HOME

User Manual

Version: 1.0

Exported on: 22 February, 2024

To obtain the latest documentation for Lawo products, please visit:

https://docs.lawo.com/

Table of Contents

This user manual describes the general operation of HOME.

1 HOME - General Information

Before you start working with HOME, please read the following information.

- HOME - About this Documentation

1.1 HOME - About this Documentation

This documentation represents the latest state of information. Subject to availability, manuals covering former versions are provided via the Lawo Download-Center (after login).

General Safety & Important Notes

When working with our hardware components, it is important to read and observe all of the instructions provided in the "General Safety Information for Lawo Equipment" booklet delivered with your devices.

The same symbols are used in the product documentation so please look out for them as follows. The letter in brackets before the signal word denotes the language version: e.g. (E) = English.

(E) WARNING - warnings or mandatory actions.

These instructions **must always be observed** to ensure the personal safety of the user, and to protect your system and the work environment from potential damage.

(E) IMPORTANT NOTE - important information for proper functioning.

Other Informational Icons

When reading about our software or the general operation, you may also see the following icons.

General information and points of clarification. Please take note.

Useful tips and shortcuts. Feel free to follow if you like.

Notes. To avoid getting stuck, make sure you follow.

Important actions. To keep the system operational, you should always follow.

Further Information

Mechanical drawings and data sheets (including weights and dimensions) are available from the Lawo Download-Center (after login). We also recommend that you carefully observe the release notes for your product/system.

Lawo User Registration

For access to the Lawo Download-Center, and to receive regular product updates, please register at: www.lawo.com/registration.

Contact Details

If you need further assistance, the Lawo Support Department can be contacted by email at support@lawo.com, or by telephone during normal working hours - please visit the Support area of the Lawo website for the most up-to-date contact details.

2 HOME - Getting Started

If you are new to HOME, then please read the following topics to get started.

- HOME - Introduction
- HOME - First Steps
- HOME - Login Credentials

2.1 HOME - Introduction

HOME is an IP management technology from Lawo.

In Lawo systems, HOME defines all of the network routing required for control and streaming. Thus, it configures the management network connections and sending/receiving streams between any two registered devices.

All settings are adjusted using the HOME Web UI. This is accessed by entering the IP address of the HOME server into a web browser and then signing in. The computer you use must be part of the same network and subnet as the HOME server.

The HOME Web UI has four main pages:

- **Devices** - lists all devices known to HOME. From here you can label a device, define its network ports and configure its senders and receivers (visible in Stream Routing).
- **Stream Routing** - manages the streaming connections. From here you can connect a sender to a receiver, or interrogate the existing connections.
- **Snapshots** - lists the system snapshots. Snapshots can be used to create a backup of the complete configuration (i.e. all devices and stream routing).
- **Settings** - provides access to more advanced settings.

2.2 HOME - First Steps

This topic describes how to open a HOME Web UI session.

Prerequisites

All Lawo systems come with HOME pre-installed onto a suitable host server platform. In most cases, this platform is a server cluster consisting of 3 single servers. In some cases, HOME is shipping pre-installed as a single instance on the mc² Gateserver. Whether the host server platform is a cluster, or a device that is included with the system hardware, is dependent on the product and its integration.

The HOME server must be correctly installed and connected to the network. Then, you can use HOME to connect devices that you wish to manage.

Computer / Browser Requirements

A connection to HOME can be opened from a service computer connected to the same network as the HOME server.

To run the Web UI, your computer MUST meet or exceed the following requirements:

- **CPU**: Intel i3 or higher
- **RAM**: 64 MB
- **Network Interface Card**: operating at 100 or 1000 Base-T
- **Screen Resolution**: >= 1024 x 786 (FullHD is recommended)
- **Web Browser**: Microsoft Edge, Google Chrome, Apple Safari or Mozilla Firefox. Please install the latest version of the browser for best performance.

For the best user experience, we recommend running HOME in a browser as used in Lawo's labs (e.g. Google Chrome v100.x or higher).

Opening the HOME Web UI

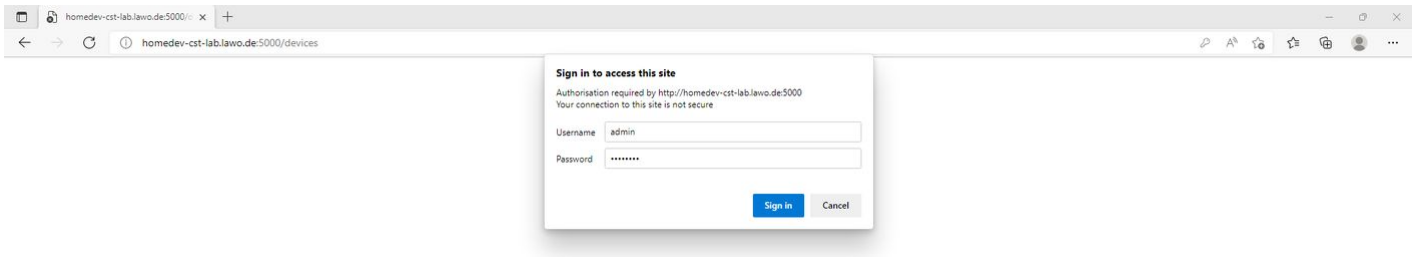
Follow the steps below to open a web UI session.

1. Connect your computer's LAN port to the network.
2. Configure the network settings for your computer's Network Interface Card (NIC).

- The IP address must be unique, and set within the same range as that of the HOME servers management NIC(s).
- The subnet masks should be identical.
- A default gateway is required if data packets are to be redirected. For example, if you are connecting via a network switch with Layer 3 routing capability. If redirection is not required, then the default gateway can be left blank.

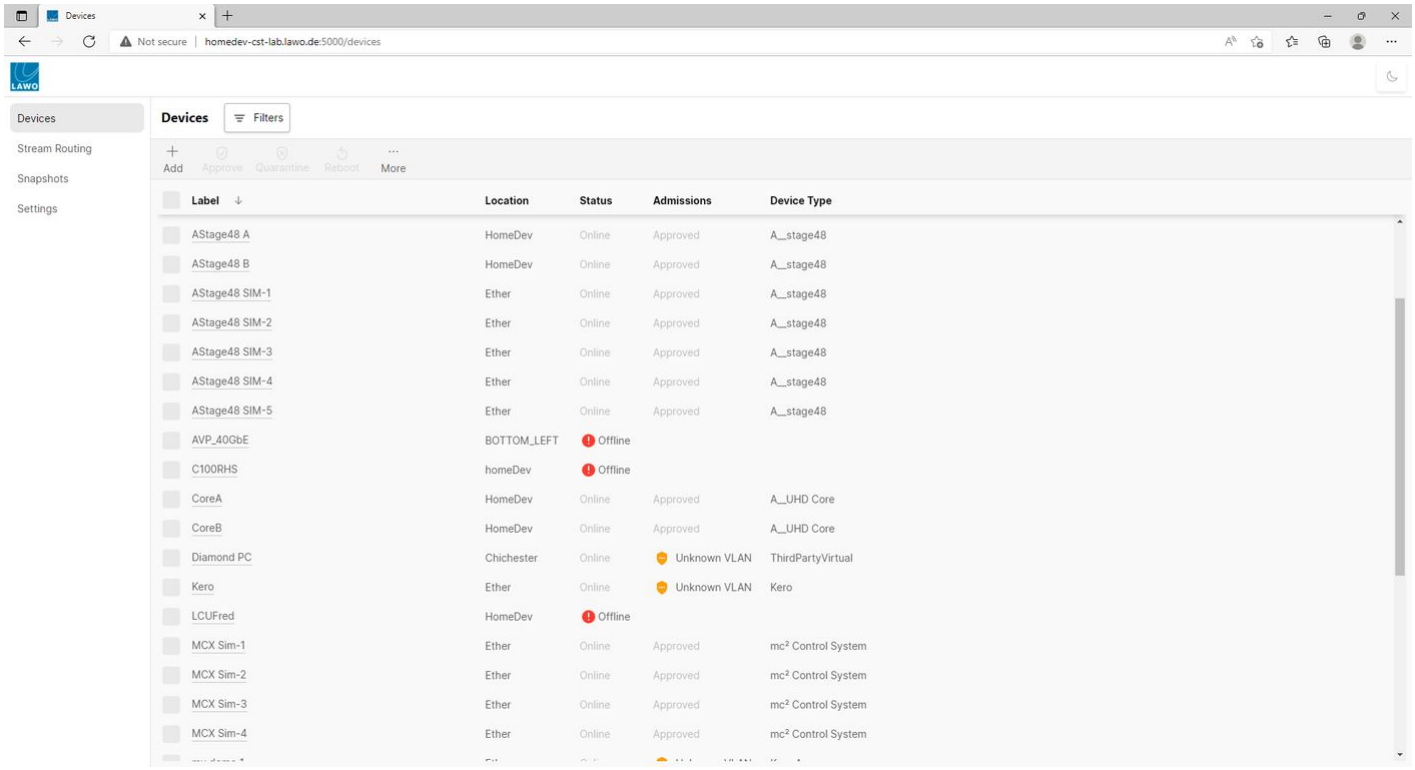
3. Open your web browser application and type in either `http://IP address:5000/` or the domain name of the HOME server, followed by port `:5000`.
4. Press Enter.

Following a successful connection, the "Sign in" screen appears.



5. Enter the Username and Password as follows:
   - **Username** = admin
   - **Password** = password
6. Click on the **Sign In** button.

Following a successful sign in, the HOME “Devices” page appears.



Troubleshooting

Q: Why does the “Sign in” screen not appear?

A: If the “Sign in” screen does not appear, then there is a problem with the network communication to the HOME server.

- Check that the HOME server is powered and connected to the network.
- Check that your web browser meets the system requirements. If in doubt, try a different browser.
- Check the network cabling and IP settings of the computer’s LAN port and HOME server.

Q: Why do I see the message “401 Authorization Required” after signing in?

A: This message appears if the sign in process fails.

- Re-fresh your browser to return to the “Sign in” screen.
- Enter the correct Username and Password, and click on **Sign In**.
- The Username and Password are case sensitive.

2.3 HOME - Login Credentials

To access the HOME Web UI, you must be signed in as a user.

In the current release, HOME supports a single user (admin). There is no way to change the user password and so you must sign in using the following credentials:

- **Username** = admin
- **Password** = password

Following a successful sign in, the admin user has full access to all of HOME's pages and functions.

In subsequent releases, it is planned to expand the user management system.

3 HOME - Operating Principles

This chapter describes how to use the HOME Web UI.

3.1 HOME - Web UI Overview

The Web UI always opens with the “Devices” page.

All pages use the same operating principles and are divided into the following areas.

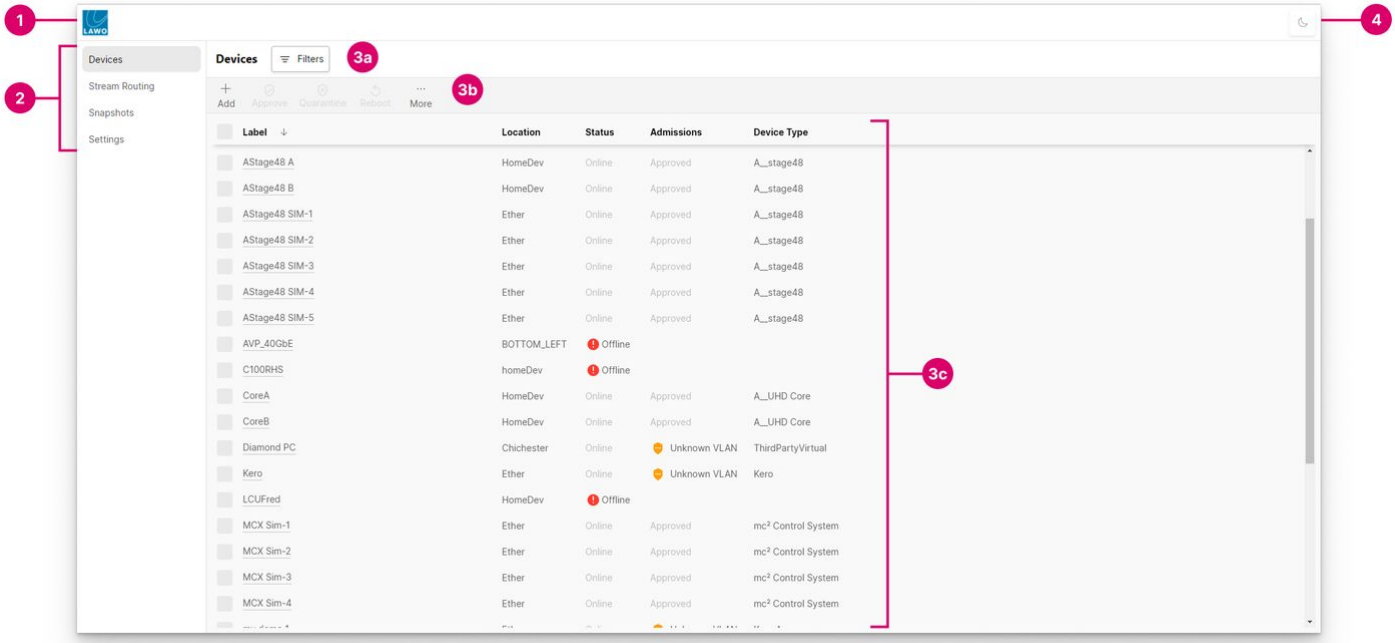
1. LAWO Logo – click to view information about the UI version and to get directed to the logging and debug screens.

2. Page Menu – click to open a different page.

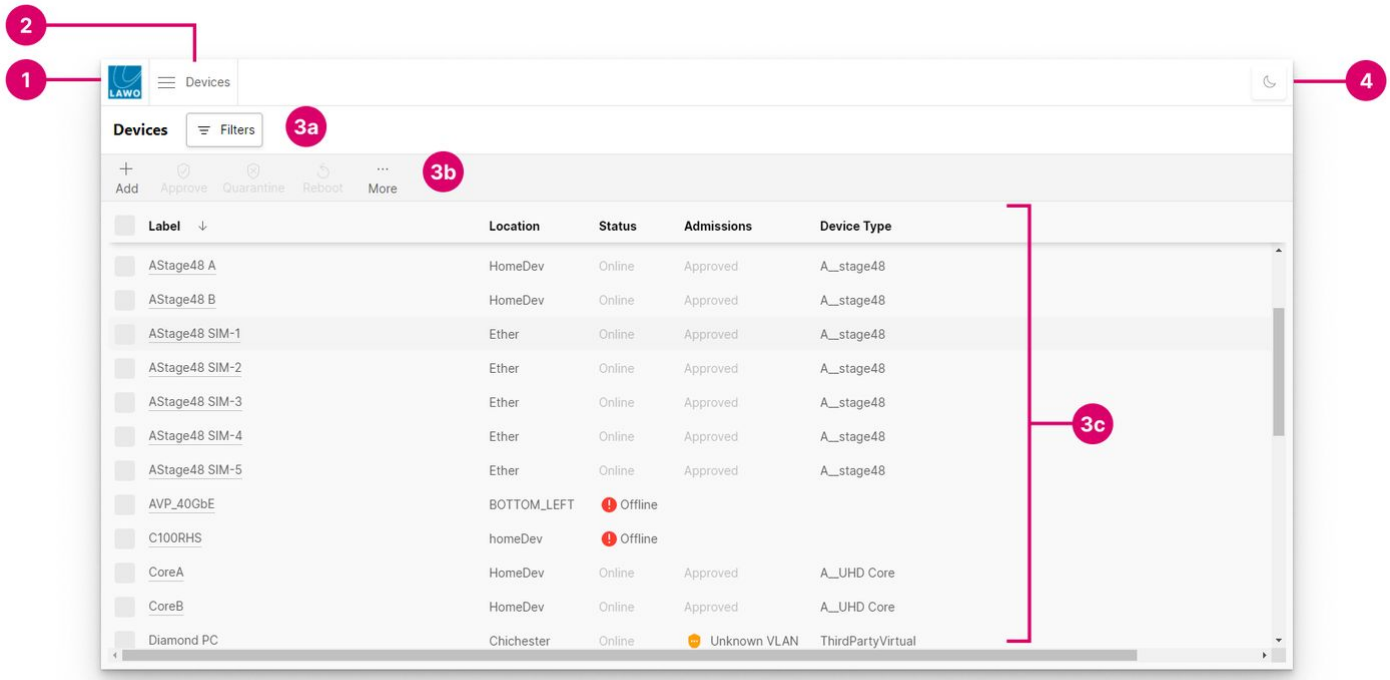
3. Working Area – displays the page name and any filters (3a), all available functions (3b) and the page contents (3c).

4. Light (or Dark) Mode - click to toggle the view between light and dark mode.

When viewing on a full-width screen, this looks as follows.



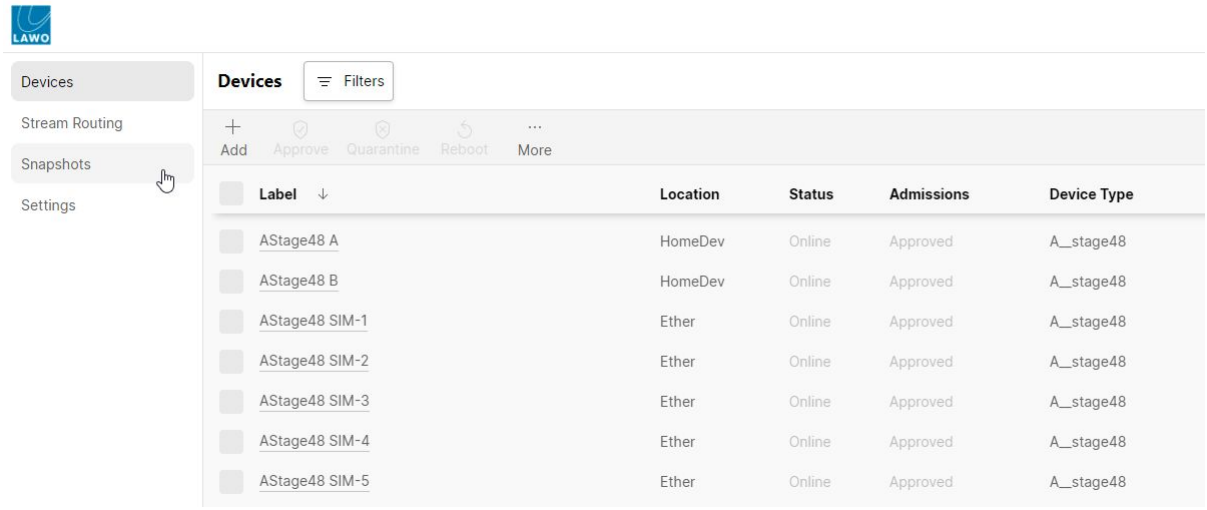
If the screen width is reduced, then there is no sidebar showing the available pages. Instead, a drop-down page menu appears (2) beside the LAWO logo (1).



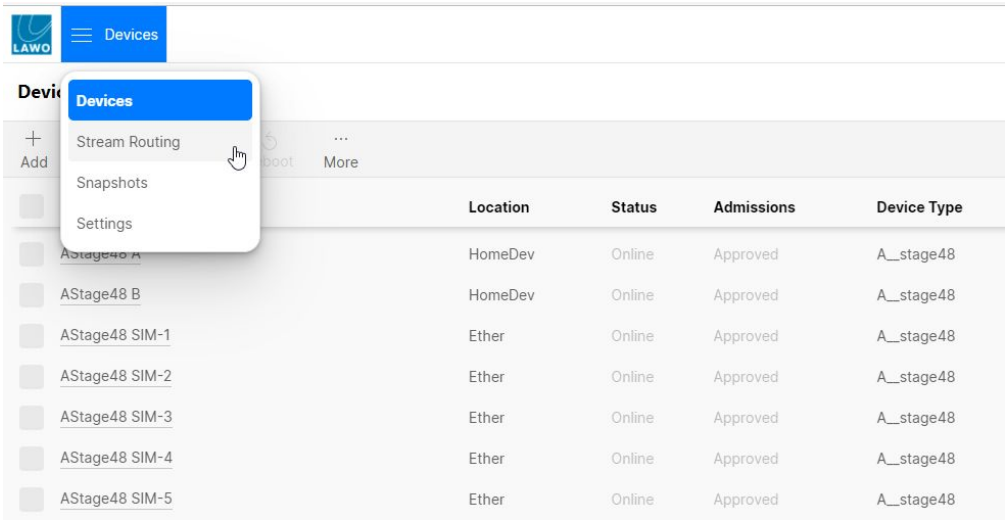
3.2 HOME - Page Navigation

You can navigate to a different page by clicking on an option in the sidebar or drop-down menu.

- Sidebar page menu (full-width screens)



- Drop-down page menu (reduced-width screens)



The HOME Web UI has four main pages:

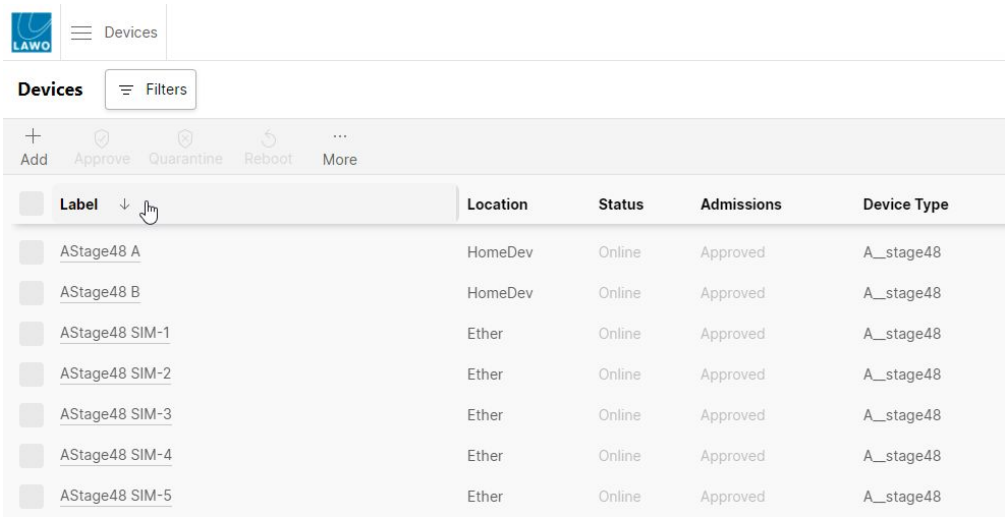
- **Devices** - lists all devices known to HOME. From here you can label a device, define its network ports and configure its senders and receivers (visible in Stream Routing).
- **Stream Routing** - manages the streaming connections. From here you can connect a sender to a receiver, or interrogate the existing connections.
- **Snapshots** - lists the system snapshots. Snapshots can be used to create a backup of the complete configuration (i.e. all devices and stream routing).
- **Settings** - provides access to more advanced settings.

