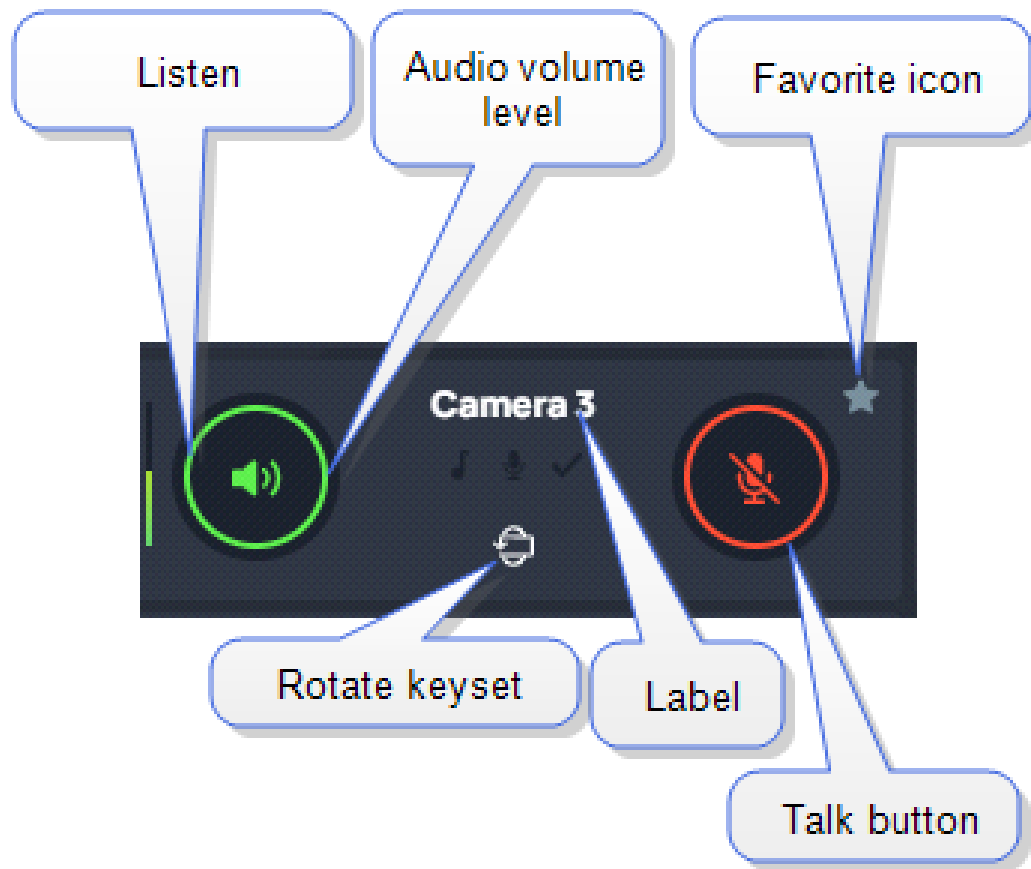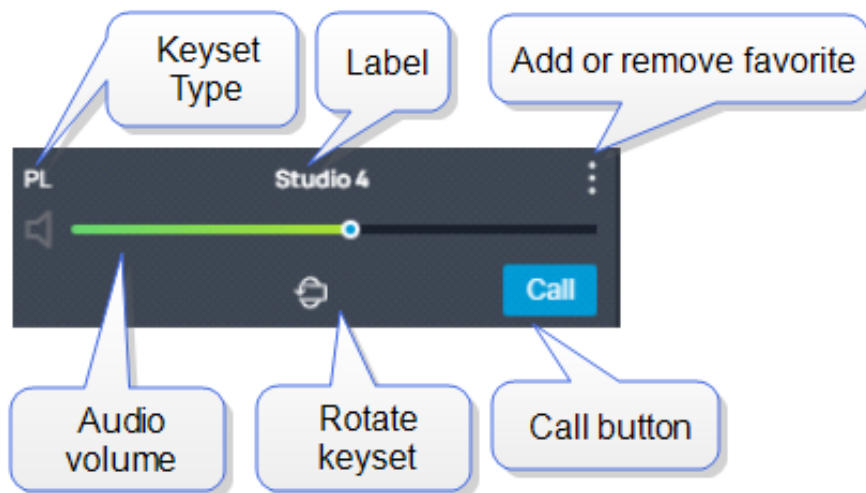
Using Talk and Listen Keys

Select the Red Talk or Green Listen key to talk or listen respectively.

When a Talk or Listen key is active, it is highlighted as follows, and .

Note: *If you select Talk or Listen with a brief mouse click the key will latch. This means that the Talk or Listen function remains active until you click the button again to deselect it.*

Note: *If you click and hold the Talk or Listen key, the key remains active until you release it. You will see Talk/Listen latch indicators at the top of the screen.*
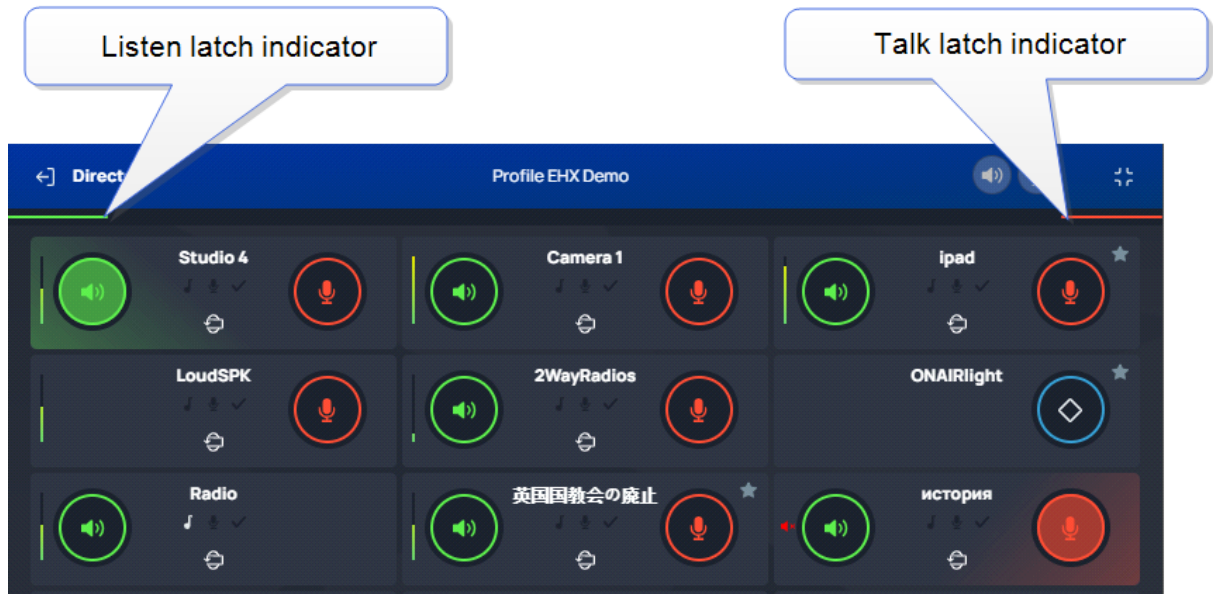
Eavesdropping