Most of the work is done in the first two pages: "Devices" and "Stream Routing".

3.3 HOME - Sorting Lists

If the page contents are listed in a table, then the header row describes each column.

Click on a column header to sort the table alphabetically (e.g. by Label).



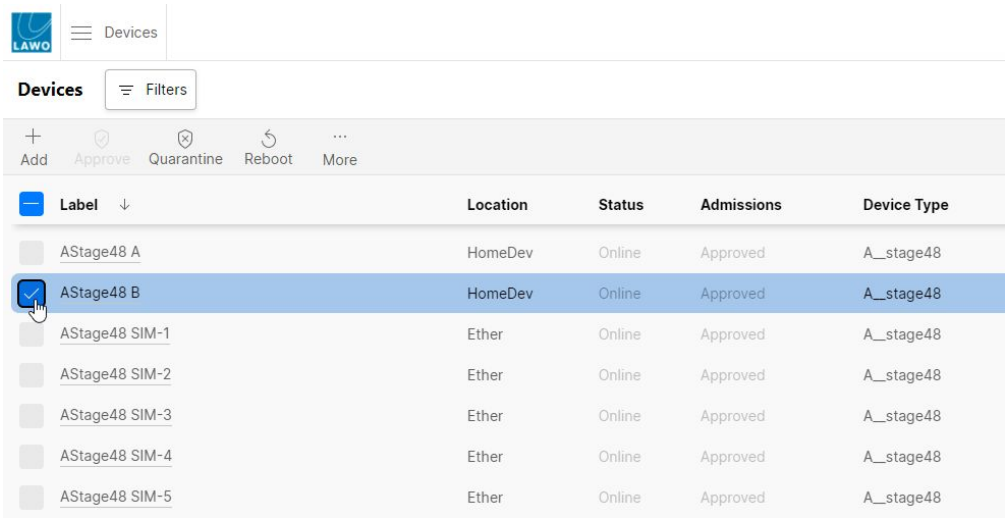
Each click toggles the sort mode between ascending (A -> Z) and descending (Z -> A). An up or down arrow appears beside the header to indicate the current sort mode.

3.4 HOME - Making Selections

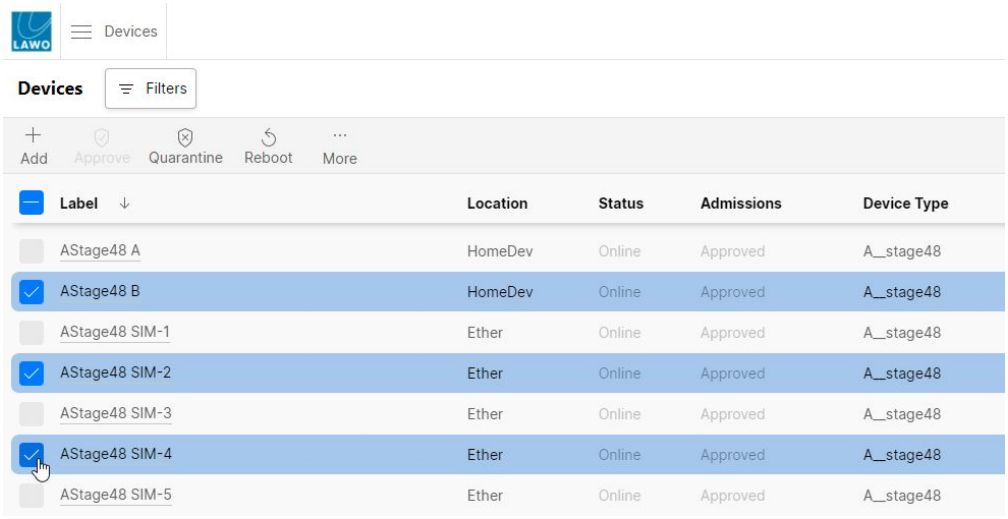
In order to unlock some functions, you must first select an entry in the table. For example, to **Quarantine** or **Reboot** a device (in the "Devices" page).

Each row can be selected (or deselected) by clicking on the checkbox in the first column. Selected rows are highlighted in blue, with a blue tick in the checkbox.

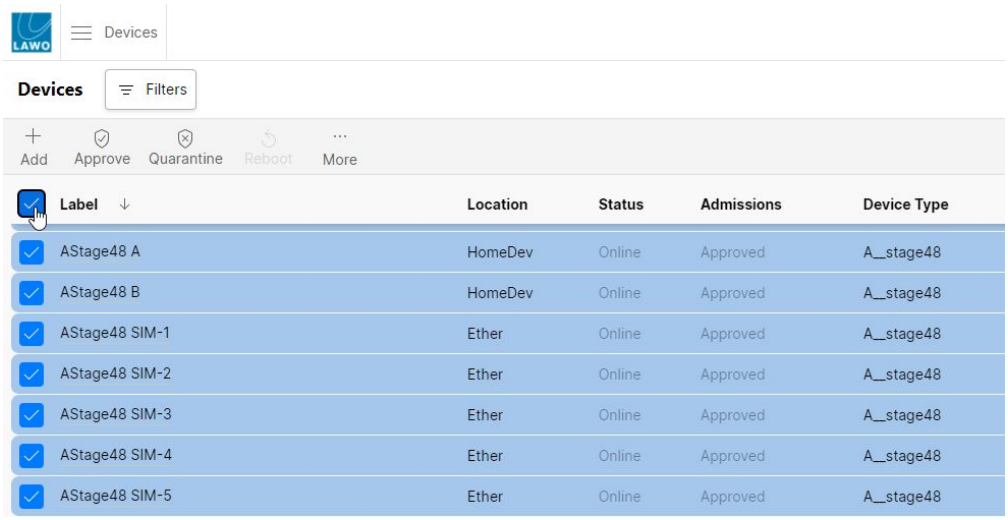
In the example below, a single device is selected.



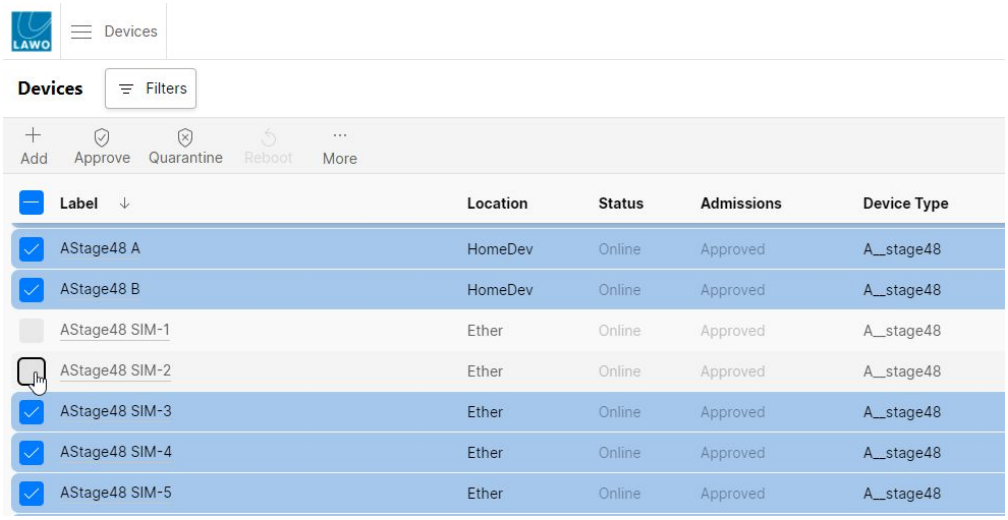
You can select more than one row by clicking on several checkboxes.



To select (or deselect) all rows, click on the checkbox in the header row.



This allows you to work in reverse by selecting all devices and then editing the selections.



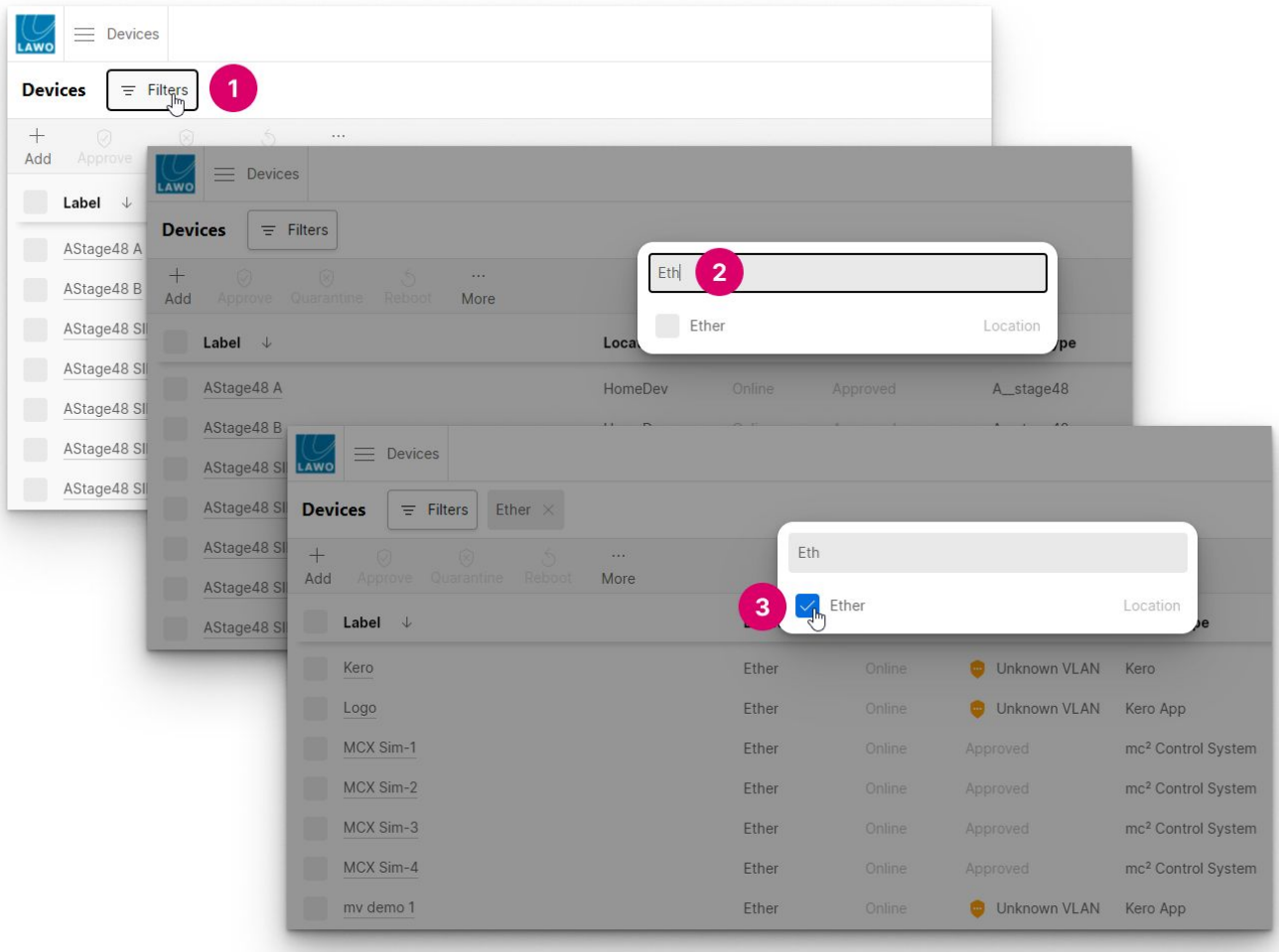
3.5 HOME - Using Filters

The **Filters** button can be used to filter the contents of a table. For example, to view only the devices in a particular location (in the "Devices" page), or only sources and destinations of a particular type (in the "Stream Routing" or "I/O Routing" pages).

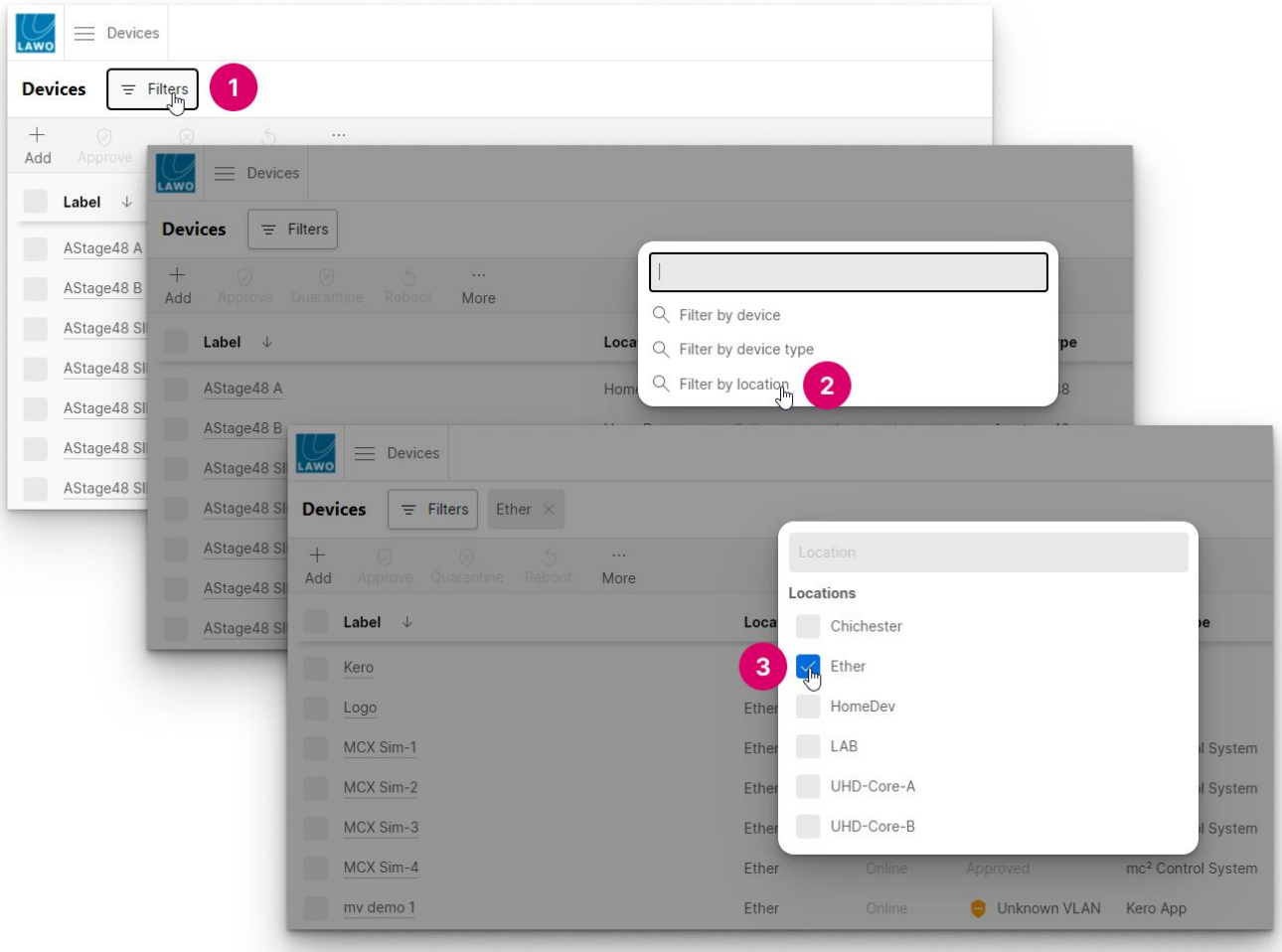
Applying a Filter

1. Click on the **Filters** button (1) and either:

- Start typing into the search field (2) and then select a checkbox (3).



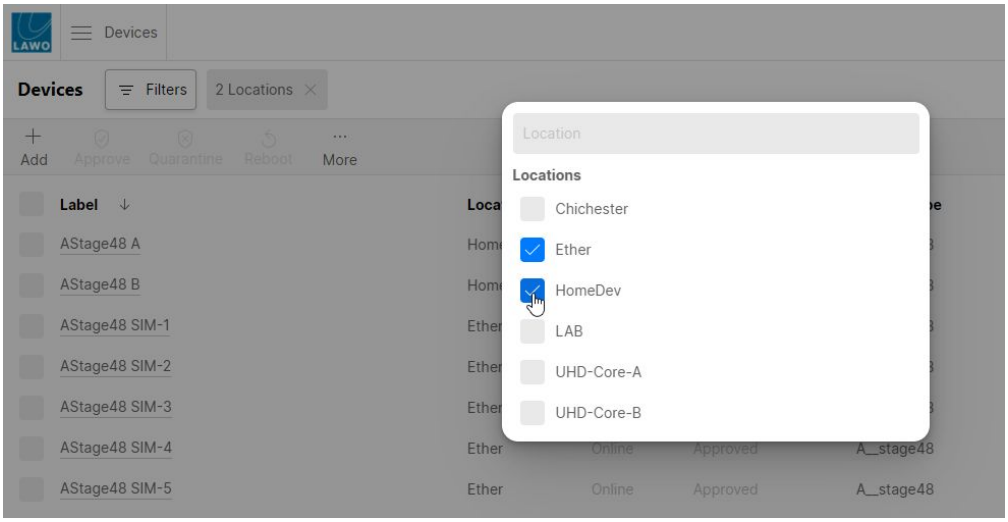
- Or, choose one of the 'Filter by' options (2) and then a checkbox (3).



The first method is great if you know exactly what you are looking for, as the text entered is used to search across all filter types. The second method can be used to browse all of the available options for each type.

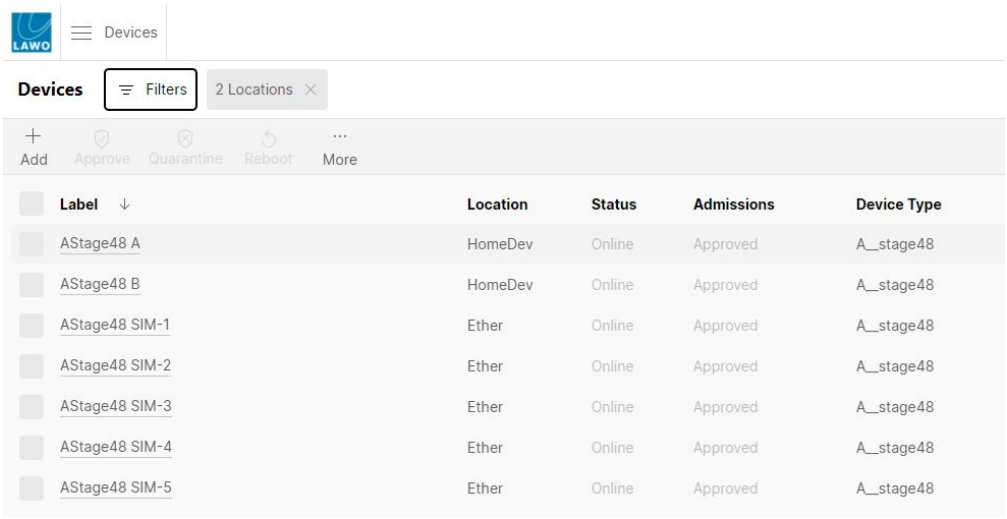
4. Once an option is selected, the table updates to show the filtered results.

You can select more than one option if you wish.



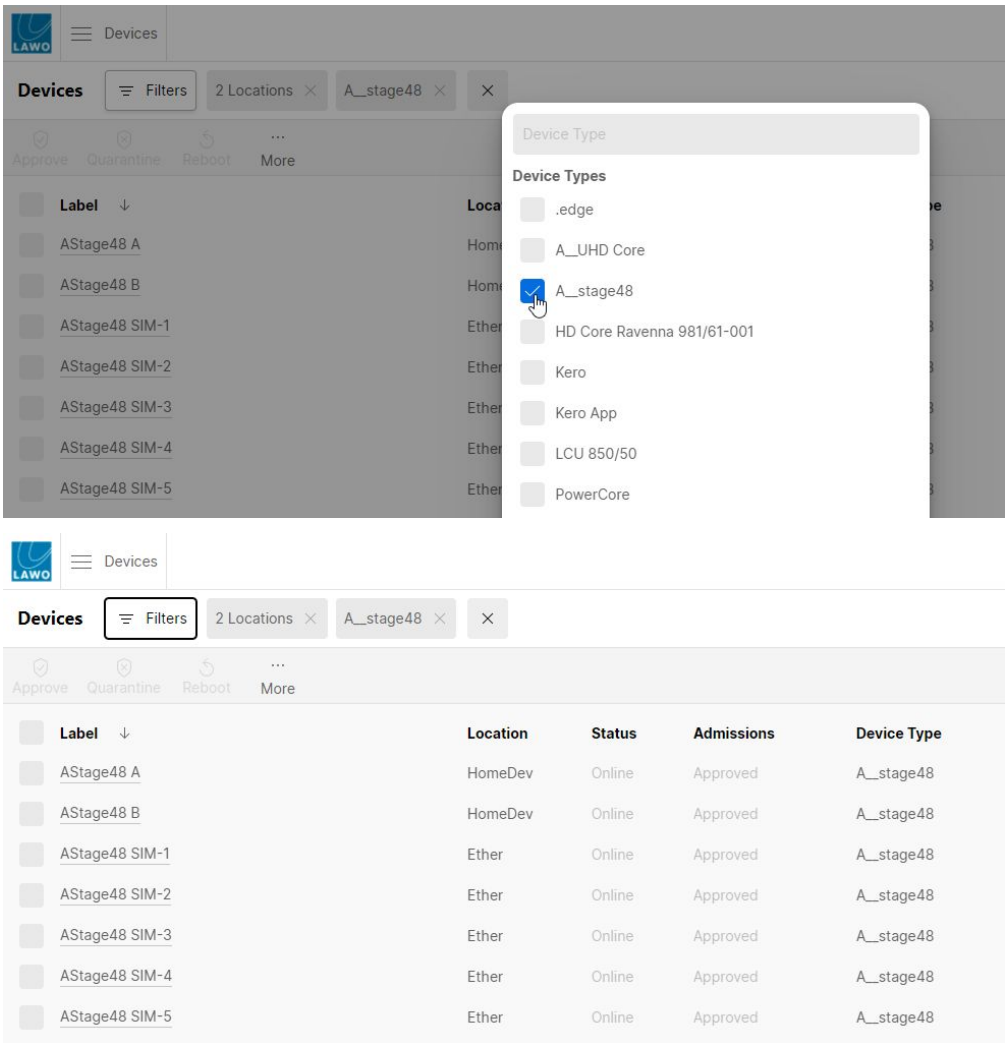
5. Click anywhere outside of the 'Filter selection' window to close it and view the results.

The applied filter(s) are displayed beside the **Filters** button. In our example, for the two locations.



Combining Filters

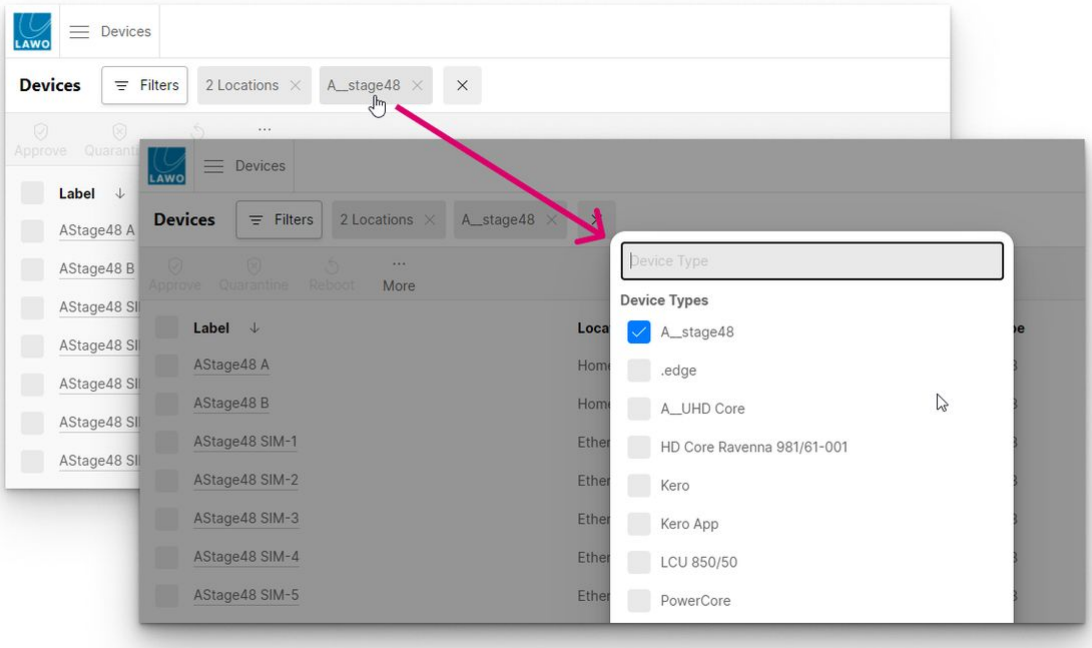
Filters of different types can be combined by repeating the process to add another filter type. For example, to view all A__stage48 devices in the selected locations.



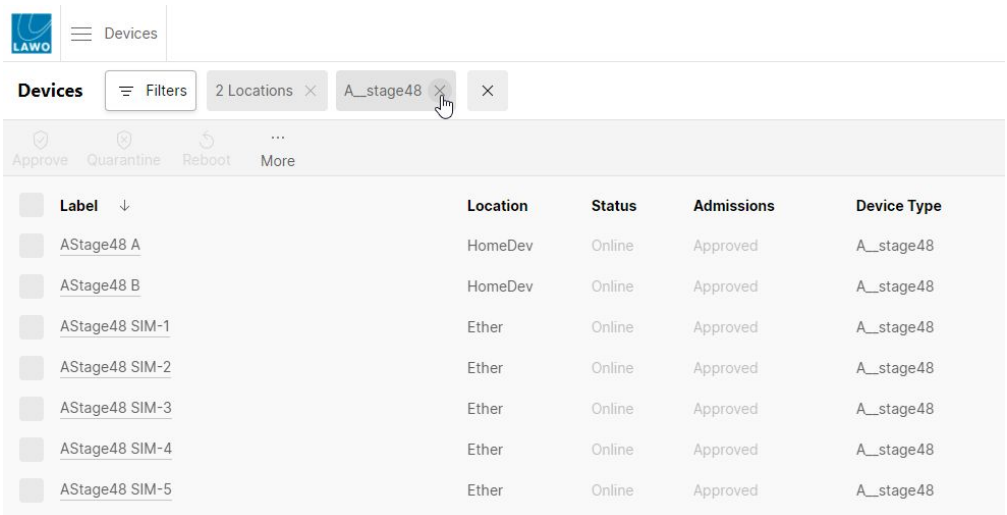
Editing & Clearing Filters

All existing filters are grouped by type and displayed beside the **Filters** button.

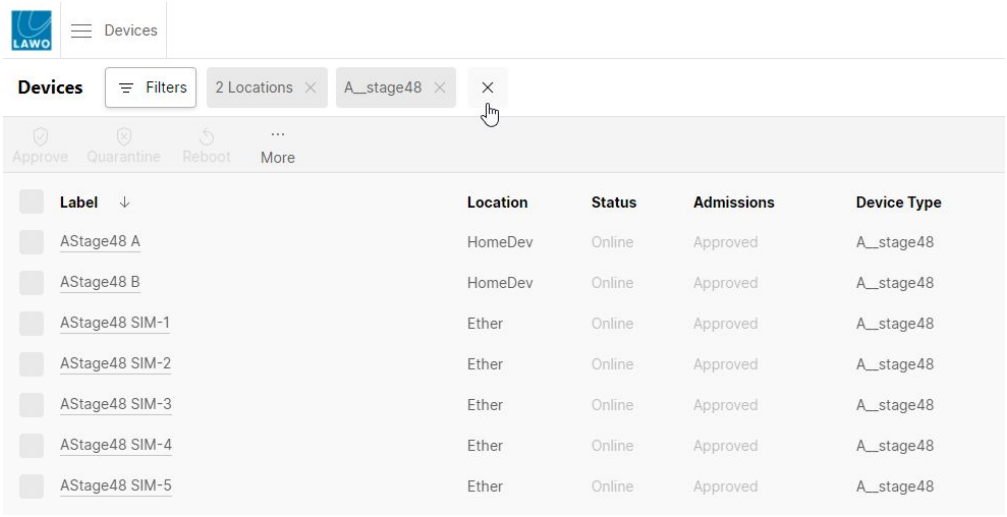
1. Click on an existing filter to re-open the 'Filter selection' window. From here you can edit the filter selections for a particular type.



2. Click on the **X** beside an existing filter to clear all filters of that type.



3. If more than one filter type is applied, then a master **X** appears. Click on this to clear all filters.



The view resets to show all of the devices known to HOME.

More Examples

You can find more examples of how to use filters in the documentation for the "Devices" and "Stream Routing" pages.

The **Filters** button can be used to filter the contents of a table. For example, to view only the devices in a particular location (in the "Devices" page), or only sources and destinations of a particular type (in the "Stream Routing" page).

3.6 HOME - Saving Settings

The current configuration is stored automatically whenever a change is made. The data is stored on the HOME server. If the server restarts, then the configuration is re-instated at the end of the reboot.

If a networked device restarts, or is disconnected, then any streaming connections to and from the device are lost. However, the connections are still prepared. This means that as soon as the device comes back online, its streaming connections are re-established.

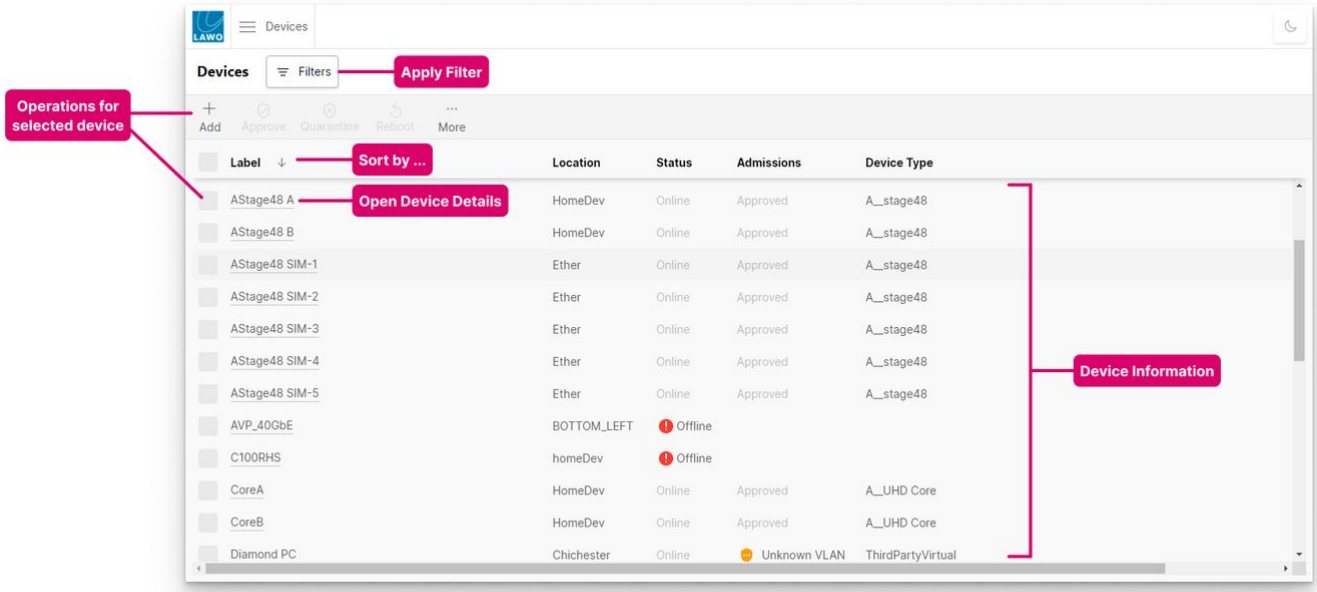
If you wish to make a backup of a particular point in the setup, then you can save the complete configuration in a snapshot. For more information on how to do this, see HOME - Snapshots.

4 HOME - Device Operations

This chapter describes the basic operations for a device.

4.1 HOME - The Devices List

The "Devices" page lists all devices known to HOME. A device must appear here before it can be configured.



All Lawo IP nodes and such devices which "live@HOME" as native HOME nodes are discovered automatically when they are connected to the network. Devices that are compatible with NMOS IS-04/IS-05 can be discovered automatically, too, if HOME is running with a valid NMOS license. Third-party devices that are not detected can be added manually by configuring a proxy. An example is included later.

Device Information

The following information is displayed for each HOME-native device known to HOME:

- **Label** - identifies the device to other network users. The label field must be completed and cannot be left blank. All automatically-detected devices are assigned a default label. The label can be edited from the "Device Details" (via the "Edit Device Info" window).
- **Location** (optional) - can be added to help identify devices in a larger network. The location can be edited from the "Device Details" (via the "Edit Device Info" window).
- **Status** - shows whether a device is online, offline or in quarantine.
- **Admissions** - shows the admissions status of the device (described below).
- **Device Type** - describes the product type. This is a fixed label that cannot be edited.

Checking the Device Status

The "Status" and "Admissions" columns describe the status of each device as follows.

Status	Admissions	Meaning
Online	Approved	The device is fully approved and part of the operational network.
Offline	-	The device is either powered off or not connected to the network.
Quarantined	-	The device is in quarantine and awaiting approval.
Online	Partially Approved	

Status	Admissions	Meaning
Online	Unknown VLAN	

Possible Operations

The following operations are possible.

1. Click on the **Filters** button to apply a filter.

This can be used to restrict the view. For example, to view only the devices in a particular location. See Using Filters.

2. Click on a column header to sort the list alphabetically by Label, Location, etc.

Each click toggles the sort mode between ascending (A -> Z) and descending (Z -> A). An up or down arrow appears beside the header to indicate the current sort mode.

3. Select a device (or devices) and click on a function:

- Approve - adds the device to the operational network.
- Quarantine - removes the device from the operational network.
- Reboot - reboots the device.
- More - provides access to more device operations.

If a function is not available, then it is greyed out.

4. Click on a device label to open the "Device Details" page.

4.2 HOME - Approve or Quarantine a Device

The **Approve** and **Quarantine** buttons can be used to manage which devices are part of the operational network.

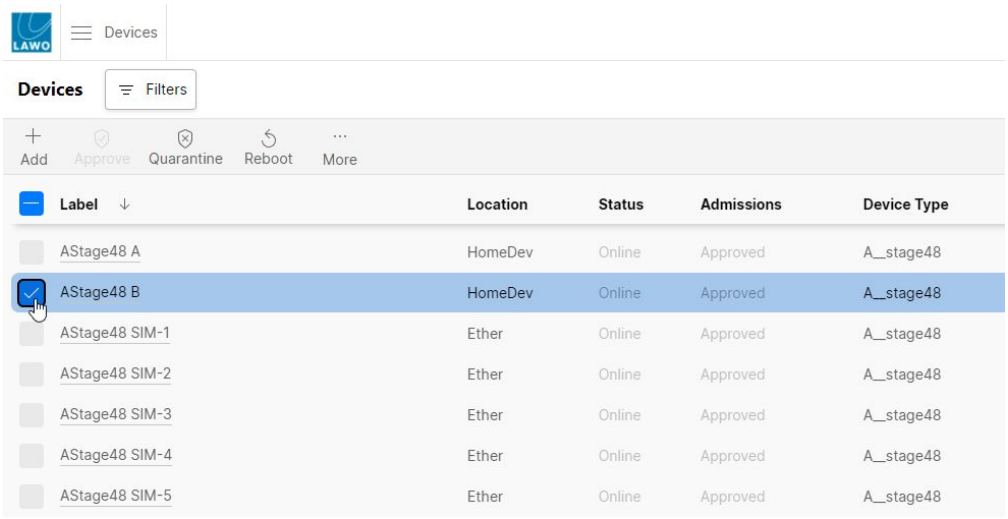
One of the aims of HOME is to keep the network secure. Whenever a new device is detected, it is automatically placed in quarantine. The user can then check the device's network settings (to avoid duplicate control IPs or multicast addresses) before adding the device to the operational network (using the **Approve** button).

If you are experiencing problems with the network, then a device can be placed in quarantine manually (using the **Quarantine** button).

> **Important**: Any change is implemented immediately, without confirmation, and so you should make sure that a device's streams are not in use before using the **Quarantine** function.

In each case, follow the steps below to use each function.

1. From the main "Devices" page, select an entry (or entries) using the selection checkboxes (on the left of the table).



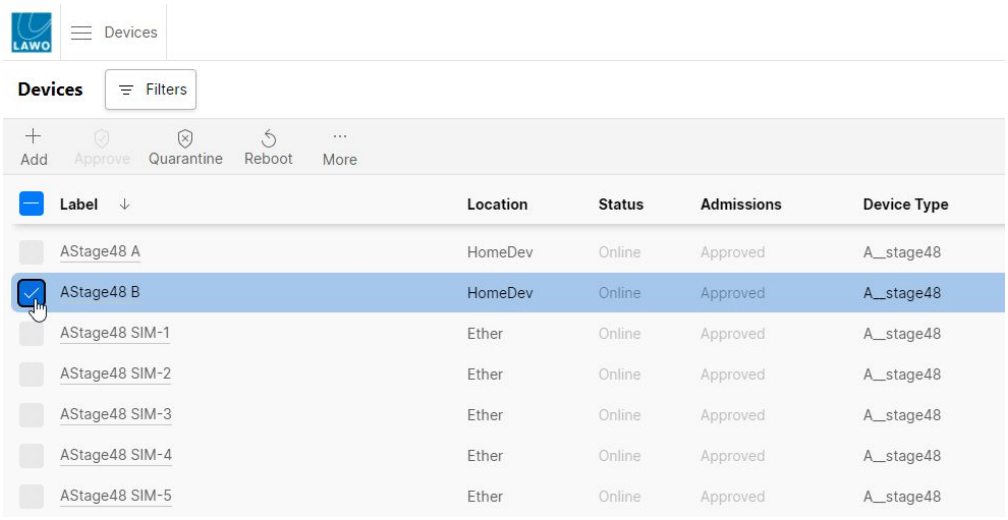
2. Click on **Approve** or **Quarantine** to change the current status of the device.

The progress is shown in the "Status" and "Admissions" columns.

4.3 HOME - Reboot a Device

The **Reboot** button can be used to restart a device.

1. From the main "Devices" page, select an entry (or entries) using the selection checkboxes (on the left of the table).



2. Click on **Reboot** to reboot the device.

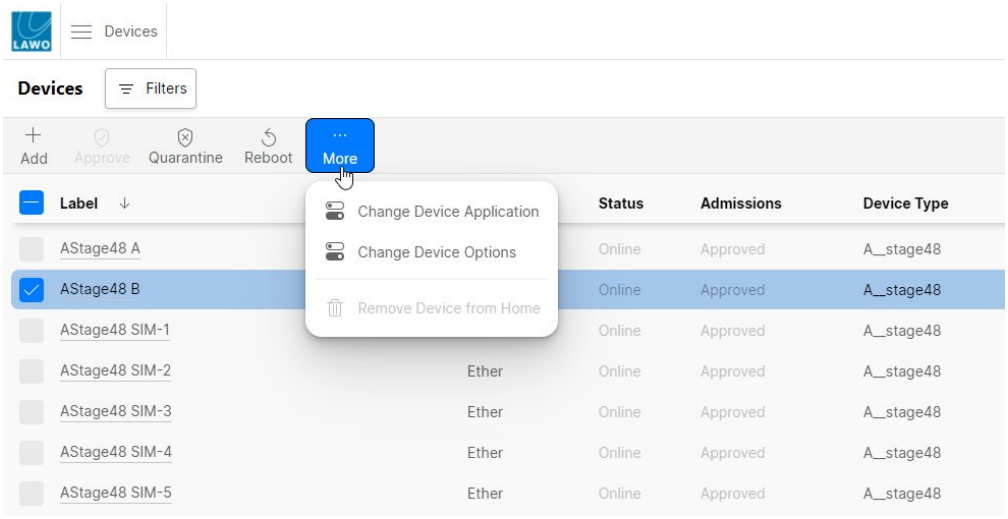
While the reboot is in progress, the device will lose its network connection and show as **Offline** (in the "Status" column).

> **Important**: The reboot is implemented immediately without any confirmation, and so you should make sure that a device's streams are not in use before using this function.

Following a successful reboot, the "Status" column should return to **Online** (if the device is connected and powered).

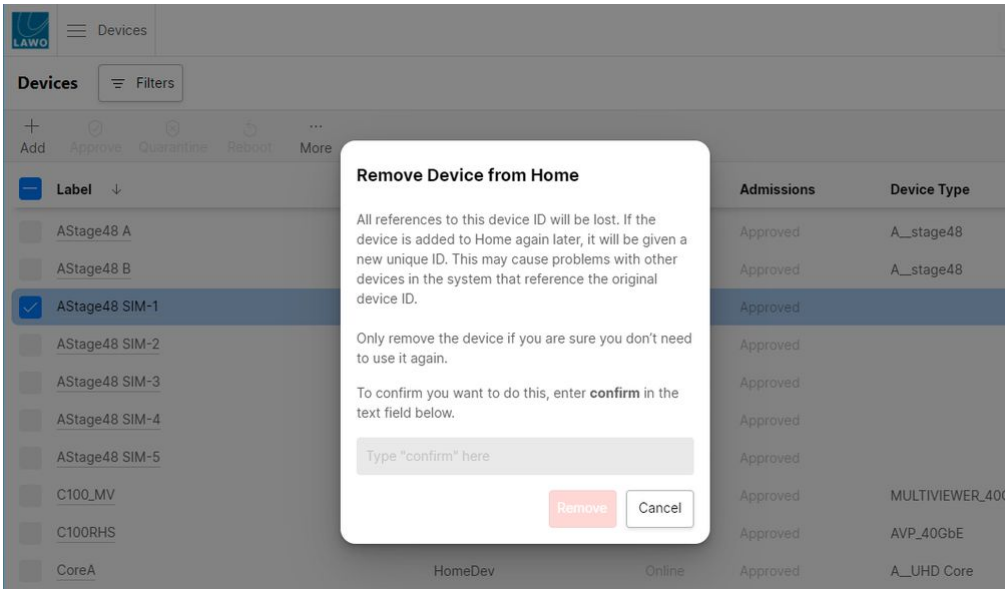
4.4 HOME - More Device Operations

The **More** button opens a drop-down menu where you can access additional options for the selected device. If an option is not supported, then it is greyed out.



The first two options open pop-up windows where you can change settings specific to the device. The same windows can be accessed from the "Device Details" page (via the General tab). The settings vary depending on the device type.

The third option opens a pop-up window where you can choose to remove the device from the Home database:



This function should be used with caution as it removes all references to the device ID, but can be useful if you need to remove an obsolete device. To proceed, follow the on-screen instructions: enter **confirm** into the text field and then click **Remove**.

5 HOME - Device Settings

This chapter describes how to adjust the settings for a device.