When another user has a key latched to listen to you, you will see an eavesdropping icon in the top bar. This shows you that someone is listening.
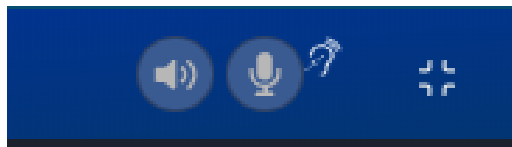
Adjusting Volume

To adjust the volume, click , and then use the green slider control to adjust the audio volume.

Muting microphones and loudspeakers
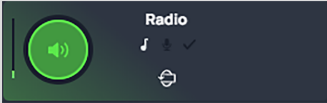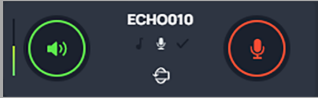
To mute all microphone and loudspeakers across all the keysets:

Click on or respectively. When all the microphones or all the loudspeakers are muted the icons display with line across them,

Call Signal

To send a call signal, click and then click .

Tally Icons

Tally Icon	Indication
Quaver	Audio presence tally
Microphone	In-use tally
Checkmark	Panel connected tally

Using the Reply Key

The **Reply** Key is located in the footer area of the **Keysets** screen. To view this area, click as shown below.

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The footer area expands to show the **Reply** key.

Note: *If you receive a call, the footer area will automatically expand and the **Reply** key will flash and display the name of the caller. When the call ends, the footer area will collapse.*

Use the arrows (<>) to navigate through stacked calls on the Reply key. X clears the top element in the call stack.

Control Key

Keysets can be configured in the host intercom system to send a control (General Purpose Output) to an external system. This allows you to control an external appliance such as an on-air light, or transmission to two-way radios.
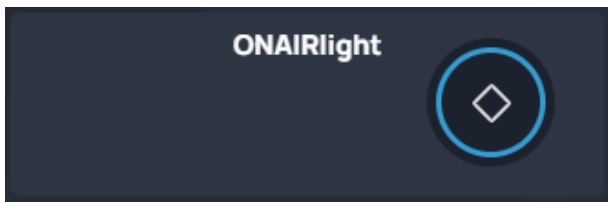
Alternative Key Configuration

Keysets do not have to be configured in the host intercom software to have two keys. They can have listen, talk, both or none.
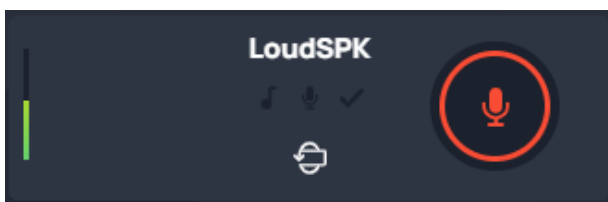
Using Compact Mode

To make any keyset appear in Compact Mode, click the **Favorite** icon at the top-right hand side of the keyset. Click the icon again to remove it from Compact Mode.

Favorite keysets have a Star icon at the top-right hand side of the keyset.
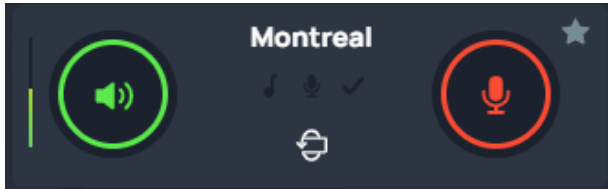
When in compact mode, the name of the key is shortened to two characters.

Talk (red indication) and listen (green indication) latched keys are indicated by a triangle, as well as the talk-latch indicators (the red/green bars).

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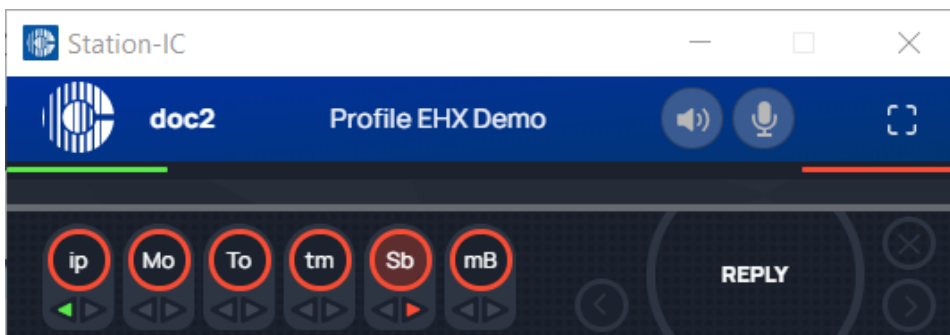
6.2   Using Station-IC with LQ

When you connect to the device specified in your selected profile, the Keysets screen appears.
The maximum is 24 Keysets.