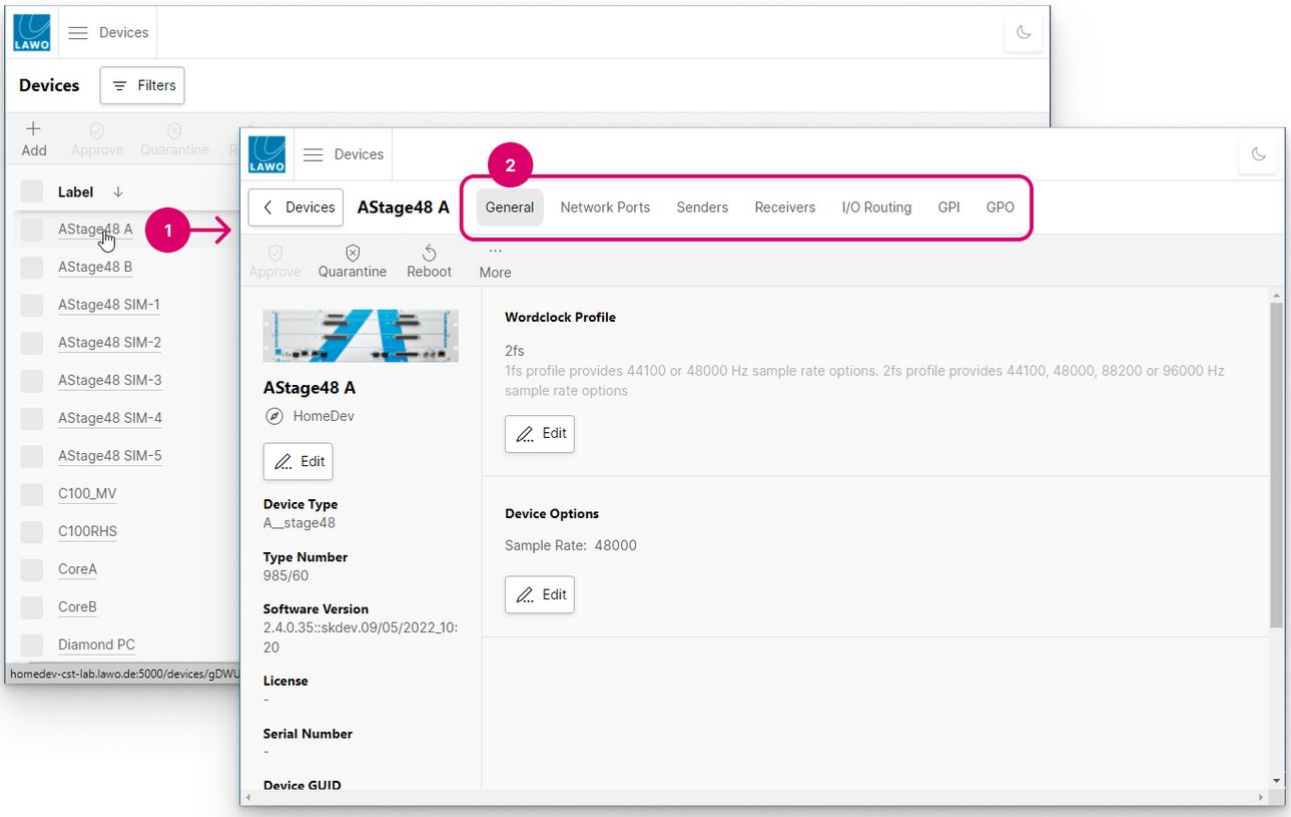
5.1 HOME - The Device Details Page

The "Device Details" page contains all of the available settings for an individual device. The settings are organized into several subpages: **General**, **Network Ports**, etc. The subpages and their contents vary depending on the device type.

1. To open the "Device Details", click on the device label (from the main "Devices" list).

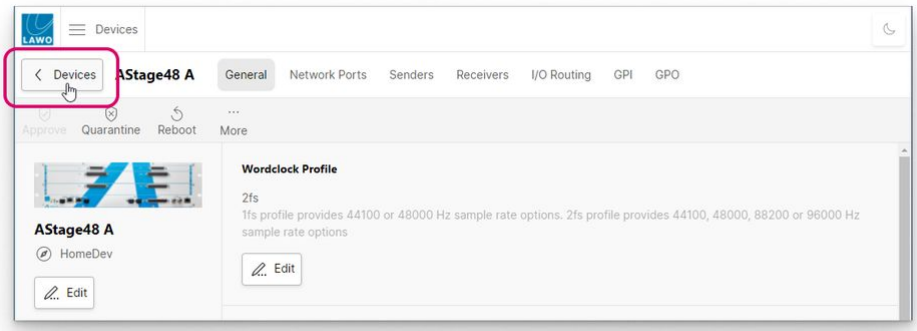
The page always opens with the **General** tab selected.

2. Use the menu tabs to access the other subpages.



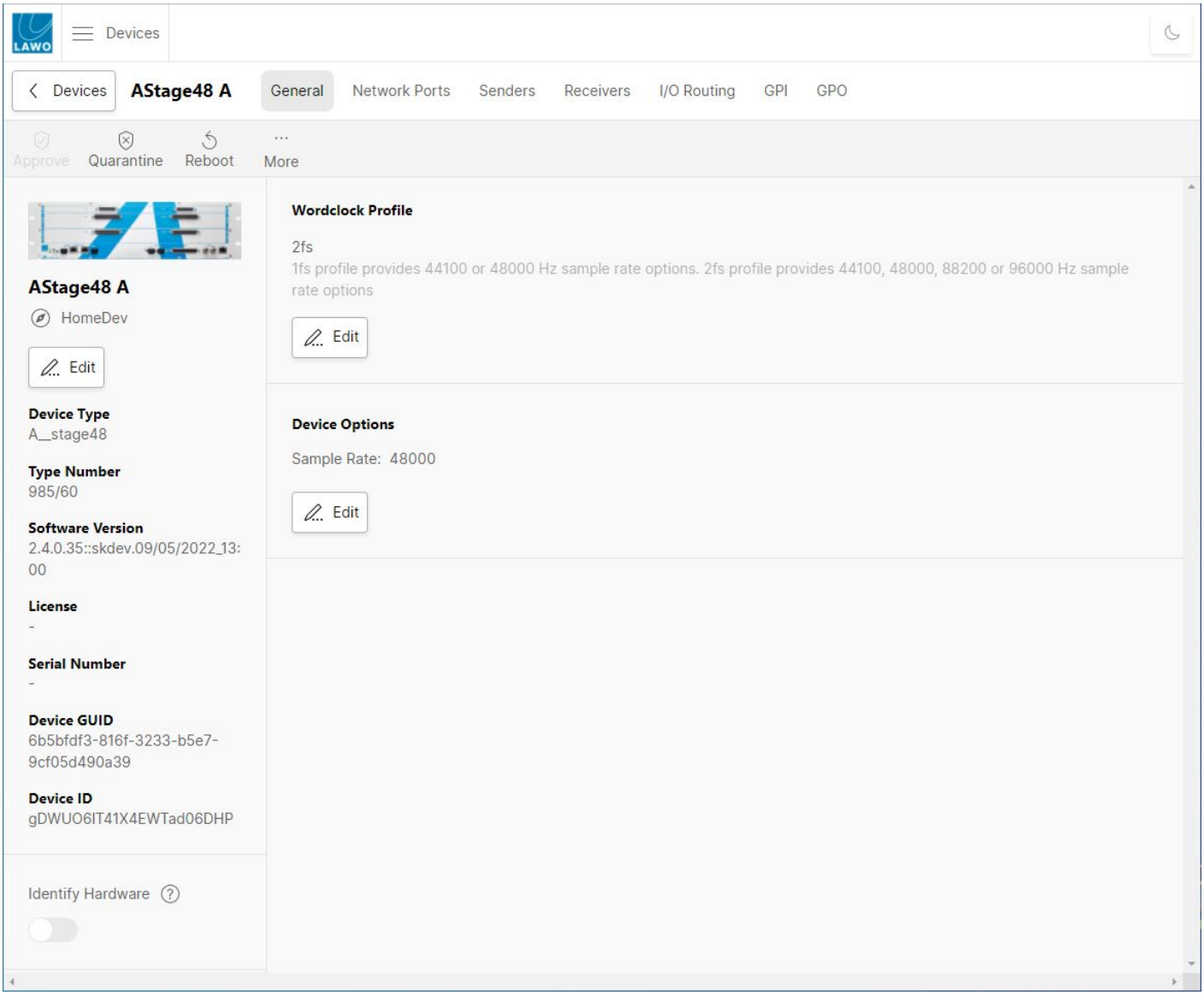
The device operations (**Approve**, **Quarantine**, **Reboot** and **More**) are repeated at the top of each subpage for convenience.

3. To close the details and return to the main "Devices" list, click on the **< Devices** button (to the left of the device label).



5.2 HOME - Device General Information

The **Device** → **General** tab is divided into two sections with general information about the device (on the left) and other settings (on the right). If a setting can be edited, then you will see an icon that can be clicked. If there is no icon, then the field provides information only.



Device Information

The area on the left provides general information about the device such as its label, location, device type, type number, software version, etc.

The label, location and device types are also shown on the main "Devices" page. The label and location can be edited by clicking on the **Edit** button (as described below).

The **Identify Hardware** function can be used to identify a physical device (as described below).

Device-Specific Settings

The area on the right provides access to other general settings for the device. These vary depending on the device type.

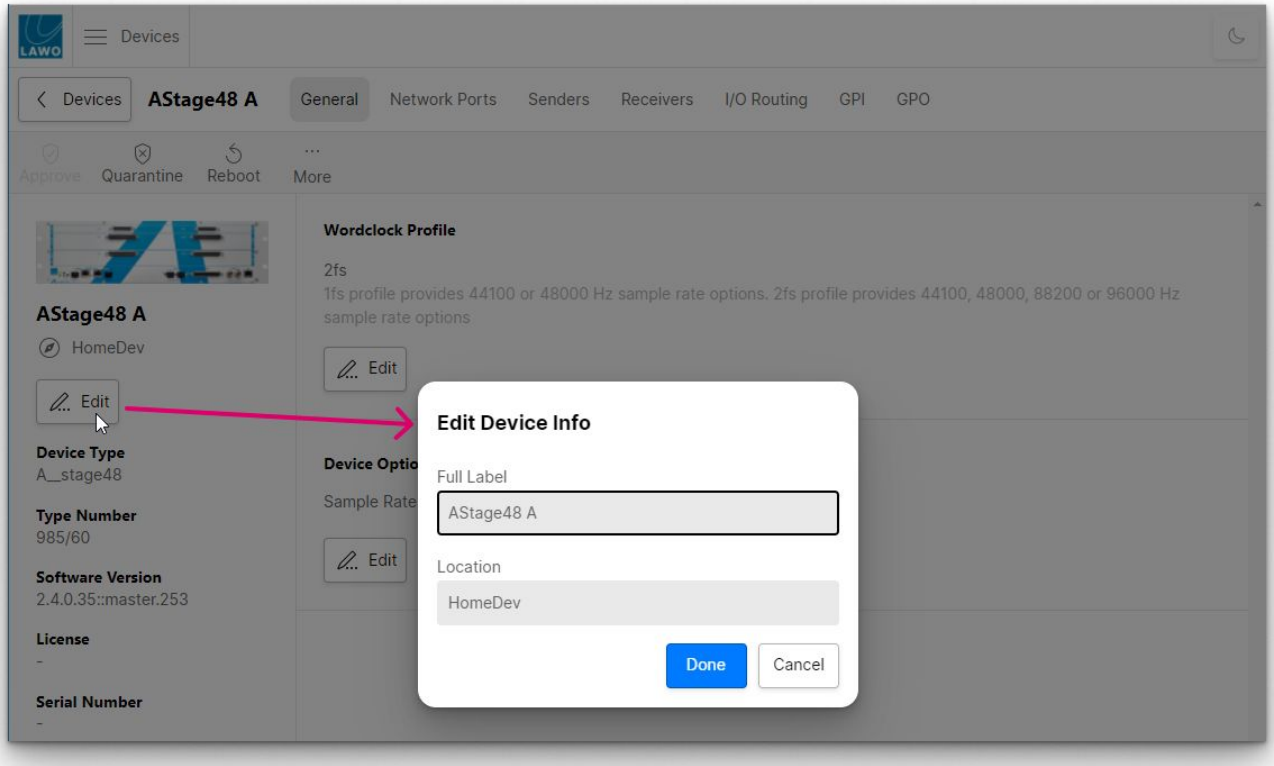
Edit a Label and Location

Follow the steps below to edit the device label and location.

1. From the main "Devices" page, click on the label of the device you wish to edit.

This opens the "Device Details" page and **General** tab.

2. Select the **Edit** button (below the current label and location) to open the "Edit Device Info" window.



3. Enter the new label text into the "Full Label" field.

> A label must be entered. This field cannot be left blank. The label can be changed, at any time, without affecting the configuration.

4. Optionally, you can enter a location into the "Location" field.

This is particularly useful in a larger network as it allows you to filter or sort the "Devices" list by location. The location field can be left blank.

5. Select **Done** to confirm and close the "Edit Device Info" window.

The label and location are updated everywhere in HOME, and forwarded to other devices on the network (where applicable).

Identify a Physical Device

The **Identify Hardware** function can be used to identify a physical device by flashing an LED or showing a message on its front panel. This makes it easy to identify the device you are about to configure.

Click on the **?** icon (beside **Identify Hardware**) to read the on-screen help.

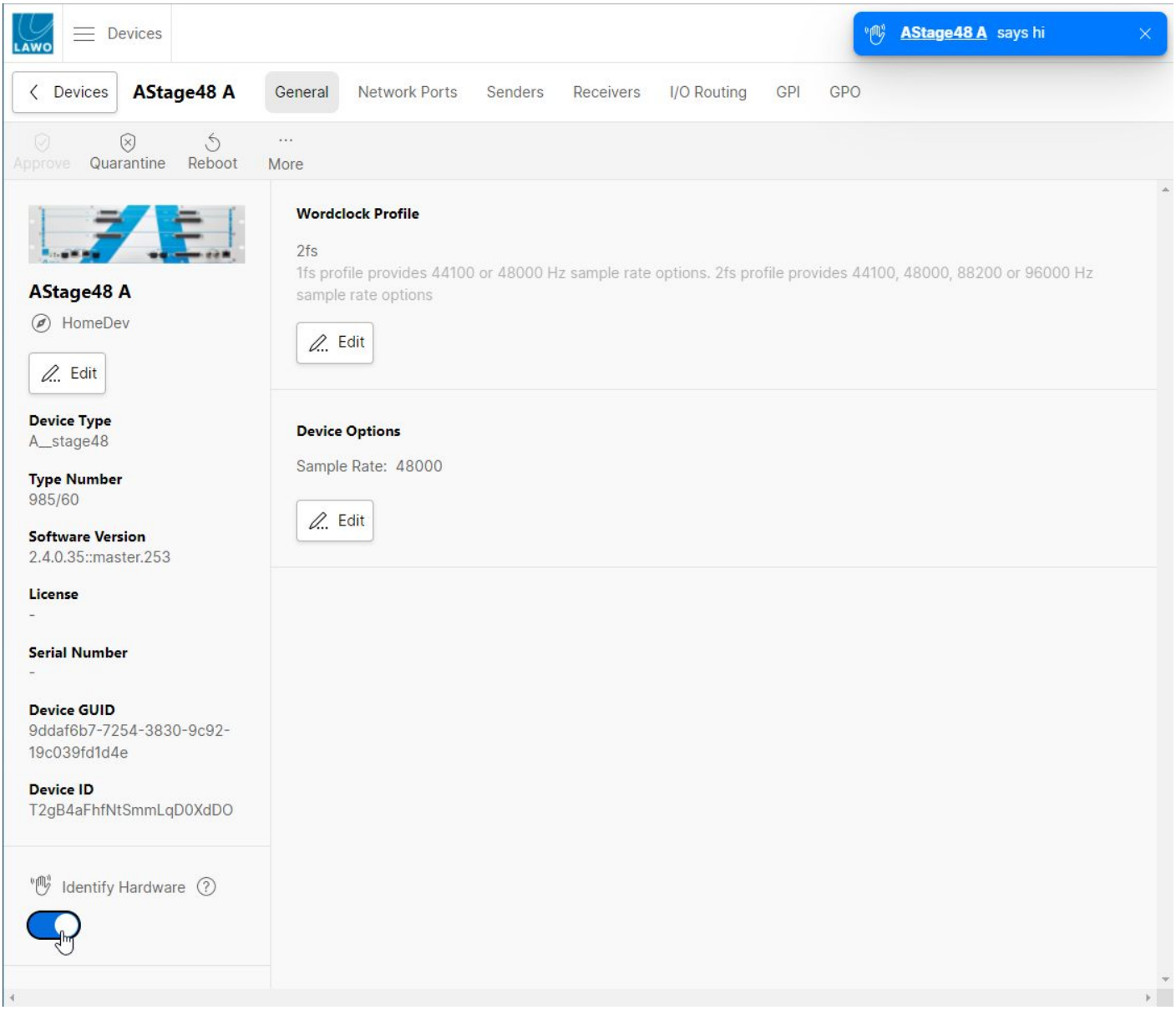
Follow the steps below to use this function.

1. From the main "Devices" page, click on the label of the device you wish to identify.

This opens the "Device Details" page and **General** tab.

2. Scroll down to the bottom of the page and turn on the **Identify Hardware** slider.

This sends a message to the device to flash an LED or show a message on its front panel. At the same time, an on-screen alert appears showing that the device "**says hi**".



3. You can now identify the hardware device in the equipment rack.

4. If other users have the HOME Web UI open, then they will see the on-screen alert.

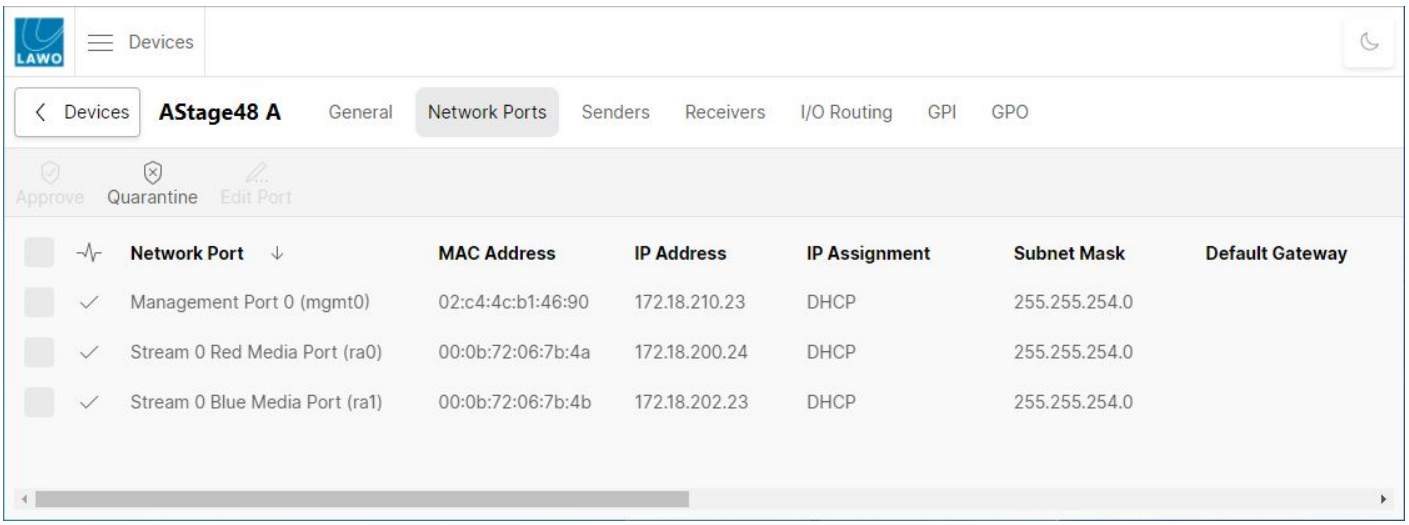
They can either click on the device label to open the "Device Details" page, or click on **X** to close the alert.

Tip: To quickly clear all of the on-screen alerts, refresh the browser window.

5. Once you have identified the device, turn off the **Identify Hardware** slider.

5.3 HOME - Device Network Settings

The **Device** -> **Network Ports** tab lists each of the device's network ports. From here you can check the status of a port or edit its network settings.

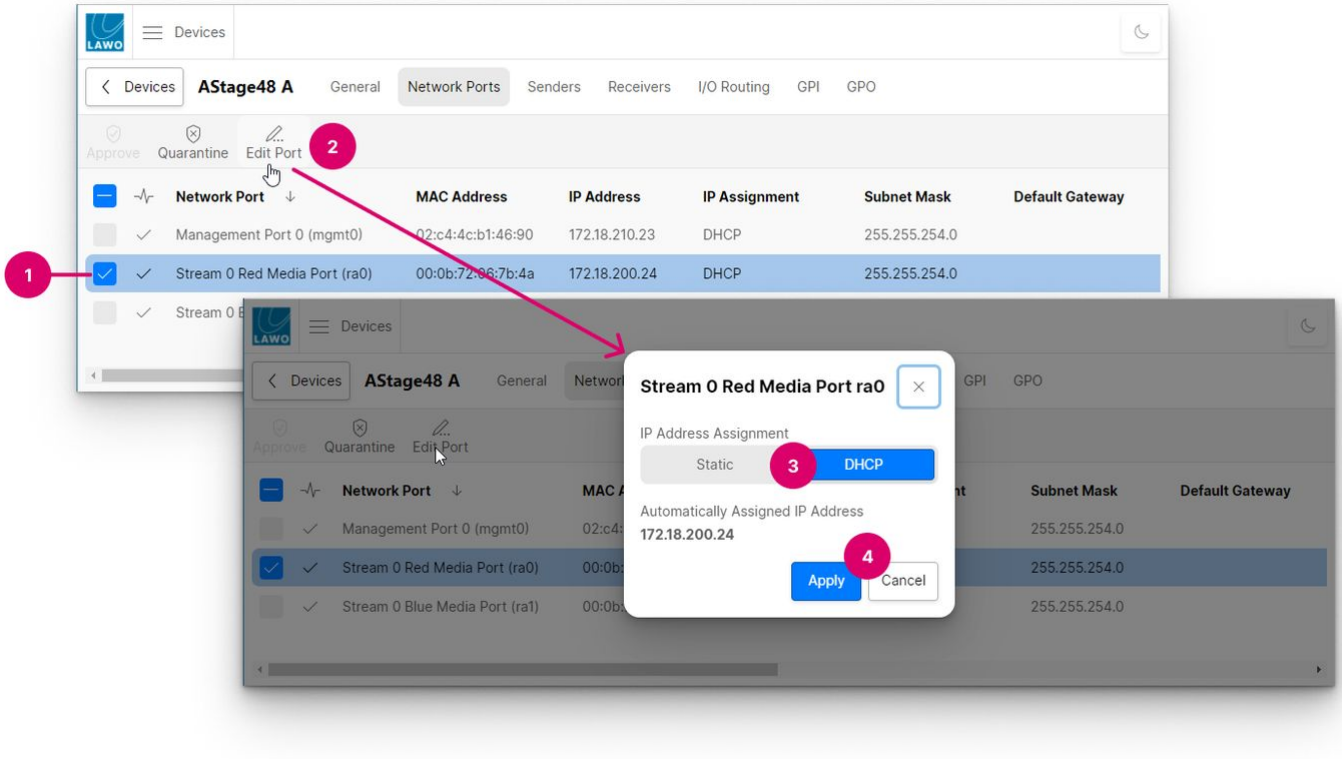


The table shows information about each network port including the link state, label, description, internal name, media interface, MAC address, IP address, IP assignment and subnet. Scroll to the right to view more information such as the link speed, switch name, etc.

Click on a column header to sort the list alphabetically by **Network Port**, **MAC Address**, **IP Address**, etc. Each click toggles the sort mode between ascending (A -> Z) and descending (Z -> A). An up or down arrow appears beside the header to indicate the current sort mode.

Edit a Network Port

Follow the steps below to edit the network settings.



1. Select the port you wish to edit using the checkboxes (on the left of the table).
2. Click on **Edit Port** to open the "Network Settings" window.
3. Set the "IP Address Assignment" type to either **Static** or **DHCP**.

- Static - choose this option to enter a fixed IP address and network mask manually (as described below).
- DHCP - choose this option to receive an IP address automatically from HOME's DHCP server.

4. Select **Apply** to confirm and close the "Network Settings" window.

The new settings are applied and the link state updates accordingly.

5. Once applied, you should check the link status.

- Link up = correct operation
- Link down = the Ethernet link is not connected or invalid

Using a Static IP Address

If the "IP Address Assignment" is set to **Static**, then you can define the port's IP address (and other network settings) manually.

The **IP Address** must be unique and lie within the same IP address range as all other nodes you wish to connect to (i.e. the first three fields must match). The **Network Mask** must match the Subnet Mask of all other nodes.

If data packets are to be redirected via a network switch with Layer 3 routing capability, then enter a **Gateway** and up to two **Name Servers**. If redirection is not required, then these fields can be left blank.

Using the DHCP Server

HOME includes a DHCP server that can be used to assign IP addresses automatically.

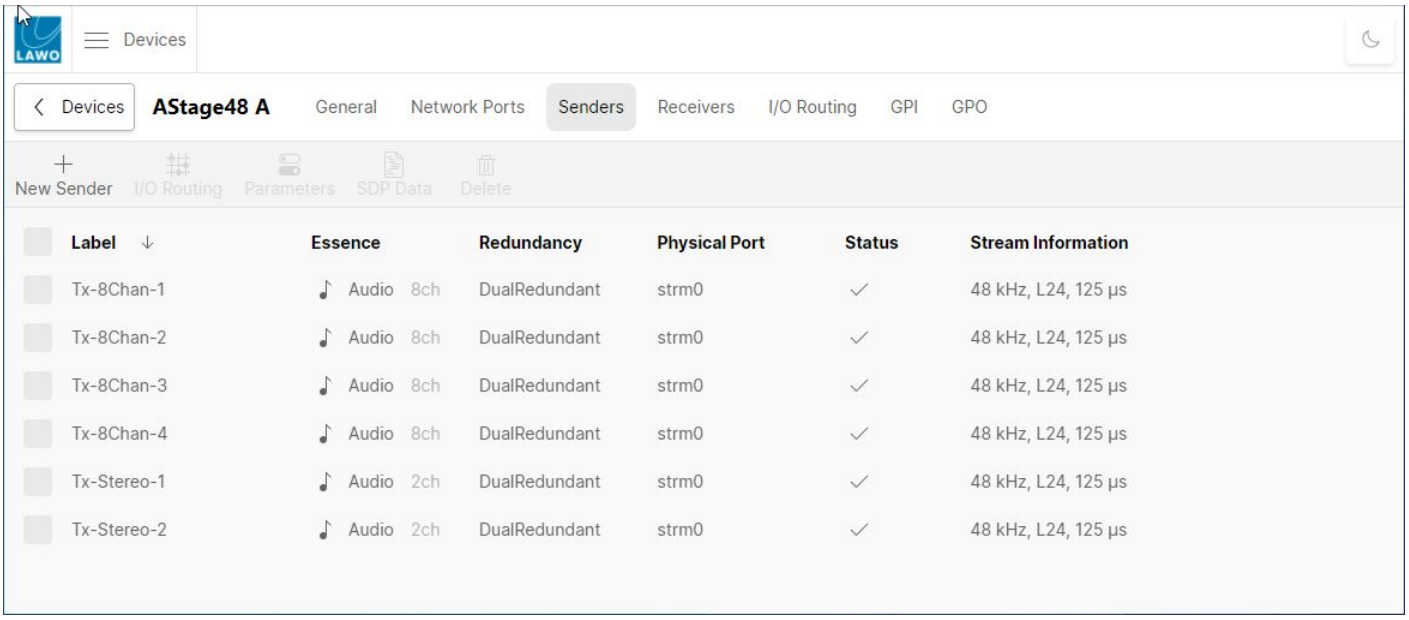
5.4 HOME - Device Senders and Receivers

The **Device** → **Senders** and **Device** → **Receivers** tabs appear for all devices that support network streaming. They are used to configure the sending streams from a device and its receivers.

For some devices, the senders and receivers are pre-defined, while for others they must be created. In both cases, you can adjust the I/O Routing (for audio streams), edit the streaming parameters or access the SDP data.

Senders

The **Senders** tab lists all of the streams transmitted from the device to the network. If the list is empty, then you can create some new streams using New Sender.



Sender Information

The following information is displayed for each stream:

- **Label** - identifies the stream to other network users. It cannot be edited once the stream is created.
- **Essence** - describes the type of content carried by the stream: Video, Audio, Metadata or GPIO. For audio streams, you will also see the number of channels (e.g. 8ch or 2ch).
- **Redundancy** - shows the redundancy status of the stream. A DualRedundant stream is SMPTE ST2022-7 compatible.
- **Physical Port** - shows the name of the network interface(s) sending the stream.
- **Status** - indicates the status of the stream. Hover over the icon to reveal more information.
- **Stream Information** - shows a summary of the stream parameters (e.g. for an audio stream: 48kHz = the sample rate; L24 = the codec type; and 125 µs = the packet time).

Sender Operations

The following operations are possible.

1. Click on a column header to sort the list alphabetically by **Label**, **Essence**, etc.

Each click toggles the sort mode between ascending (A -> Z) and descending (Z -> A). An up or down arrow appears beside the header to indicate the current sort mode.

2. Click on the New Sender button to create some new streams.
3. Select a stream (or streams) and click on a function:

- I/O Routing - assigns the device's audio inputs (Mic/Line, AES3, MADI) to the stream's IP channels.

- Parameters - edits the stream parameters.
- SDP Data - opens the stream's SDP data.

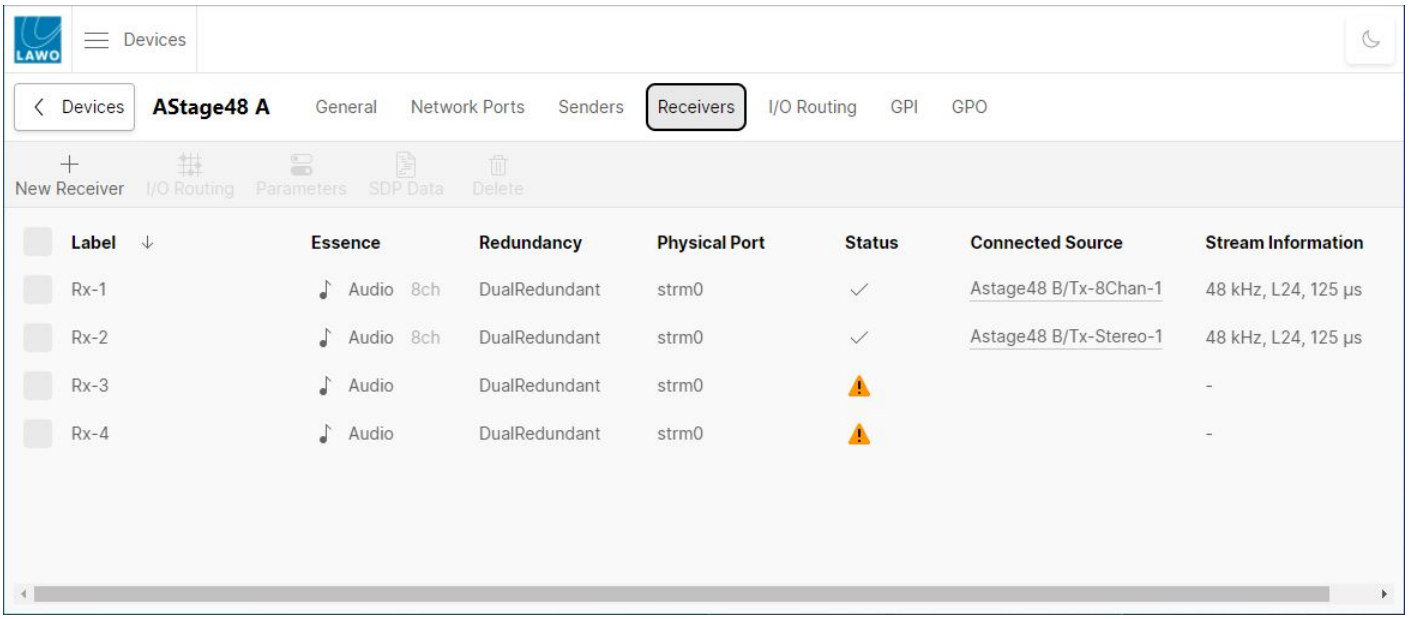
If a function is not available, then it is greyed out.

4. Select a stream (or streams) and click on **Delete** to delete the selected stream(s).

A confirmation window appears. Click on **Remove** to confirm or **Cancel** to cancel the operation.

Receivers

The **Receivers** tab lists all of the available receivers. Each one can be used to receive a stream from the network either by making a connection in the "Stream Routing" page or by editing the receiver's SDP data. If the list is empty, then you can create some new receivers using New Receiver.



Receiver Information

The following information is displayed for each receiver. This is similar to the information for senders but adds the **Connected Source** column (to show the connected stream).

- **Label** - identifies the receiver within the network. It cannot be edited once the receiver is created.
- **Essence** - describes the type of content that can be received: Video, Audio, Metadata or GPIO. For audio streams, you will see the number of channels (once a connection is made).
- **Redundancy** - shows the redundancy status of the receiver. A DualRedundant receiver can be connected to either a redundant or non-redundant stream.
- **Physical Port** - shows the name of the network interface(s) used by the receiver.
- **Status** - indicates the status of the receiver. Hover over the icon to reveal more information.
- **Connected Source** - shows the name of the connected stream (once a connection is made).
- **Stream Information** - shows a summary of the connected stream parameters (e.g. for an audio stream: 48kHz = the sample rate; L24 = the codec type; and 125 µs = the packet time).

> If a receiver is not connected, then it is normal to see a yellow warning indicator in the **Status** column. The warning will clear once a connection is made (providing that the stream subscription is successful).

Receiver Operations

The following operations are possible.

1. Click on a column header to sort the list alphabetically by **Label**, **Essence**, etc.

Each click toggles the sort mode between ascending (A -> Z) and descending (Z -> A). An up or down arrow appears beside the header to indicate the current sort mode.

2. Click on the New Receiver button to create some new receivers.
3. Select a receiver (or receivers) and click on a function:

- I/O Routing - assigns the receiver's IP channels to the device's audio outputs (Analog, AES3, MADI).

- Parameters - edits the receiver parameters.
- SDP Data - opens the receiver's SDP data.

If a function is not available, then it is greyed out.

4. Select a receiver (or receivers) and click on **Delete** to delete the selected receiver(s).

A confirmation window appears. Click on **Remove** to confirm or **Cancel** to cancel the operation.

HOME - New Sender

The **New Sender** button can be used to create one or more streams (to publish content from the device to the network).

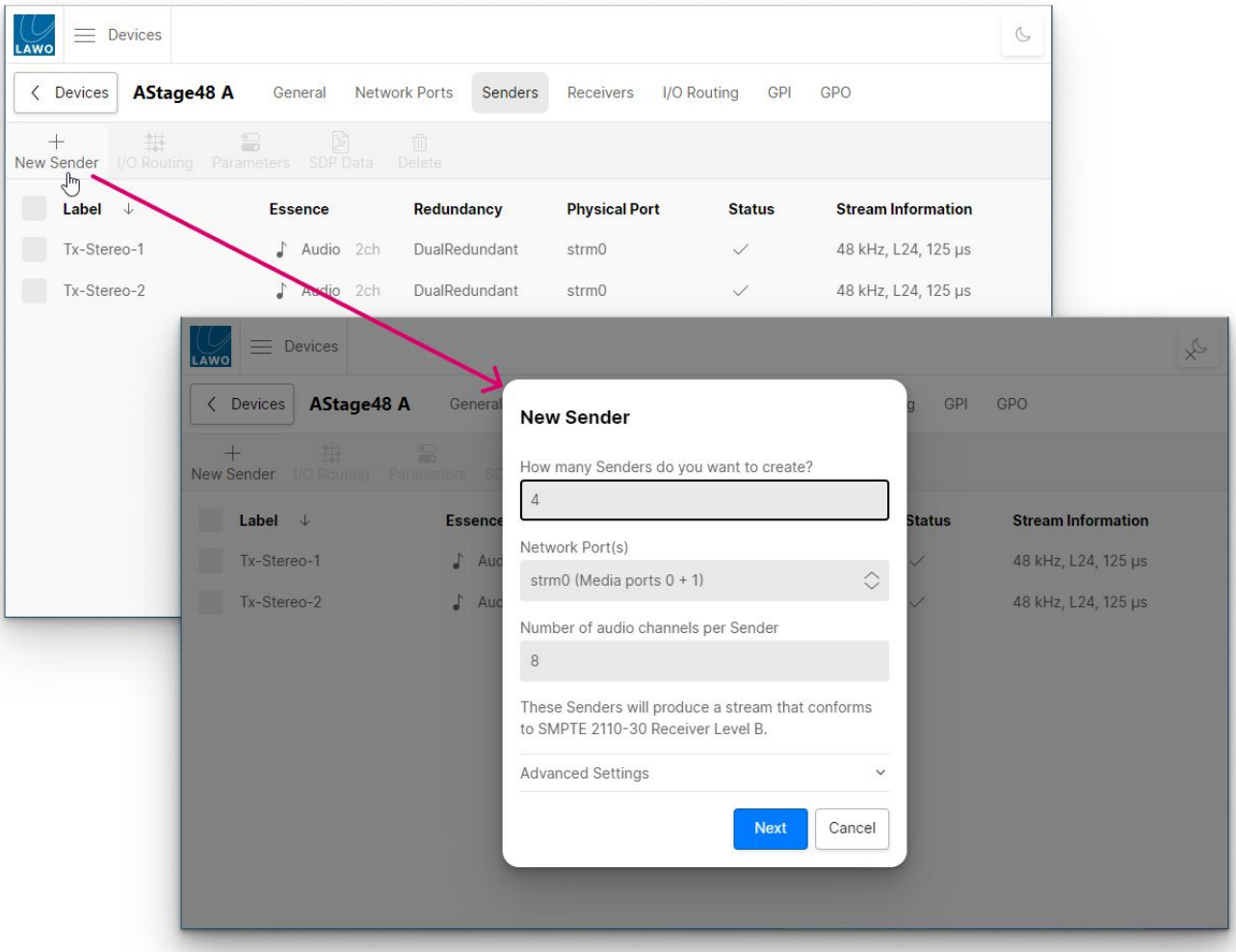
1. From the main "Devices" page, click on the label of the device you wish to configure.

This opens the "Device Details" page with the **General** tab selected.

2. Select the **Senders** tab to view the existing senders.

In our example, there are two existing streams labeled "Tx-Stereo-1" and "Tx-Stereo-2".

3. Click on the **New Sender** button and follow the on-screen instructions.

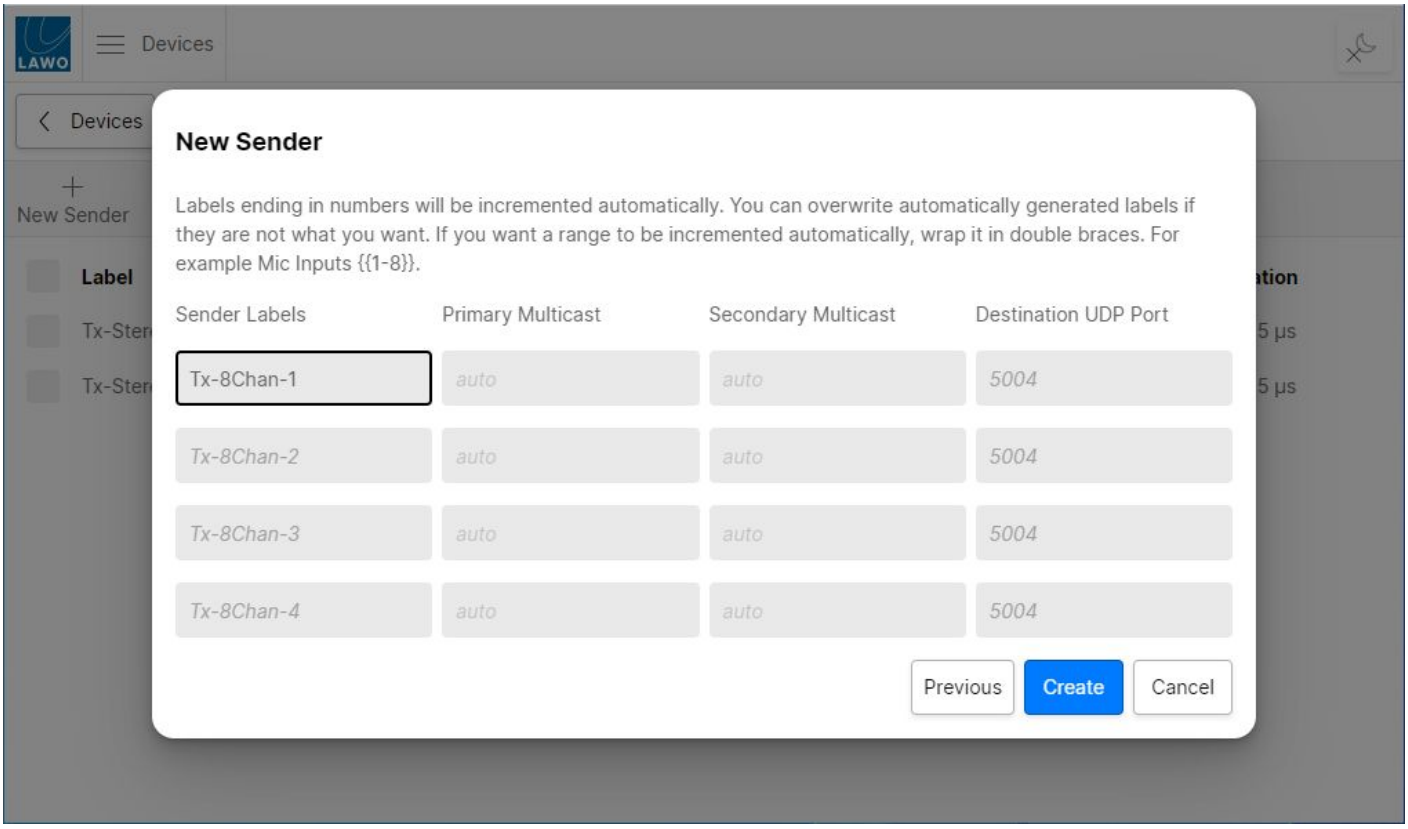


To simplify the operation, the "New Sender" window opens with some default values and the advanced settings are hidden.

- To change the number of senders or any of the other values, edit the fields as required. The example above will create four 8-channel senders that conform to SMPTE 2110-30 Receiver Level B.
- The **Advanced Settings** can be opened if you need to adjust the streaming parameters (described later). In most instances, it is fine to leave these hidden and use the default values.

> The stream size is defined by the number of channels, codec type and frame size. This is important if network bandwidth is an issue. Thus, the network topology should be considered before defining the channel count for senders and receivers.

4. Select **Next** to continue, and enter a label for the first sender (e.g. Tx-8Chan-1).



The fields auto-complete as you enter your text. If the label ends in a number, then this increments.

You can use double braces to enter an auto-incrementing range. For example, when creating 8-channel streams. you could type Tx {{1-8}} to enter the sender labels: Tx 1-8, Tx 9-16, Tx 17-24, etc.

The **Sender Label** identifies the stream to other network users. It cannot be left blank and cannot be edited once you have created the stream.

The identifier string must not contain the character "/" (ASCII/UTF-8: 47) and must begin with a letter or the lower line character "a"-"z", "A"-"Z", "_" (ASCII/UTF-8: 65-90, 97-122 ,95).

Sender labels must not exceed 28 characters.