6.2.1   The Keysets Screen
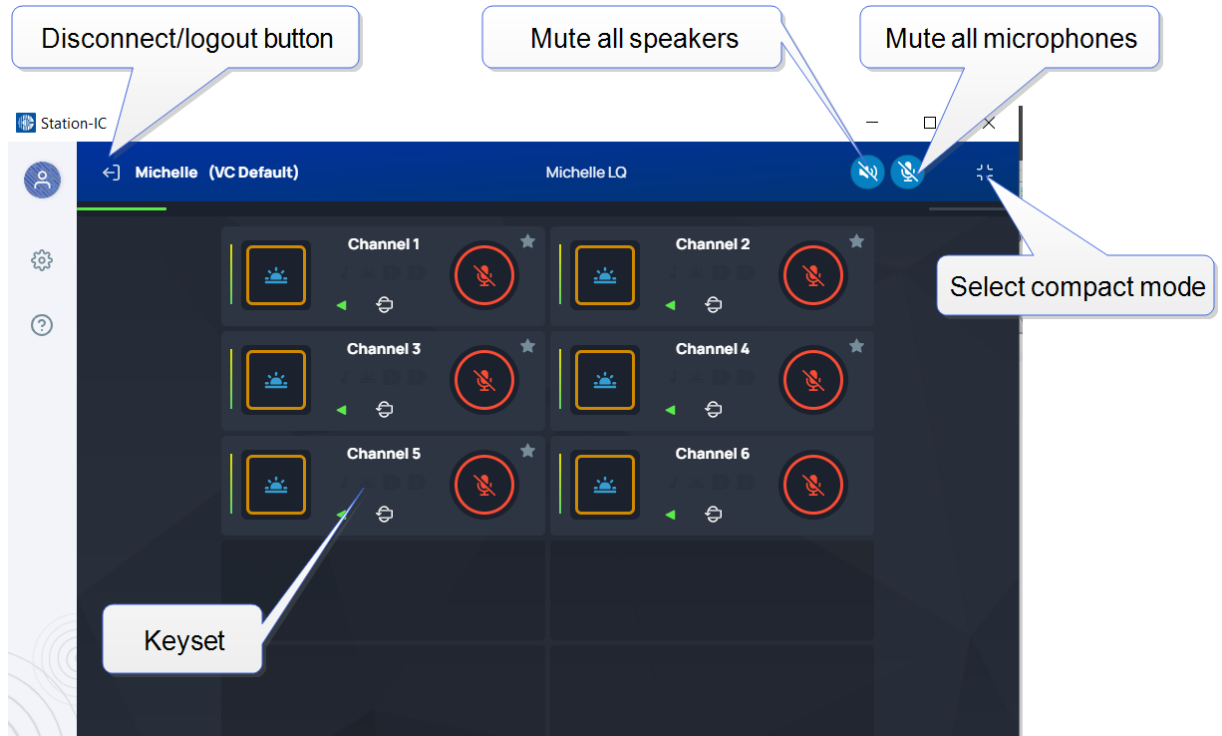
6.2.2   Select Operation Mode

You can use Station-IC in two modes:

Normal Mode - you can resize the screen to any required size. The keysets will responsively
adjust to fit the screen size.

Compact Mode - a small screen containing up to six keysets floats on top of the programs on
the user's desktop. You can position the compact screen as required. This enables you to use
Station-IC while you use your main screen for other applications. This screen appears on top of
any other applications that are open.
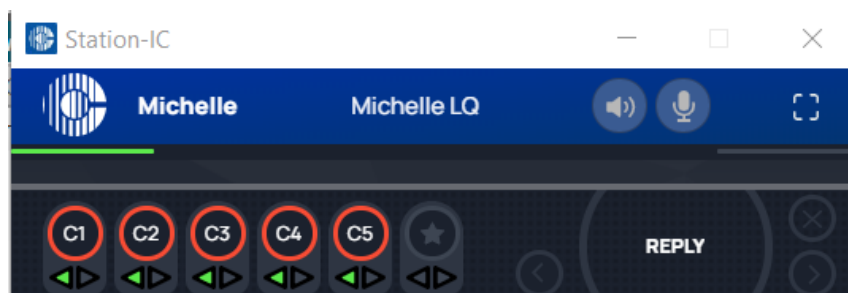
To select Compact Mode, click the ⤡ icon.

To return to Normal mode, click the ⟦ ⟧ icon.

6.2.3   Using Keysets

A keyset is a set of controls associated with an audio assignment that enables you to communicate with a channel (conference line).

Each Keyset can be rotated to reveal more keys and controls. Click 🔄 to flip the keyset.

Each keyset has four keys that can be configured as:

- Call signal
- Event signal (1 or 2)
- Talk key (red)
- Listen key (green)
- Remote mic kill (RMK)

Each key also has:

- A volume indicator
- A label that identifies the keyset

The positioning of controls on Keysets is controlled by the LQ software and can be changed as required.

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Front View of Keyset (default configuration)
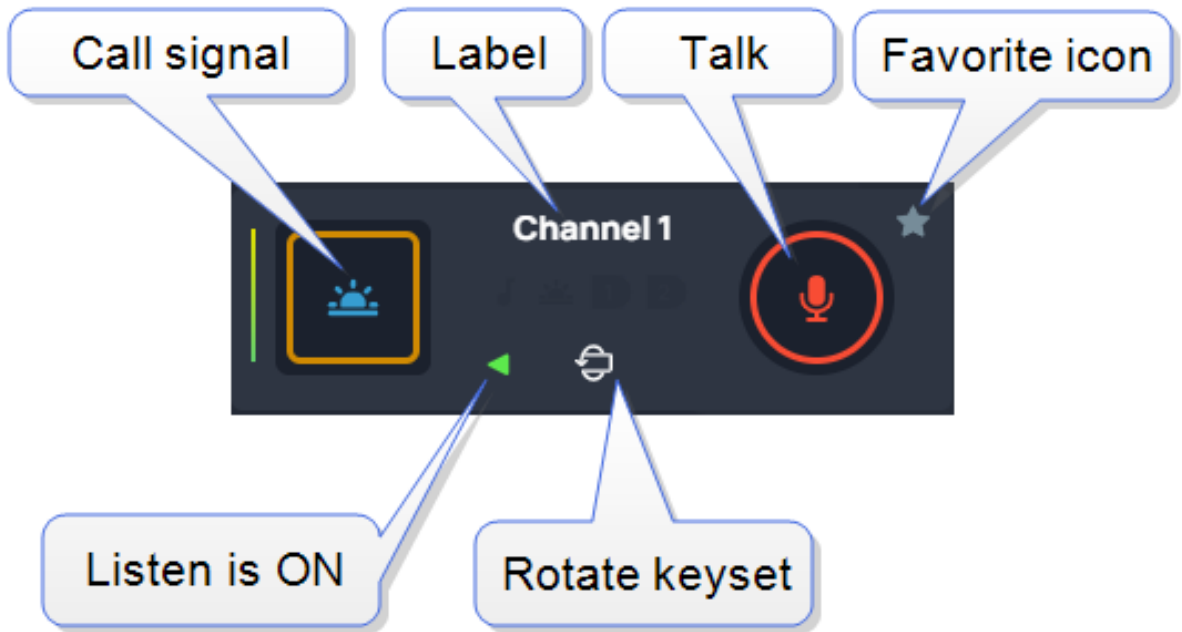
Back View of Keyset

When the Listen key is not activated it has a black background:
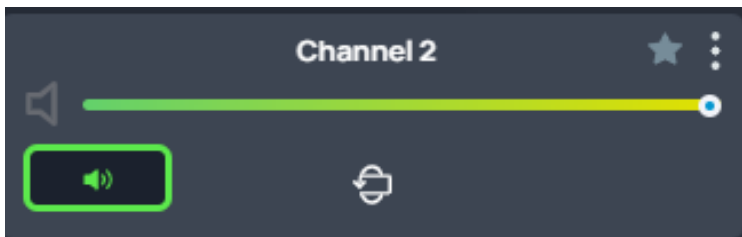
Note: *When **both** Talk and Listen keys are not activated, Call Signal, Events and RMK are not available.*

Note: *These graphics show the default configuration for Keysets. The system administrator may set up an alternative Keyset layout.*

Using Talk and Listen Keys

Select the red Talk button to talk.

When a Talk key is active, it is highlighted as follows, .

Every time you log into Station-IC for LQ, all the Listen keys are activated. If you don't want to hear a particular key, you must turn it off.

When you log out and back in to Station-IC, all Keysets will return to default configuration (all Listen keys ON).
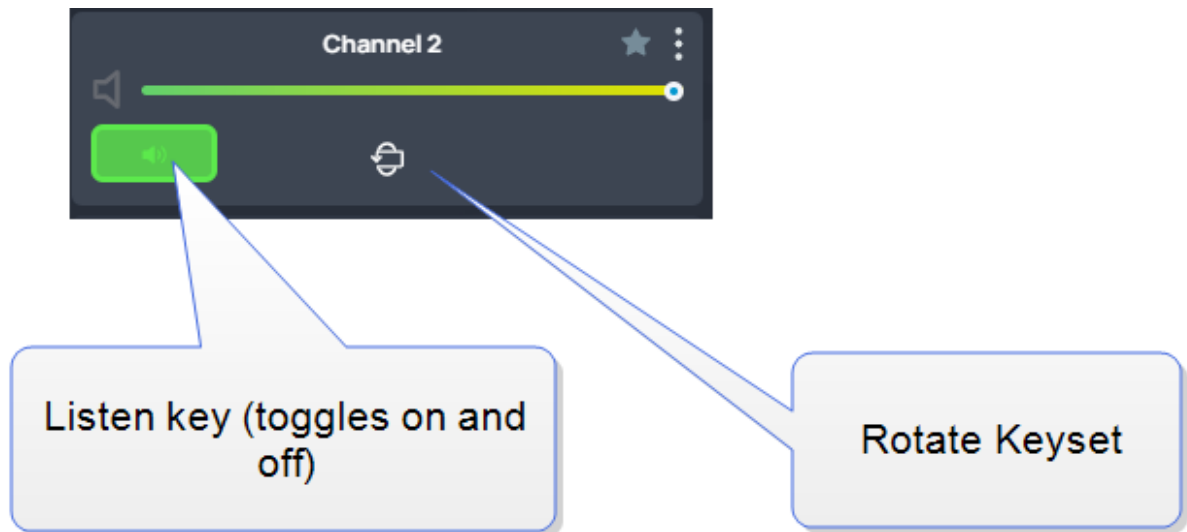
In the default configuration, the Listen key is latched activated.

Note: *If you select Talk or Listen with a brief mouse click the key will latch. This means that the Talk or Listen function remains active until you click the button again to deselect it.*

Adjusting Volume

To adjust the volume, click , and then use the green slider control to adjust the audio volume.

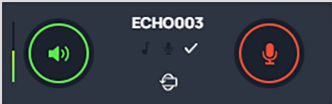## Muting microphones and loudspeakers

To mute all microphone and loudspeakers across all the keysets:

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Click on [icon] or [icon] respectively. When all the microphones or all the loudspeakers are