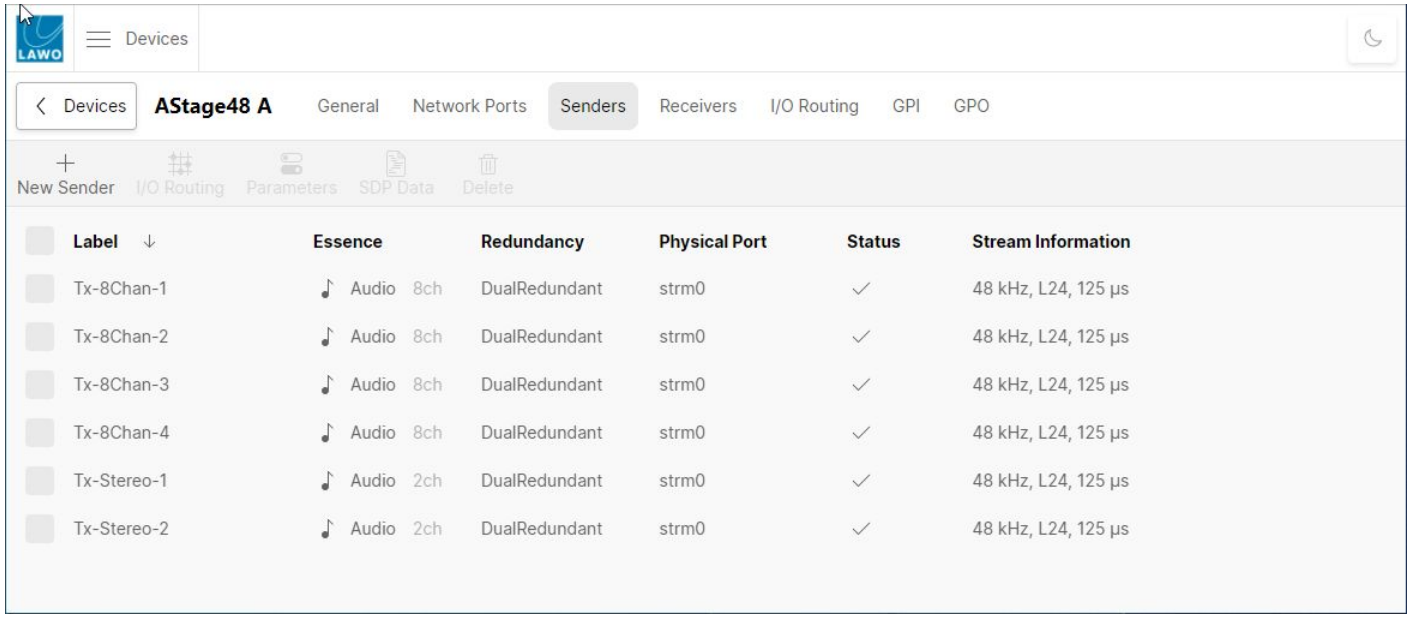
The **Primary Multicast, Secondary Multicast** and **Destination UDP Port** fields determine how the multicast addresses are created. There are two possibilities: either automatic or manual.

- If you leave the fields at their default values (auto and 5004), then the stream will be allocated an automatic multicast IP address and port. In most instances, this is fine. You can view the allocated addresses once the stream is created (by selecting the stream and clicking on Parameters).
- If your network supports a limited IP range, then you may wish to assign a multicast IP address and port manually. In this instance, type the required values into the corresponding fields.

5. Select **Create** to create the streams.

The sending streams are added to the list of **Senders**.

In our example, the final result looks like this.



HOME - New Receiver

The **New Receiver** button can be used to create one or more new receivers. Once created, an incoming stream can be assigned to each receiver either by making a connection in the "Stream Routing" or editing the receiver's SDP data.

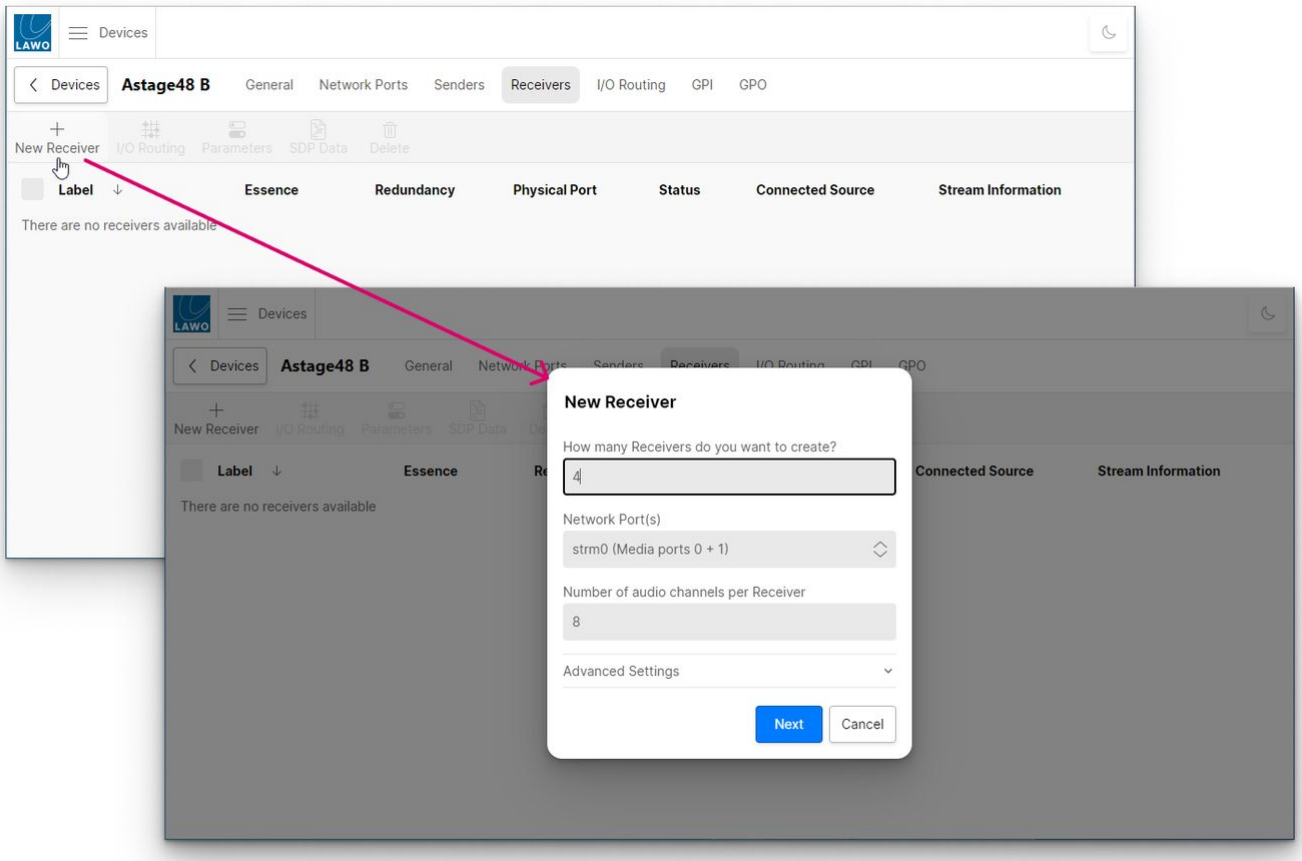
1. From the main "Devices" page, click on the label of the device you wish to configure.

This opens the "Device Details" page with the **General** tab selected.

2. Select the **Receivers** tab to view the existing receivers.

In our example, there are no existing receivers.

3. Click on the **New Receiver** button and follow the on-screen instructions.



To simplify the operation, the "New Receiver" window opens with some default values and the advanced settings are hidden.

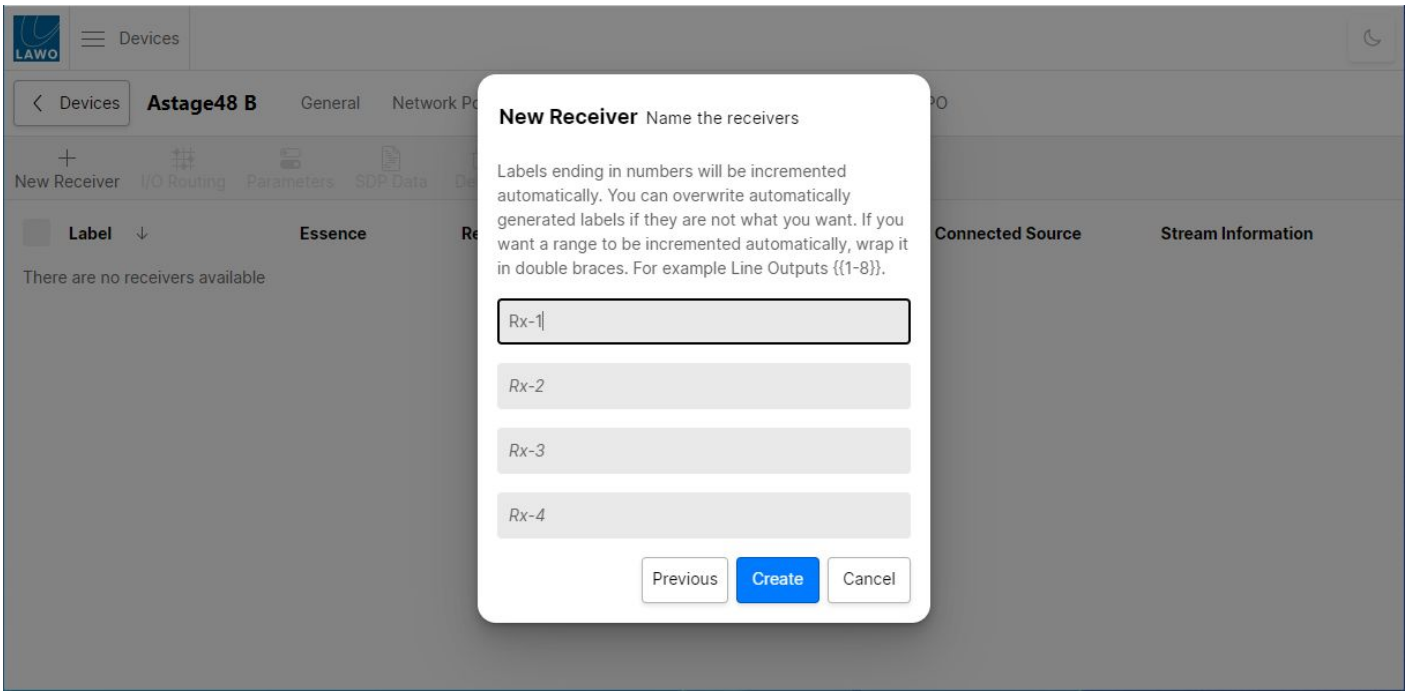
- To change the number of receivers or any of the other values, edit the fields as required. The example above will create four 8-channel receivers.
- The **Advanced Settings** can be opened if you need to adjust the streaming parameters (described later). In most instances, it is fine to leave these hidden and use the default values.

> By default, all new receivers are configured to use two network ports in **Dual Redundant** mode so that they can accept SMPTE ST2022-7 compatible streams (for redundant streaming).

The "Number of audio channels per Receiver" sets the maximum number of channels that can be received. Once an incoming stream is connected, if there is a mismatch, then the incoming channels are received on a best-effort basis. For example:

- If a stereo stream is connected to an 8-channel receiver, then the two source channels are assigned to channels 1 and 2 of the receiver (and channels 3 to 8 of the receiver are unused).
- If a 64-channel stream is connected to an 8-channel receiver, then the first eight source channels are assigned to channels 1 to 8 of the receiver (and the remaining source channels from the incoming stream are unused).

4. Select **Next** to continue, and enter a label for the first receiver (e.g. Rx-1).



The fields auto-complete as you enter your text. If the label ends in a number, then this increments.

You can use double braces to enter an auto-incrementing range. For example, when creating 8-channel receivers. you could type Rx {{1-8}} to enter the receiver labels: Rx 1-8, Rx 9-16, Rx 17-24, etc.

The **Receiver Label** identifies the receiver within the network. It cannot be left blank and cannot be edited once you have created the receiver.

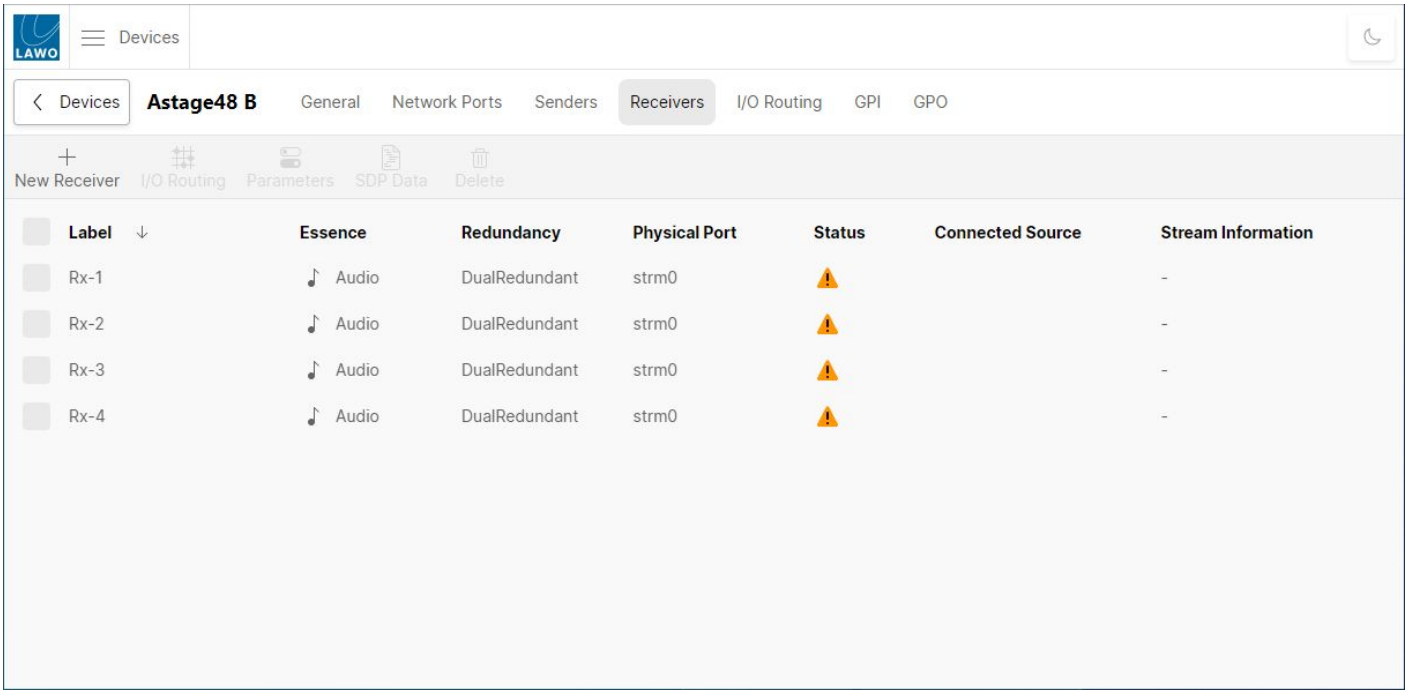
The identifier string must not contain the character “/” (ASCII/UTF-8: 47) and must begin with a letter or the lower line character “a”-“z”, “A”-“Z”, “_” (ASCII/UTF-8: 65-90, 97-122 ,95).

Receiver labels must not exceed 28 characters.

5. Select **Create** to create the receivers.

The new entries are added to the list of **Receivers**.

In our example, the final result looks like this.



Note that the yellow warning indicator in the **Status** column is normal at this stage, as the receivers have not been connected. The warning should clear once a connection is made (providing that the stream subscription is successful).

HOME - I/O Routing

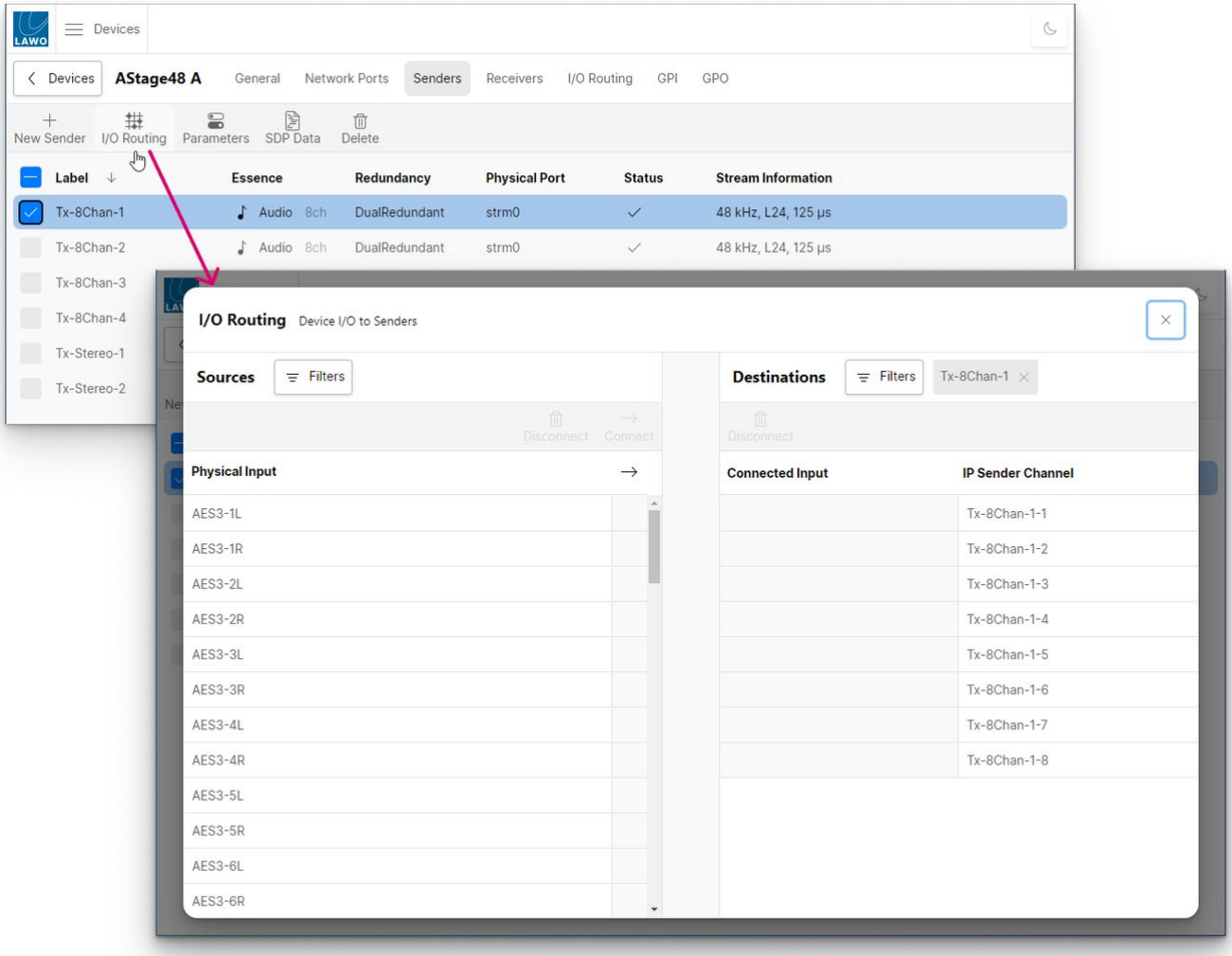
The **I/O Routing** page is used to connect the IP channels of the senders and receivers to the physical audio I/Os of the device: Mic/Line, AES3, MADI, etc. The operation is very similar to the "Signal List" display on Lawo's mc^2 consoles. To make a connection, select a source (on the left) and a destination (on the right); then click **Connect**.

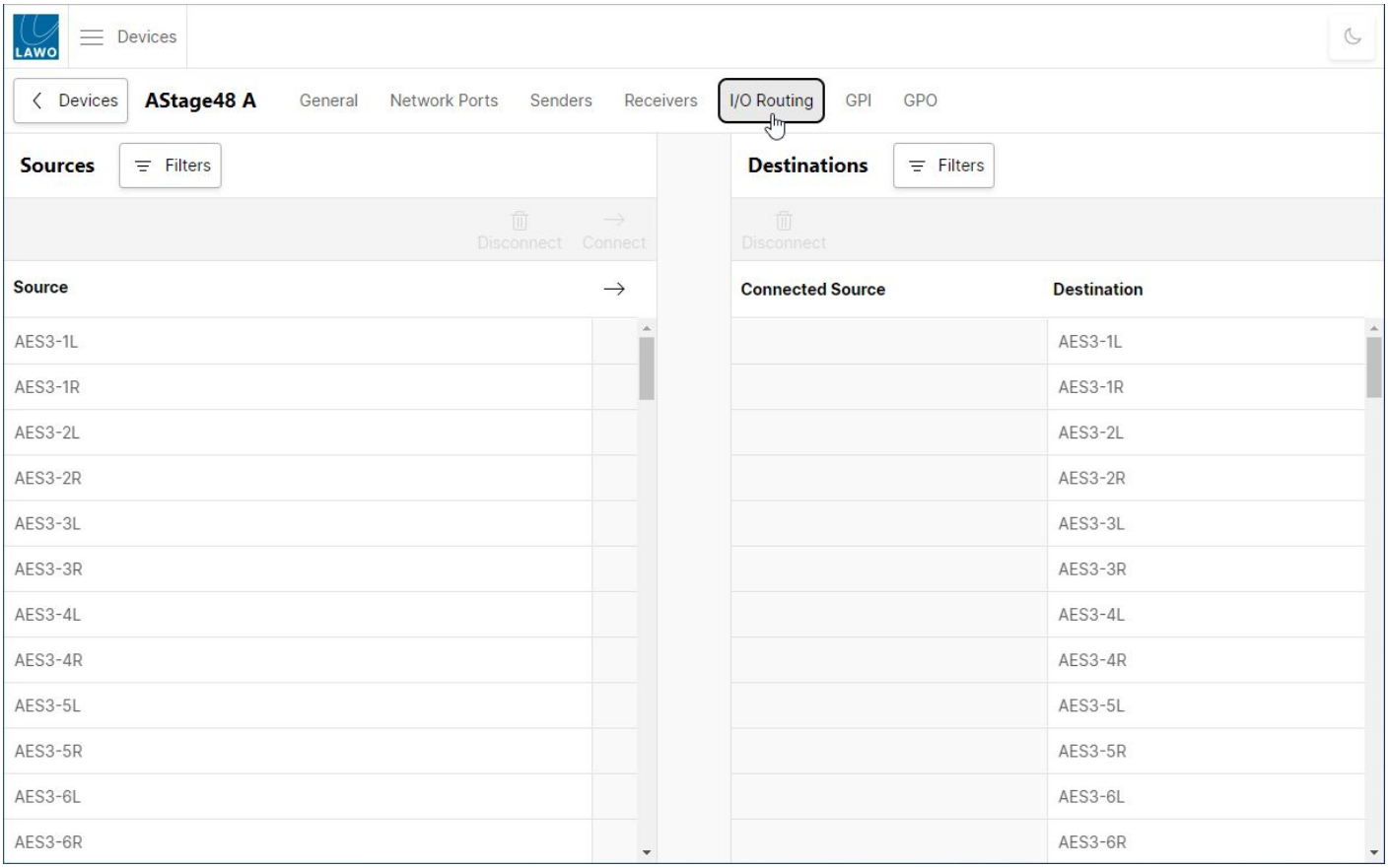
Opening the I/O Routing Page

Depending on how you want to view the information, there are three different ways to open the page.