muted the icons display with line across them, [icons]
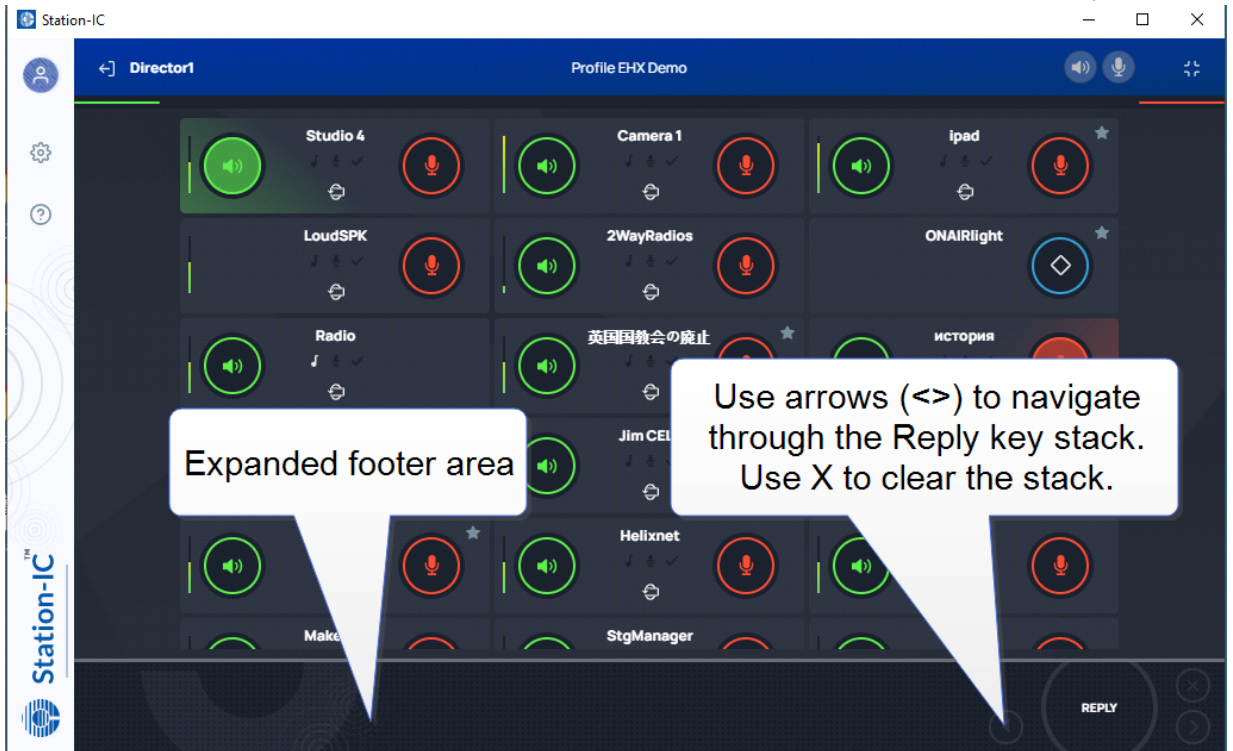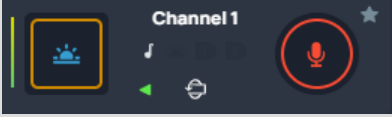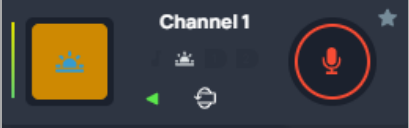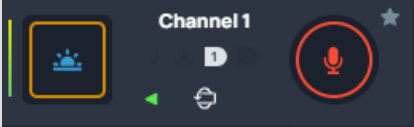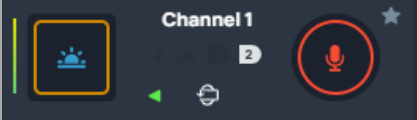
Call Signal

To send a call signal, click the call signal button on the front of the Keyset:

Note: *The call signal is not latchable. When you press it, you will see it light briefly. Once pressed, the call signal will remain active in the target channel for 10 seconds.*

Tally Icons

Tally Icon	Indication
Quaver	Audio presence tally
Call signal	Call signal active
Event 1	Event 1 is currently active
Event 2	Event 2 is currently active

Using the Reply key

The **Reply** Key is located in the footer area of the **Keysets** screen. To view this area, click as shown below.
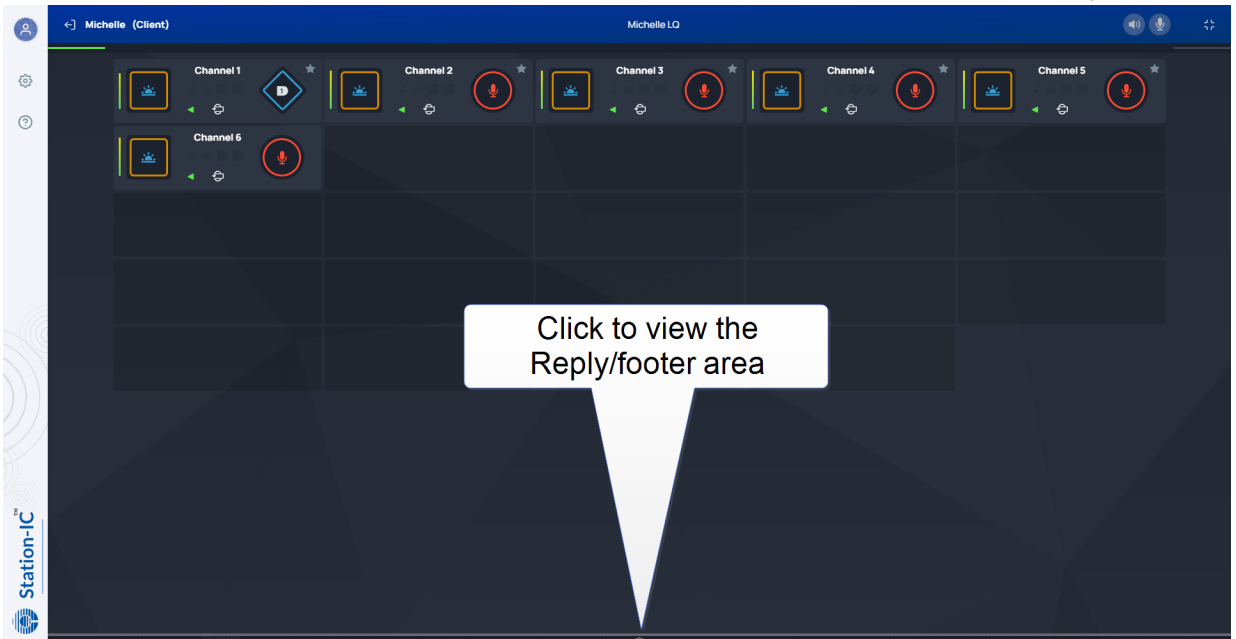
The footer area expands to show the **Reply** key.

Note: *If you receive a call, the footer area will automatically expand and the* ***Reply*** *key will flash and display the name of the caller. When the call ends, the footer area will collapse.*

Use the arrows (<>) to navigate through stacked calls on the Reply key. X clears the top element in the call stack.

Using Compact Mode

To make any keyset appear in Compact Mode, click the **Favorite** icon at the top-right hand side of the keyset. Click the icon again to remove it from Compact Mode.

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Favorite keysets have a Star icon at the top-right hand side of the keyset.

When in compact mode, the name of the key is shortened to two characters.
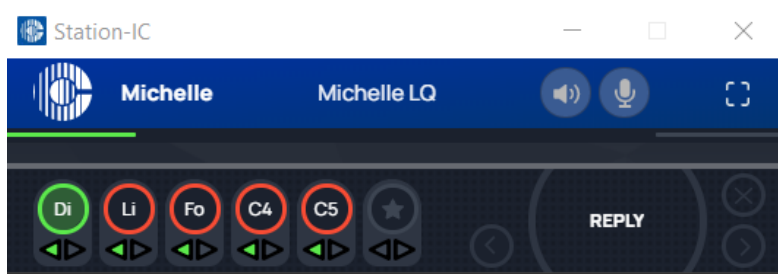
Talk (red indication) and listen (green indication) latched keys are indicated by a triangle, as well as the talk-latch indicators (the red/green bars).

6.2.4   Alternative Key Configuration

Station-IC keysets are configurable in the host intercom software (the LQ CCM).

Each keyset has 4 keys. Each key is assigned to a channel and different functions can be assigned to the channel:

- Talk
- Listen only
- Call
- Events (1 and 2)
- Remote mic kill (RMK)

Example configuration:
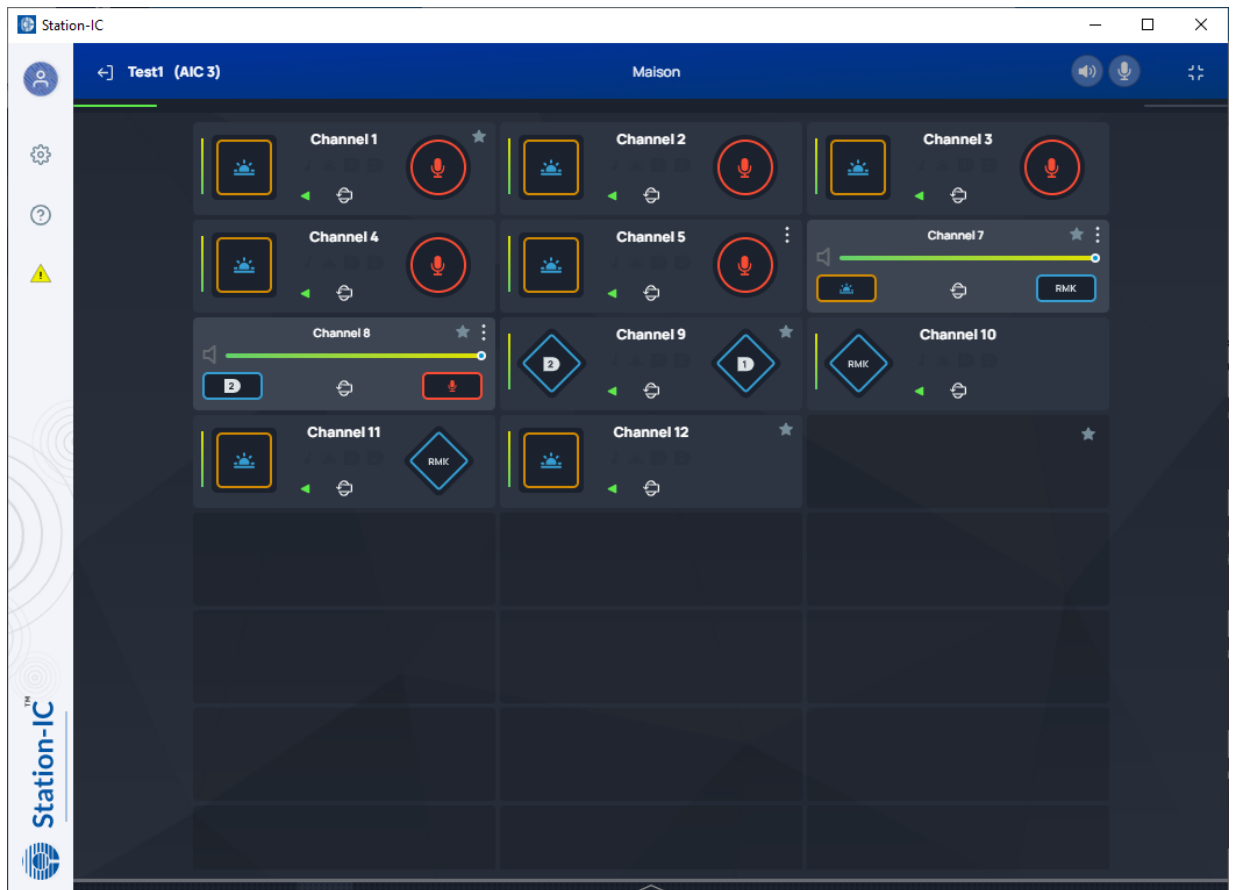
Note: *Call Signal and Event keys are not latchable. You will see them light briefly in Station-IC. Call signals and events will persist for 10 seconds in the target endpoint. If you want the signal or event to last longer than 10 seconds, you must press the key again.*

When in compact mode, the keys are determined according to the first key found on the keyset in the following order: Talk, Listen, Call, Event 1, Event 2, RMK.
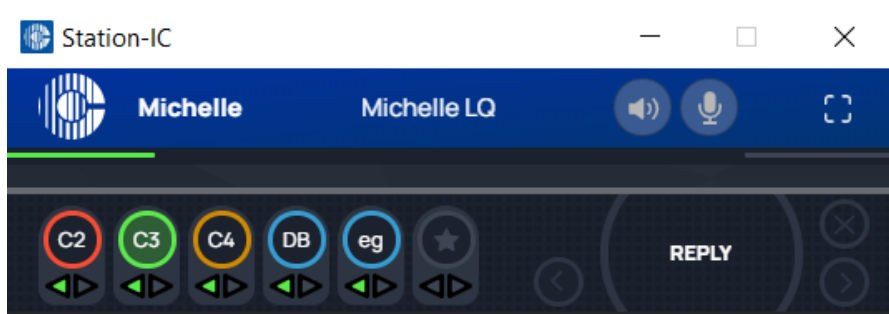
In the above example,

- C2 is a talk key

- C3 is a listen only key

- C4 is a call key

- DB and eg are Event and RMK keys respectively.

7 Troubleshooting

Ways to resolve any problems that may arise with Station-IC.