1. From the **Senders** tab, select a stream and click on **I/O Routing**. This method shows all of the device inputs (on the left) and the stream's IP channels (on the right).
2. From the **Receivers** tab, select a receiver and click on **I/O Routing**. This method shows the receiver's IP channels (on the left) and all of the device outputs (on the right).
3. Select the **I/O Routing** tab. This method shows all available sources and destinations.

The first two methods are ideal for making assignments to a selected stream or receiver. You can select more than one stream or receiver if you wish. The third method is best if you need a complete overview of the device. The images below show two examples.





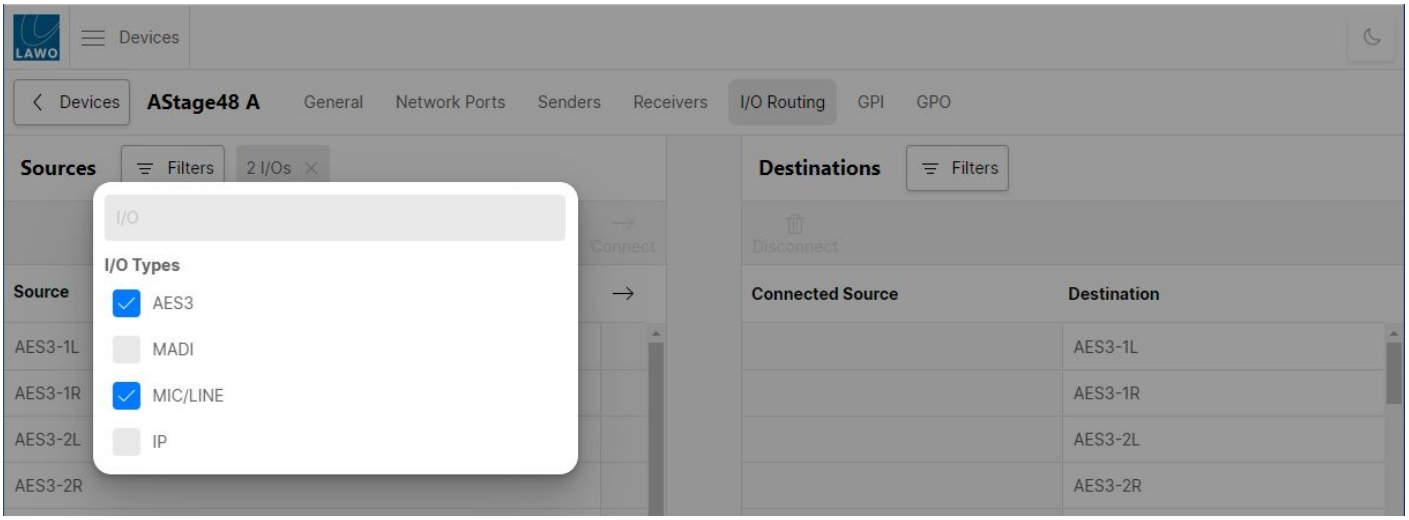
Once open, the page shows connections from "Sources" (on the left) to "Destinations" (on the right). Use the vertical scroll bars to scroll up and down each list.

- If a destination is connected, then the source label appears in the "Connected Source" column. If the source is also in view, then a solid line appears.
- If a source is connected, then a number appears in the "source used" column. This indicates the number of connections made. i.e. the number of times a source is used.

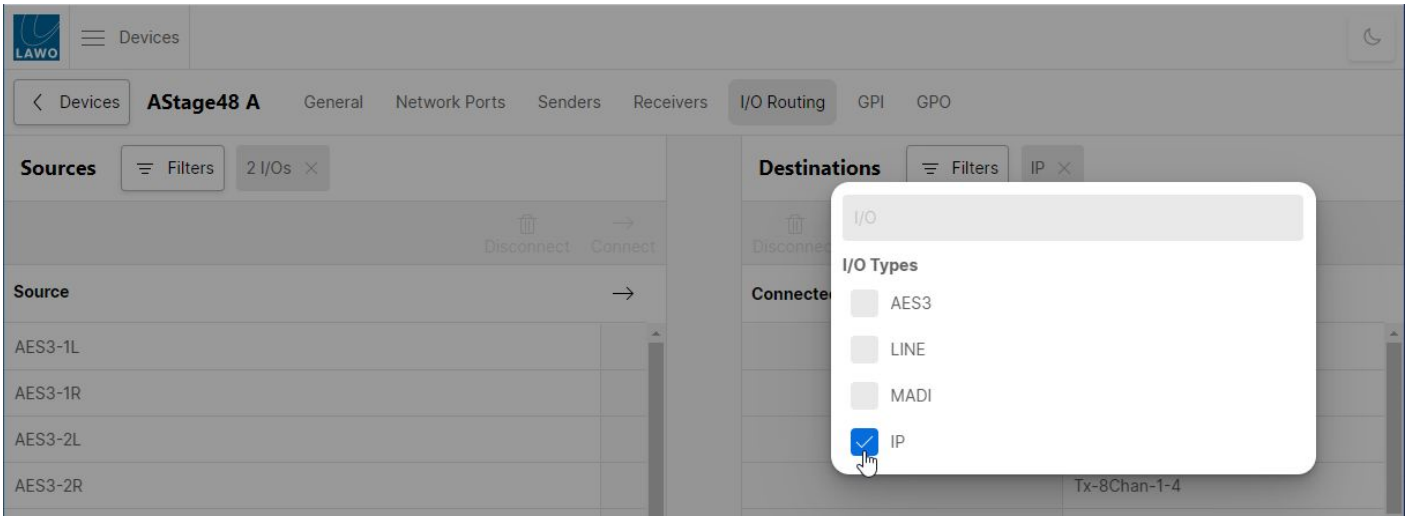
Applying a Filter

To restrict the view, you can apply one or more filters. This is a good idea, especially if you have opened the **I/O Routing** tab and have all sources and destinations in view.

1. Start by selecting the "Sources" **Filters** button and choose **Filter by type**.
2. Select the sources you wish to view (e.g. **AES3** and **MIC/LINE**).



3. Click anywhere outside of the **Filters** box - the pop-up closes and the filters are applied.
4. Repeat to filter the "Destinations", but this time choose **IP**.



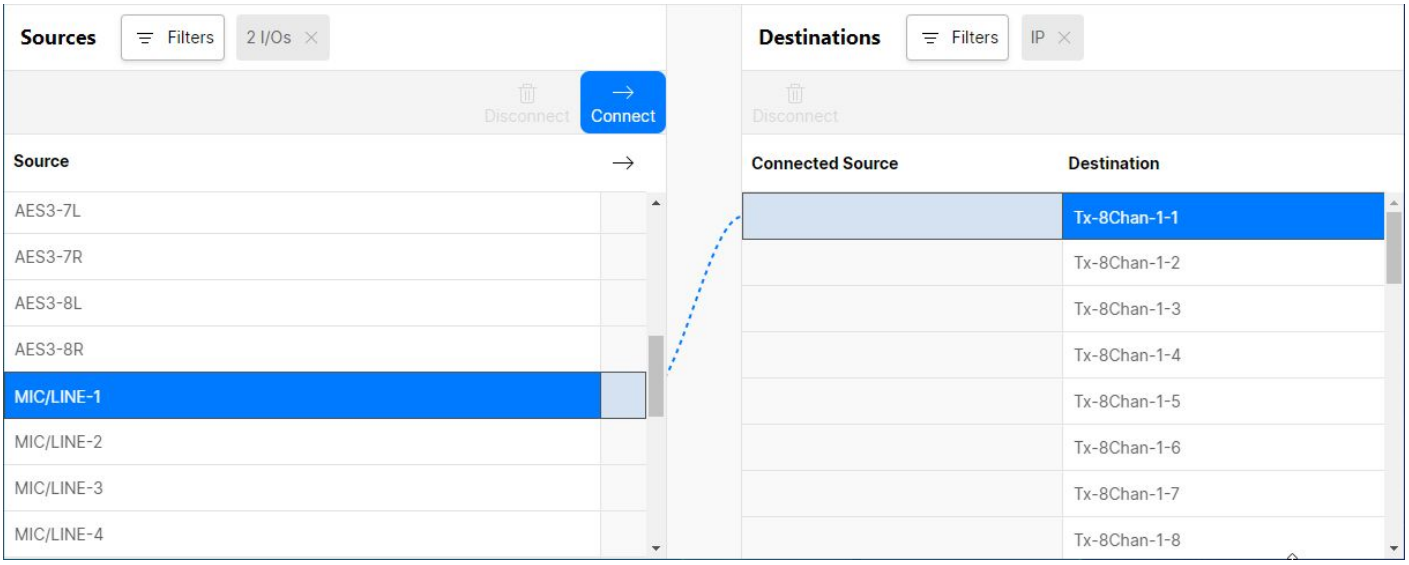
You should now see all of the AES3 and Mic/Line inputs (on the left) and IP channels (on the right). This view is ideal for connecting the device I/Os to the IP channels of the Tx streams.

Making (and Unmaking) Connections

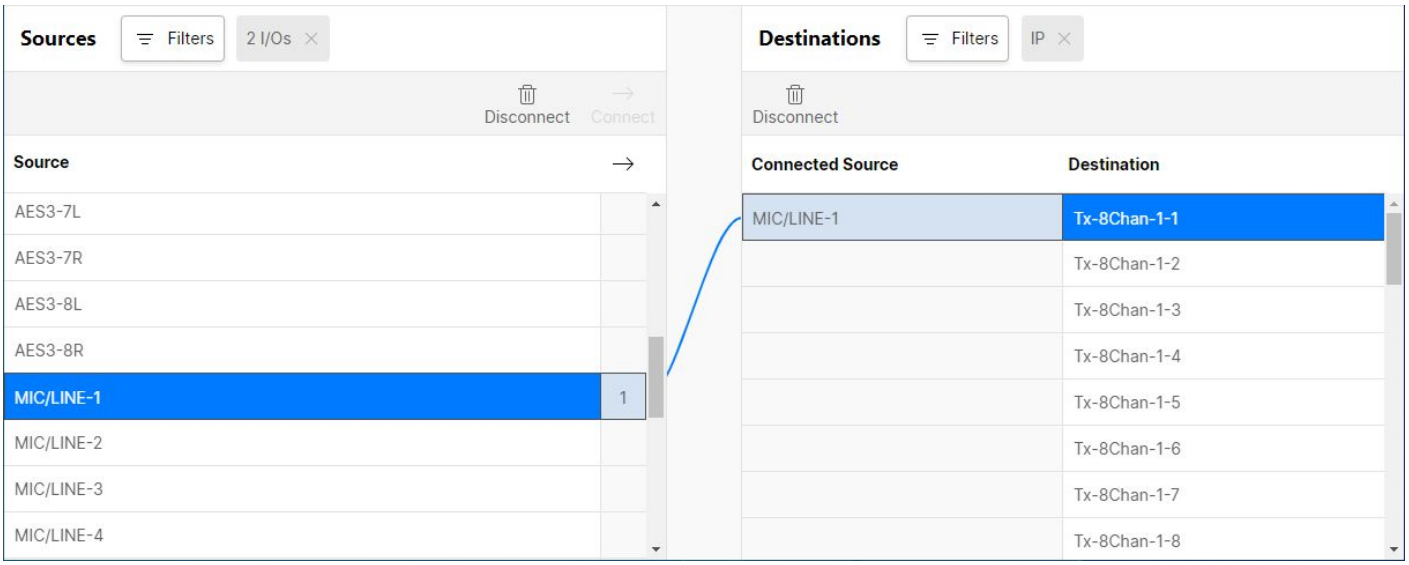
The **Connect** and **Disconnect** buttons are used to make and unmake connections as follows.

Connecting a Source to a Destination

To make a connection, select a source and a destination.



Then click **Connect** - the dotted (preview) line changes to a solid line and the "Connected Source" field updates.



Using Disconnect

To remove a connection, select either a source or destination and click **Disconnect**.

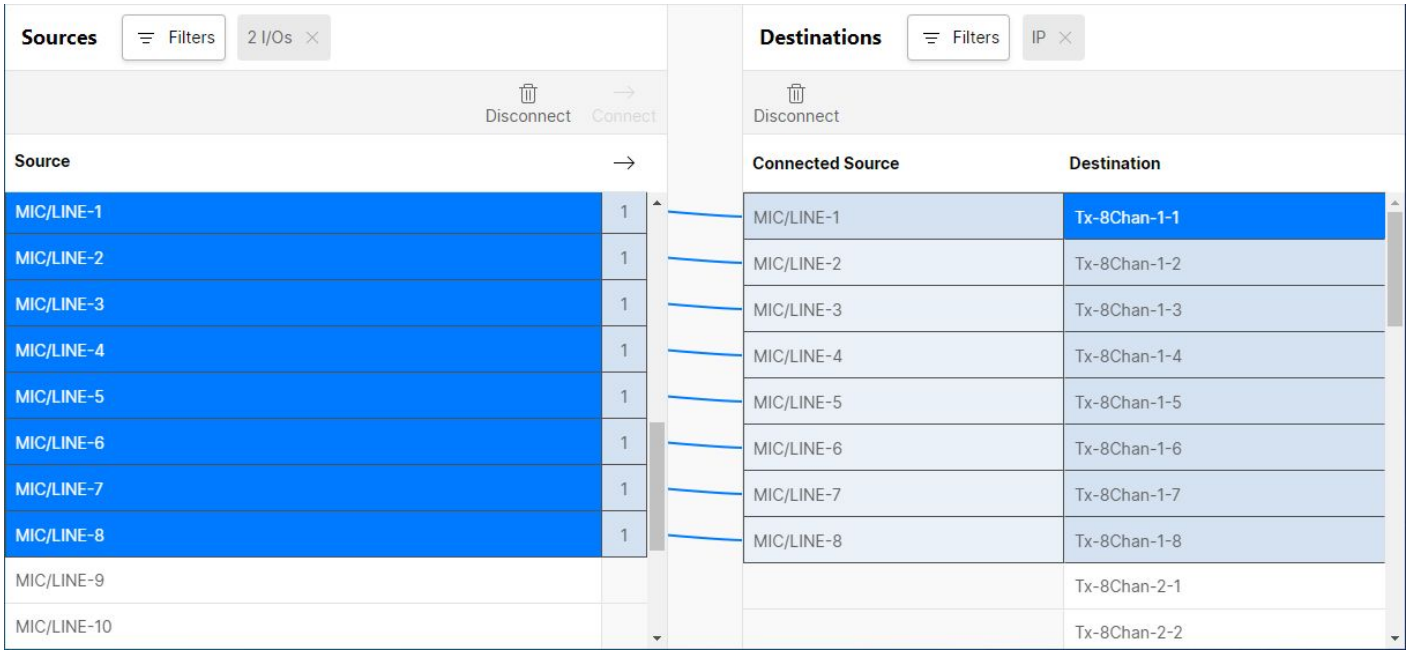
- If you disconnect a source, then all of its connections are removed and the "source used" field clears.
- If you disconnect a destination, then the connection is removed and the "Connected Source" field clears.

Connecting Multiple Sources to Multiple Destinations

You can select multiple sources and destinations by pressing and holding the SHIFT or CTRL buttons on your keyboard. This makes it easy to connect or disconnect multiple signals in one operation.

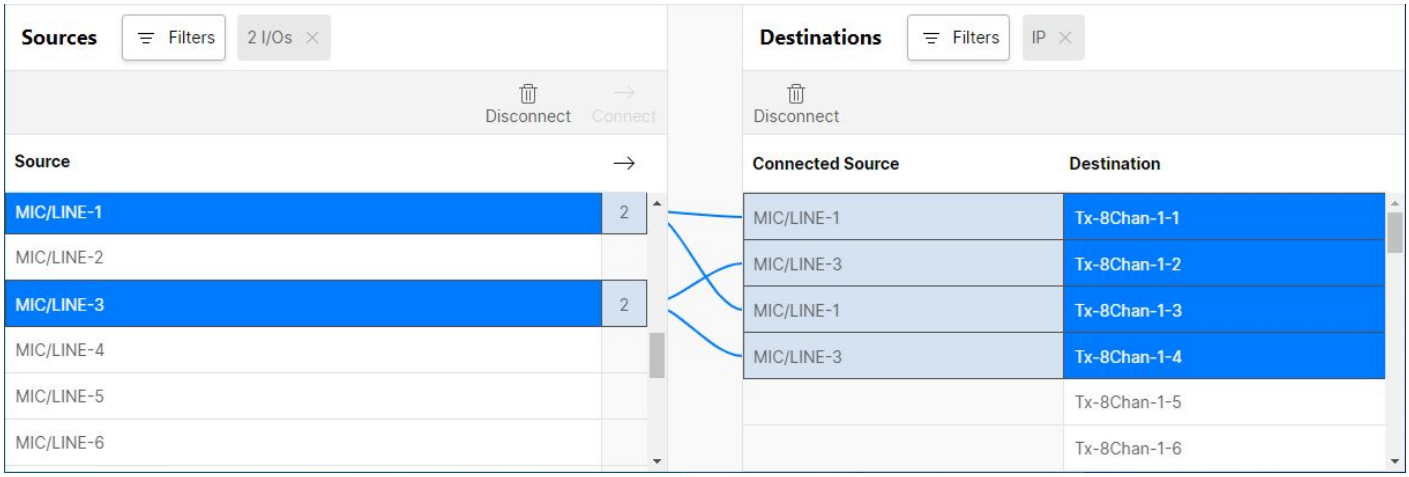
Follow the same steps as before, but press and hold SHIFT to select a range. Once a range is selected, press and hold SHIFT to increase (or decrease) the selected range. Alternatively, press and hold CTRL to select (or deselect) individual signals.

When you click **Connect** (or **Disconnect**), the assignments are made in one operation. For example, to connect eight sources to eight destinations.



If there is a mismatch between the number of selected sources and destinations, then the routes are made on a best-effort basis as follows.

- If there are eight sources and only four destinations, then the first four sources are assigned consecutively to the first four destinations.
- If there are two sources and eight destinations, then the sources are repeated to each pair of destinations (as shown below).



Reversing the Filters

Remember to reverse the filters to connect the receiver's IP channels to the device's physical outputs.

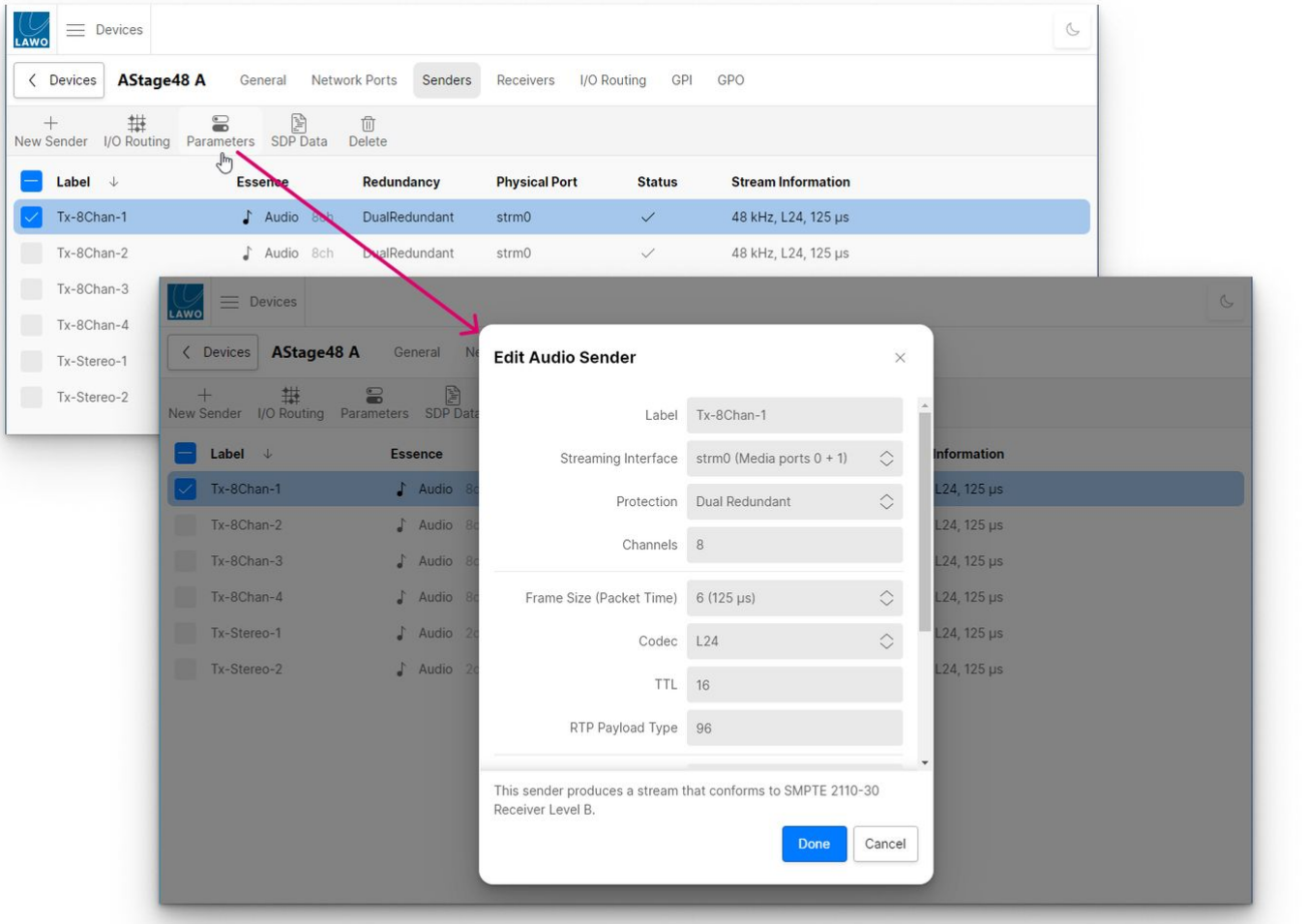
HOME - Edit Sender or Receiver

The **Parameters** button can be used to view or edit the parameters for an existing sender or receiver. The example below shows a sender. The method for receivers is identical (but select the **Receivers** tab).

1. From the **Senders** tab, select a stream and click on **Parameters**.

The "Edit Sender" window opens.