7.1 Connecting to the Matrix

In Settings/Connections ⚙ , check:

- Username

- Password (passwords are case sensitive)

- DNS Name or IP Address of the host intercom system

- Host intercom system network TCP/UDP port (default 6001)

7.2 Network Issues

If your network connection to the host intercom system fails:

- Check if you can ping the host intercom system

- If you can ping the host intercom system but cannot connect, the problem may be that the port that Station-IC uses on your local network is blocked. Check with your network administrator.

- If the problem is not with the network, it may be that your network connection is not providing enough bandwidth to support Station-IC.

7.3 Configuration Issues

Are you connecting to your own host intercom system? If you are connecting to your own Eclipse matrix or LQ unit, and the issue is not with your local firewall (the port is closed) then check the following details with your system administrator:

- Hardware: is an IVC-32-HX or an E-IPA-HX card installed and configured on the matrix?

- Software: is the matrix running on Eclipse EHX 12.1 or above? Is the LQ unit (all the units if you are connecting to a Link-Group) running LQ 4.2 or above?

- Eclipse configuration: is the Station-IC client correctly configured in this system?

- Check that the firewalls are configured to allow Station-IC to access. This includes the firewalls set on your PC and those set on the host intercom system.

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- LQ only: Role allocation; is another Role user still logged in to your Station-IC client? LQ (not EHX) is Role based. A Role may have many users, but only one user can log in to the Station-IC client at one time.

7.4 Poor Audio

This is caused by unreliable IP infrastructure. Query your IP provider and make sure that your network resources are suitably configured.

7.4.1 Audio Delay

This fault is due to the inherent delay between the matrix and Station-IC. But certain devices may make this worse if they do not support low latency. Check your device capabilities under Settings.

7.4.2 Unwanted Echo

Some devices do not support acoustic echo cancellation (AEC) when in speaker mode. If one party has a device that does not support AEC, make sure that he uses a headset. Ask the other party to check his device capabilities under Settings.

7.5 Installation Issues

Windows installation error:
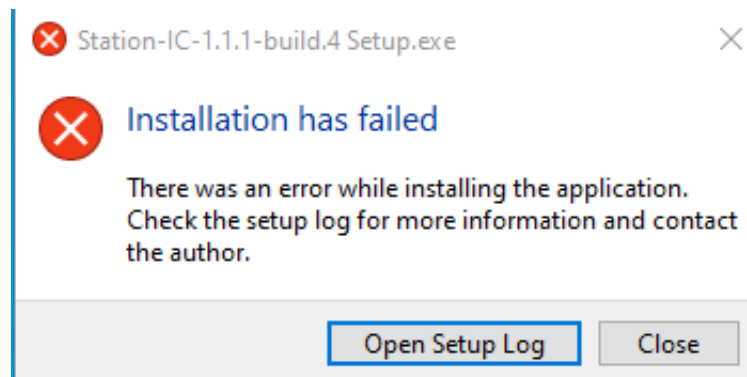
If you see this popup, follow the instructions and click '**Open Setup Log**' for more information.

Clear-Com strongly recommends re-installing Station-IC if you are prompted with a message of failed installation.

7.6 Any Other Issues

Please consult the Clear-Com solution finder: Clear-Com Solution Finder.

8   Technical Specifications

8.1   Software Applications

Software Applications	
Eclipse	**Host Connection Profiles**: 2 **Keysets**: 23 **Assignable**: Talk, Listen and Controls in EHX **Talk/Listen**: Tap to latch (if allowed), push for momentary Call signal: Initiation and indication **Tally Indication**: Audio Presence, In-Use, Panel/Client Connected **Reply key**: 1 - Shows incoming Point-to-Point talk for immediate response. Hidden by default, pops up and provides operating system notification **Character Support**: Arabic, Cyrillic, Hangeul, Hebrew, Hiragana, Kanji, Katakana, Latin
LQ	**Host Connection Profile**s: 2 **Keysets**: 24 **Assignable**: per assigned channel to Talk, Listen, Call, Control Events and Remote Mic Kill in LQ's CCM **Talk/Listen**: Tap to latch (if allowed), push for momentary **Call signal**: Initiation and Indication Tally Indication: Audio Presence, Call, Control Events 1 & 2 **Reply Call key**: 1 - Shows incoming Call signal on a Channel for immediate response. Hidden by default, pops up and provides operating system notification **Character Support**: Latin
LQ in HelixNet Link-Group	Station-IC LQ functionality is available when LQ is linked in a HelixNet Link Group.

8.2   Audio Settings

Audio Settings
• Assignment to any operating system input and output
• Audio test capability for computer audio
• Audio level meters
• Far-end Silence Suppression
• Echo Cancellation

8.3   Audio Controls and Indications

Audio Controls and Indications
• Talk/Listen indication and level meter
• Talk/Listen master mute
• Listen level per key/keyset
• Master level and balance by operating systems

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8.4   Minimum System Requirements

Minimum System Requirements	
Host Intercom System	• Eclipse 12.1 or above with E-IPA (or IVC-32) • LQ 4.2 or above
Windows	Version 8 (minimum), Version 10 or above (recommended) Computer and Processor: 1.6 GHz, 2 core (min) Memory: 4.0 GB RAM (min) Hard Disk: 3.0 GB (available) Display: 1024 x 768 (min)
MacOS	Version: 10.14 (min), 10.16+ (recommended) Computer and processor: Intel Duo Core Processor (min), Apple M1 Memory: 4.0 GB RAM (min) Hard disk: 1.5 GB (available) Display: 1280 x 800 (min)

Note: *Please contact your Clear-Com representative for use with older Eclipse versions*

8.5   Audio

Audio	
Eclipse	
Audio Encoding	G.722 – Wideband - 7 kHz audio-coding within 64 kbit/s
Frequency Response	50Hz-7kHz
LQ	
Audio Encoding	Opus – Configurable 12kHz-20kHz within 16-128kbit/s
Frequency Response	100Hz-12kHz, 100Hz-20kHz

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Audio	
LQ in HelixNet Link-Group	
Audio Encoding	WavPack – Fixed Wideband 10kHz within 320kbit/s
Frequency Response	20Hz-10kHz

Note: *Frequency Response is additionally filtered depending on use*

8.6 Latency

Latency is measured on local network with user selected network presets which induce latency with processing and Forward Error Correction for network resilience. Measurements are averages that include inline adaptive Echo Cancellation and Silence Suppression. Final latency performance is heavily dependent on configuration, computer, audio peripherals and network.

Eclipse/Station-IC Latency	
Windows	Station-IC to 4-wire: **LAN** 85 ms, **WAN** 92 ms, **Internet** 117 ms 4-wire to Station-IC: **LAN** 135 ms, **WAN** 158 ms, **Internet** 216 ms Station-IC to Station-IC: **LAN** 220 ms, **WAN** 245 ms, **Internet** 333 ms
MacOS	Station-IC to 4-wire: **LAN** 109 ms, **WAN** 115 ms, **Internet** 145 ms 4-wire to Station-IC: **LAN** 85 ms, **WAN** 107 ms, **Internet** 177 ms Station-IC to Station-IC: **LAN** 185 ms, **WAN** 205 ms, **Internet** 305 ms

LQ Series to Station-IC Latency	
Opus Latency (With LQ Local mix at default High Quality)	
Windows	Station-IC to 4-wire: **High** 60ms, **Balanced** 90ms, **Low** 110ms 4-wire to Station-IC: **High** 115ms, **Balance**d 115ms, **Low** 115ms Station-IC to Station-IC: **High** 197ms, **Balanced** 202ms, **Low** 246ms
MacOS	Station-IC to 4-wire: **High** 67ms, **Balanced** 88ms, **Low** 109ms 4-wire to Station-IC: **High** 76ms, **Balanced** 76ms, **Low** 76ms Station-IC to Station-IC: **High** 94ms, **Balanced** 140ms, **Low** 152ms
WavPack Latency - (when LQ Series are linked to HelixNet Stations)	
Windows	Station-IC to LQ 4-wire: **High** 106ms, **Balanced** 106ms, **Low** 106ms 4-wire to Station-IC: **High** 115ms, **Balanced** 115ms, **Low** 115ms Station-IC to Station-IC: **High** 177ms, **Balanced** 187ms, **Low** 223ms
MacOS	Station-IC to 4-wire: **High** 109ms, **Balanced** 109ms, **Low** 109ms 4-wire to Station-IC: **High** 76ms, **Balanced** 76ms, **Low** 76ms Station-IC to Station-IC: **High** 171ms, **Balanced** 183ms, **Low** 176ms

8.7 Bandwidth

Bandwidth, Opus and WavPack (LQ only). For EHX see Network Ports in this chapter.	
Eclipse	• 140 kbps from Eclipse to Station-IC • 140 kbps from Station-IC to Eclipse With Far-end Silence Suppression & bidirectional Forward Error Correction
LQ	Low quality: • 40 kbps from LQ to Station-IC • 160 (max) kbps from Station-IC to LQ Balanced quality: • 70 kbps from LQ to Station-IC • 280 (max) kbps from Station-IC to LQ High quality • 100 kbps from LQ to Station-IC • 400 (max) kbps from Station-IC to LQ
LQ in HelixNet Link-Group	• 300 kbps (max), Station-IC to LQ • 1200 kbps (max), LQ to Station-IC

8.8 Network Specifications (Version 1.0)

Network Specifications	
Network Protocols	Ethernet IPv4 – Unicast Audio and Control Layer 3 – IP Routable DNS – Domain Name Server HTTP – License Transfer HTTPS – Optional Usage Data / Diagnostic Service RTP – Audio Transport G722 – Audio Codec Opus - Audio Codec for LQ WavPac - Audio Codec for LQ in HelixNet Link-Group AES-128 – Audio and Control Encryption
Network Connectivity	Ethernet, Wi-Fi, 3G, 4G, LTE (as available on device)

8.9 Network Ports

Network Ports	
Unicast	Port **443** TCP – Optional Usage Data to Diagnostic Service Port **6001**(configurable) TCP – System Management to/from Station-IC Port **6001**(configurable) UDP – Audio Streams to/from Station-IC Port **8080** TCP – Online Licensing Activation to/from CodeMeter
QoS Tags	DSCP=41, Assured Forwarding (AF)

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8.10   Network Jitter Tolerance

Software Type	Jitter Tolerance
Eclipse	Station-IC Rx: LAN: <=160ms, WAN: <= 400ms, Internet: <= 600ms E-IPA Rx: Configurable LAN: <=12ms, WAN: <= 120ms, Internet: <= 200ms
LQ	Station-IC Rx: **High**: <=400ms, Balanced: <= 500ms, **Low**: <= 600ms . LQ Rx: (Configurable) **High**: <=60ms, **Balanced**: <= 60ms, **Low**: <= 100ms, **Very Low**: <= 200ms
LQ in HelixNet Link-Group	Station-IC Rx: High: <=400ms, Balanced: <= 500ms, Low: <= 600ms LQ Rx: <=128ms automatically adjusted to network performance

8.11   Endpoint Resource Use

Software Type	Resource Use
Eclipse	1 port on IPA/IVC card
LQ	1-3 See LQ Resource Estimator
LQ in HelixNet Link-Group	1

8.12   Theory of Operation

Eclipse or LQ Host Intercom System (the server) provides a network connection and includes user credentials for Station-IC (the clients) in its database. Server allows use of DNS and declaration of External IP address of an optional third-party network Router. Client logs onto the server with its credentials and establishes an encrypted RTP audio stream(s) via UDP and control via TCP. Single UDP and TCP port is required in each direction. Eclipse systems route and mix all audio for the client centrally and stream a complete mix to the clients running on a Windows or MacOS computer. LQ systems intelligently route audio ethernet packages dependent on loudest talkers and listen levels to be mixed on the client.

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8.13   Privacy

Station-IC optionally collects usage data to troubleshoot and continuously improve the application. The data collected is limited to Station-IC and the use of connected equipment and is transferred to Clear-Com managed diagnostics cloud servers. The data collected does not include any content or personal data. The data collected is stored and managed according to the Clear-Com Privacy Policy. Data-Usage and related communication to Clear-Com diagnostic cloud services can be disabled by the customer.