Note that the **Parameters** button is not available if you select more than one sender.



For more information about the fields, see HOME - Sender Parameters. Or, HOME - Receiver Parameters if you have selected a receiver.

2. Use the fields to edit the streaming parameters.

Note that the "Label", "Streaming Interface", "Protection" and "Channels" fields cannot be modified. This means that if you change any of these fields, then the edits are either ignored or an on-screen error message appears (once you select Done).

3. Select **Done** to confirm (or **Cancel** to exit without saving).

HOME - SDP Data

The **SDP Data** button can be used to view or edit the SDP of an existing sender or receiver. You may wish to view the SDP to help with troubleshooting or edit the SDP to set up a fixed streaming connection.

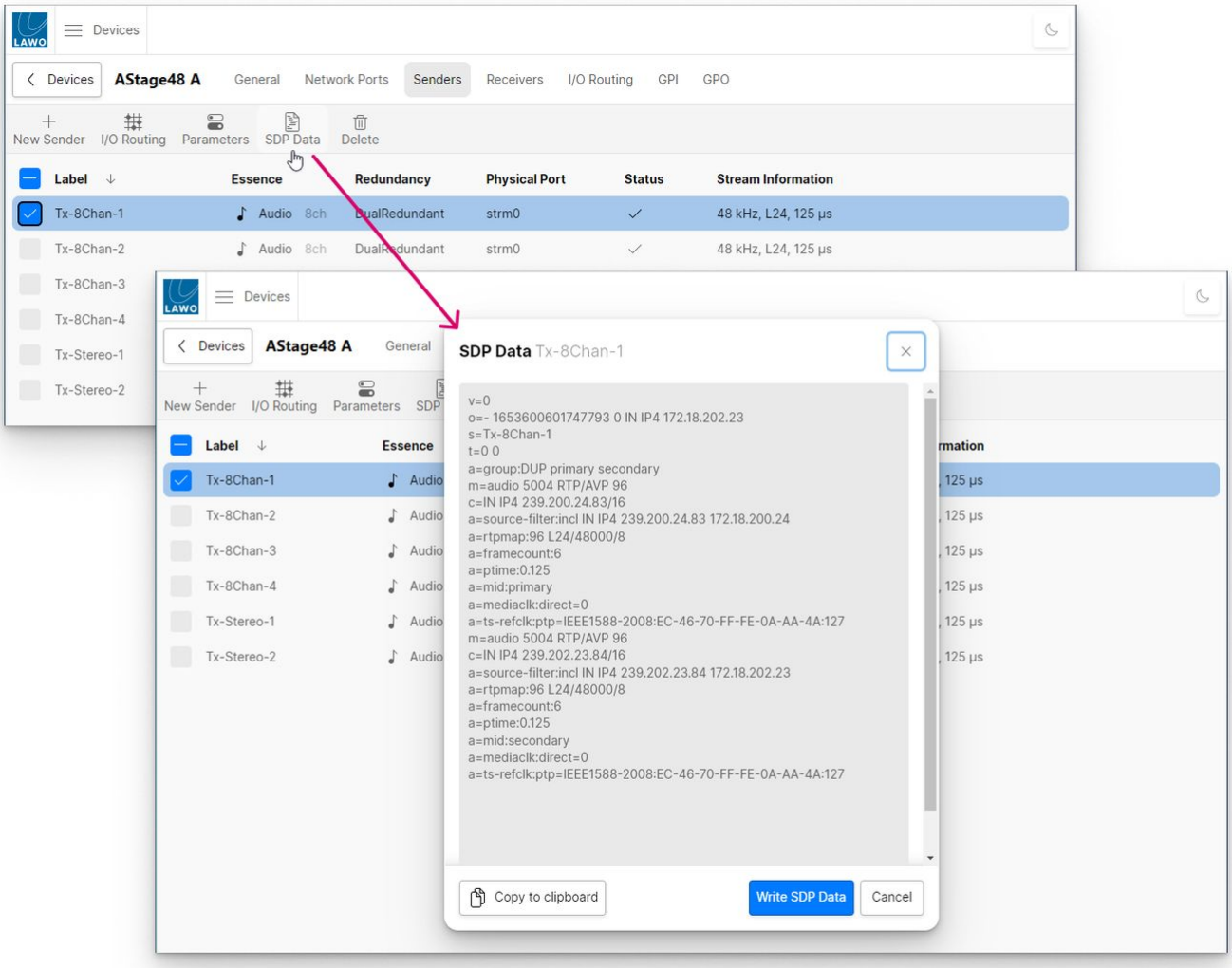
SDP (Session Description Protocol) is a format for describing streaming media communication parameters. It is commonly used in standard networking applications.

Opening the SDP Data

The example below shows a sender. The method for receivers is identical (but select the **Receivers** tab).

From the **Senders** tab, select a stream and click on **SDP** - the "SDP Data" window opens.

Note that the **SDP** button is not available if you select more than one sender.



The main area shows the SDP information for the stream. Or, for the connected stream if you are viewing the SDP of a receiver. If the stream is redundant, the SDP contains information about both network paths.

SDP Operations

The following operations are possible.

- **Copy to clipboard** - copies the SDP data to the clipboard. You can use this to set up a streaming connection (as described below).
- **Write SDP Data** - if you click anywhere inside the main area, then it is possible to edit the SDP data. To save the changes, click on **Write SDP Data**. This can be used to edit the SDP manually, or via a copy & paste (as described below).
- **Cancel** - closes the SDP data window without saving.

Setting Up a Streaming Connection

The SDP data can be used to set up a fixed streaming connection between a specific sender and receiver. This method can be used as an alternative to the Stream Routing page.

> **Important**: If you use this method, then the streaming connection is not shown in the " Stream Routing". In this instance, it is important not to make another connection to the same receiver.
>
> Connecting more than one stream to the same receiver can lead to strange results!

1. Start by creating a new receiver in the usual manner.

The receiver parameters should match (or exceed) those of the incoming stream. e.g. same channel count, redundancy mode, etc.

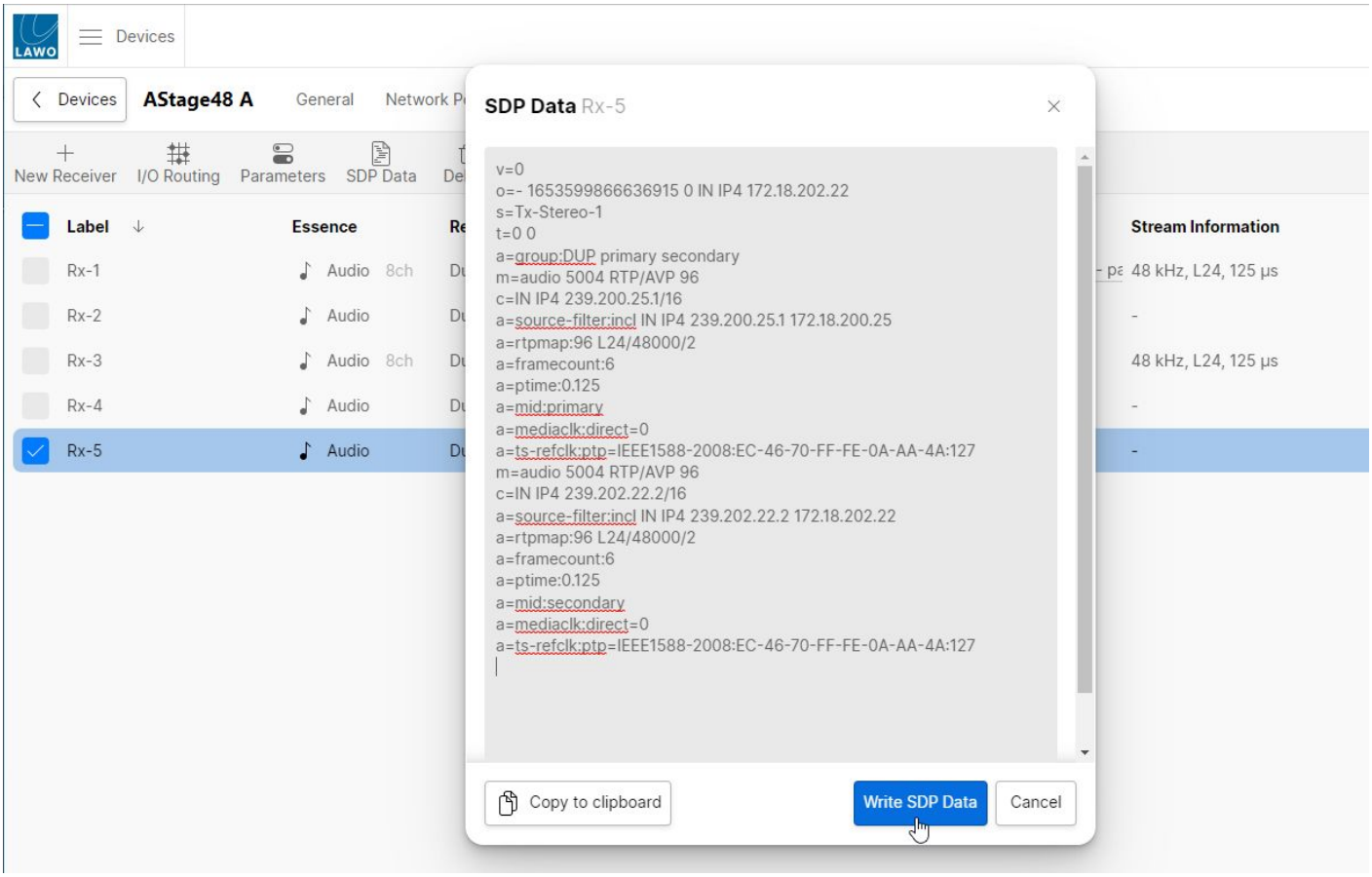
2. Copy the SDP information from the sender.

If the device is known to HOME, then you can open the SDP data (as described above) and select **Copy to clipboard**. If the device is not known to HOME, then you will need to obtain the SDP data using another method (e.g. via the device's own Web UI).

3. Return to the receiver created in step 1, and open its SDP data.

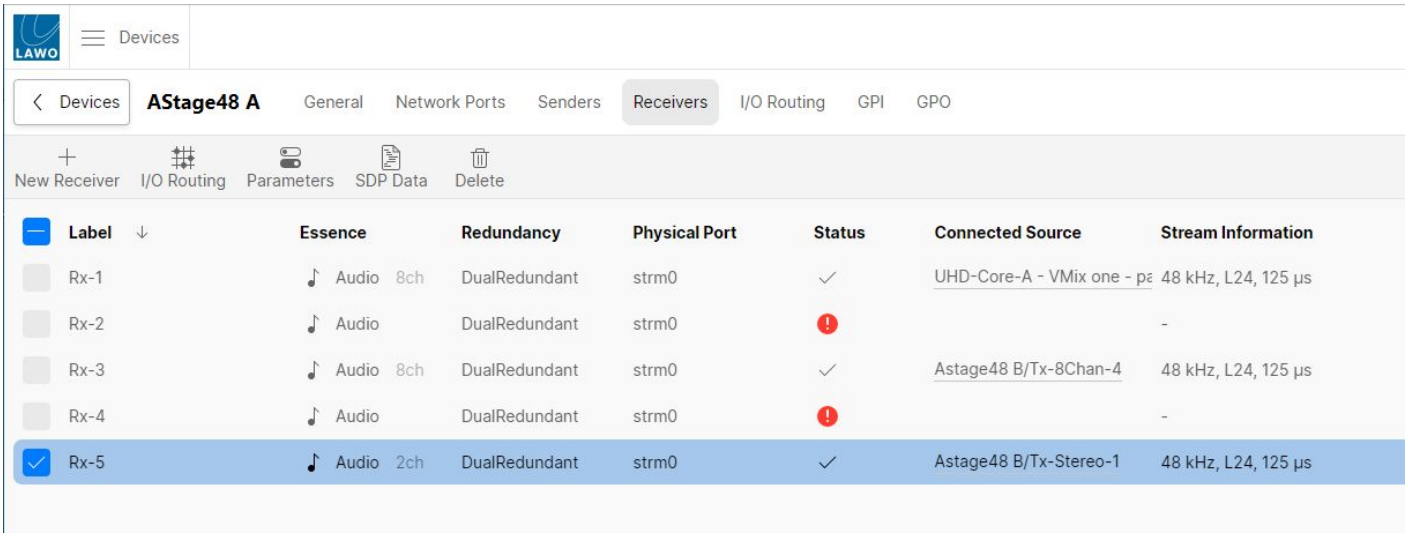
The SDP data should be empty (as this is a new receiver).

4. Click anywhere inside the main area and paste the contents of the clipboard (press CTRL+V, or right-click and select **Paste**).



5. Click on **Write SDP Data** to save the changes and exit.

The receiver "Status", "Connected Source" and "Stream Information" should update (providing that the stream subscription is successful).



Creating an Empty Receiver

If you clear the SDP data of an existing receiver, then this creates an empty receiver. Follow the steps below to clear the SDP data.

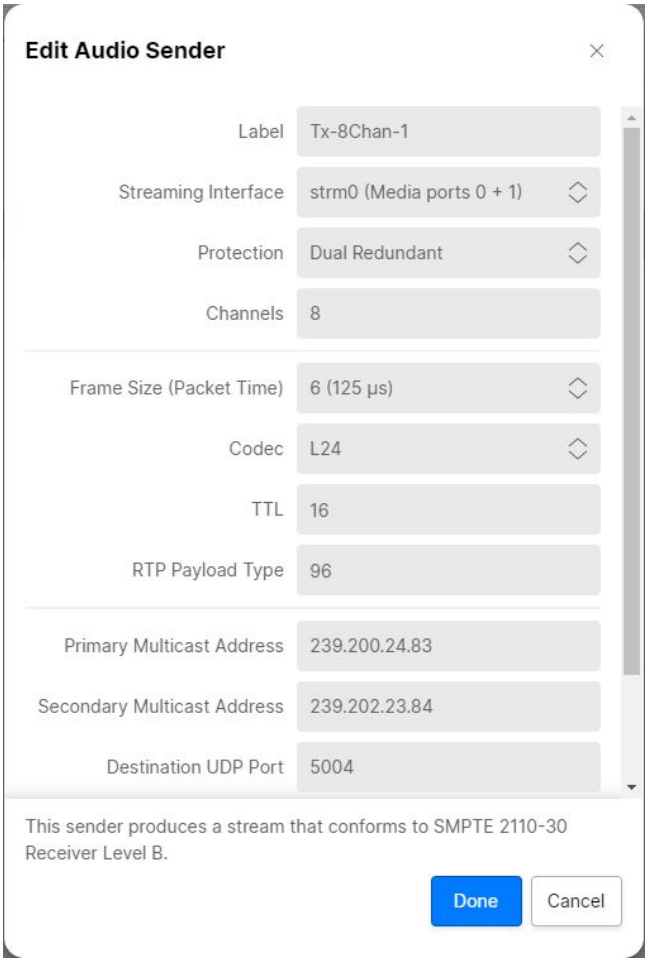
1. Select the receiver and open its SDP data.
2. Click anywhere inside the main area and select all of the data (press CTRL+A).
3. Click on **Write SDP Data** to save the changes and exit.

HOME - Sender Parameters

The following parameters appear when you edit an existing sender or create a new sender. When creating a new sender, most of the parameters are hidden from view until you reveal the **Advanced Settings**.

The parameters are explained in the order that they appear in the "Edit Audio Sender" window.

The "Label", "Streaming Interface", "Protection" and "Channels" fields cannot be modified once a stream is created.



Label

The **Sender Label** identifies the stream to other network users. It cannot be left blank and cannot be edited once you have created the stream.

The identifier string must not contain the character “/” (ASCII/UTF-8: 47) and must begin with a letter or the lower line character “a”-“z”, “A”-“Z”, “_” (ASCII/UTF-8: 65-90, 97-122 ,95).

Sender labels must not exceed 28 characters.

Streaming Interface & Protection

These fields determine which interface, or interfaces, will be used to transmit the stream to the network.

To create SMPTE ST2022-7 compatible streams, the "Protection" field must be set to **Dual Redundant** to activate both interfaces. If redundant streaming is not required, then you can choose to issue the stream from either the **Primary** or **Secondary** interface.

Channels

This value sets the number of audio channels to be encoded.

Frame Size (Packet Time)

The frame size sets the number of samples per channel per network packet, and defines the packet time (in seconds). The default value = 6 samples / 125 µs.

The smaller the value, the more often the device transmits packets. This results in a lower sending latency, but also a higher demand on the network's bandwidth. In Lawo devices, the frame size limits the number of senders that can be created by each device.

Codec

This field selects the encoding method used for the digital audio. There are three possible options. The default value = L24.

- L16 = 16-bit Linear PCM
- L24 = 24-bit Linear PCM
- AM824 = 24-bit Linear PCM + 8-bit metadata, a non-standard format commonly used in AES/EBU.

TTL (Time to Live)

The TTL value can be used to prevent data packets from circulating indefinitely. The default value = 16.

You may need to increase the TTL value if your network includes several Layer 3 network switches (Gateways).

RTP Payload Type

This field describes the format of the transported content. The default value = 98.

Primary / Secondary Multicast Address & Destination UDP Port

These fields show the multicast IP addresses and UDP port assigned to the stream. By default, when you create a new stream, the multicast addresses are assigned automatically and the UDP port value is set to 5004.

If you wish to assign a multicast IP address and port manually, then type the required values into the corresponding fields.

Primary / Secondary Source Address

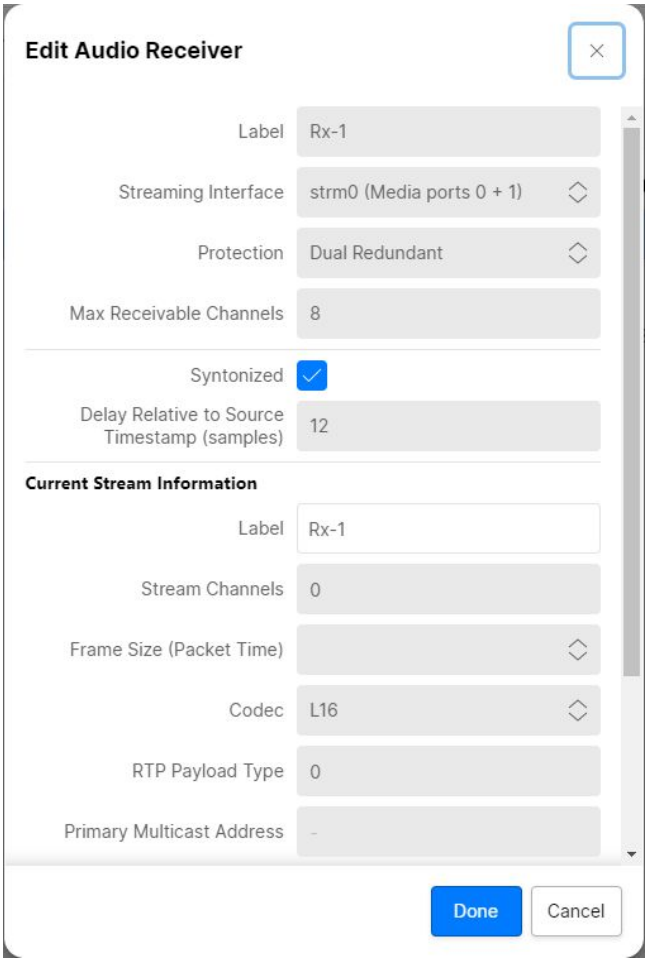
These fields are for information only. They show the IP address of the multicast address provider (used in auto mode).

HOME - Receiver Parameters

The following parameters appear when you edit an existing receiver or create a new receiver. When creating a new receiver, most of the parameters are hidden from view until you reveal the **Advanced Settings**.

The parameters are explained in the order that they appear in the "Edit Audio Receiver" window.

The "Label", "Streaming Interface", "Protection" and "Max Receivable Channels" fields cannot be modified once a receiver is created.



Label

The **Receiver Label** identifies the receiver within the network. It cannot be left blank and cannot be edited once you have created the receiver.

The identifier string must not contain the character “/” (ASCII/UTF-8: 47) and must begin with a letter or the lower line character “a”-“z”, “A”-“Z”, “_” (ASCII/UTF-8: 65-90, 97-122 ,95).

Receiver labels must not exceed 28 characters.

Streaming Interface & Protection

These fields determine which interface, or interfaces, will be used to receive the connected stream from the network.

By default, all new receivers are configured to use two network ports in **Dual Redundant** mode so that they can accept two SMPTE ST2022-7 compatible streams (for redundant streaming). You can choose to receive these streams non-redundantly by choosing either **Primary Only** or **Secondary Only**.

If the connected stream's SDP is not SMPTE ST2022-7 compatible, then the "Protection" field is set to **Primary Only** (by default). In this instance, you can change the receiver port to **Secondary Only** if needed.

Max Receivable Channels

This value sets the maximum number of channels that can be received. Once an incoming stream is connected, if there is a mismatch, then the incoming channels are received on a best-effort basis. For example:

- If a stereo stream is connected to an 8-channel receiver, then only the first two channels of the receiver are used.
- If a 64-channel stream is connected to an 8-channel receiver, then channels 1 to 8 are assigned to the receiver and channels 9 to 64 are unused.

Syntonized

This option determines whether the receiver runs in syntonized mode (option enabled) or synchronized mode (option disabled). By default, syntonized mode is enabled.

Syntonized mode should be used if the clock signal is missing from the connected stream's SDP information, or if you have a different clock source selected at the sender and receiver. It should always be enabled for connections between Lawo audio and video devices.

Synchronized mode can be used if ....

Delay Relative to Source Timestamp (samples)

This value can be used to compensate for delays along the network path such as packetization latency and jitter. The default value = 12 samples.

The value must always be larger than the frame size (in samples) specified at the sender. As a general rule, set the value to 2 x the sender's frame size. If you experience drop-outs during playback, then increase the value.

Current Stream Information

The remaining fields provide information about the connected stream (once a connection is made). The fields are identical to those for a sender, see Sender Parameters.

5.5 HOME - Device I/O Routing

The **Device** → **I/O Routing** tab appears for all devices that support audio inputs and outputs. It is used to connect the IP channels of the senders and receivers to the physical audio I/Os of the device: Mic/Line, AES3, MADI, etc.

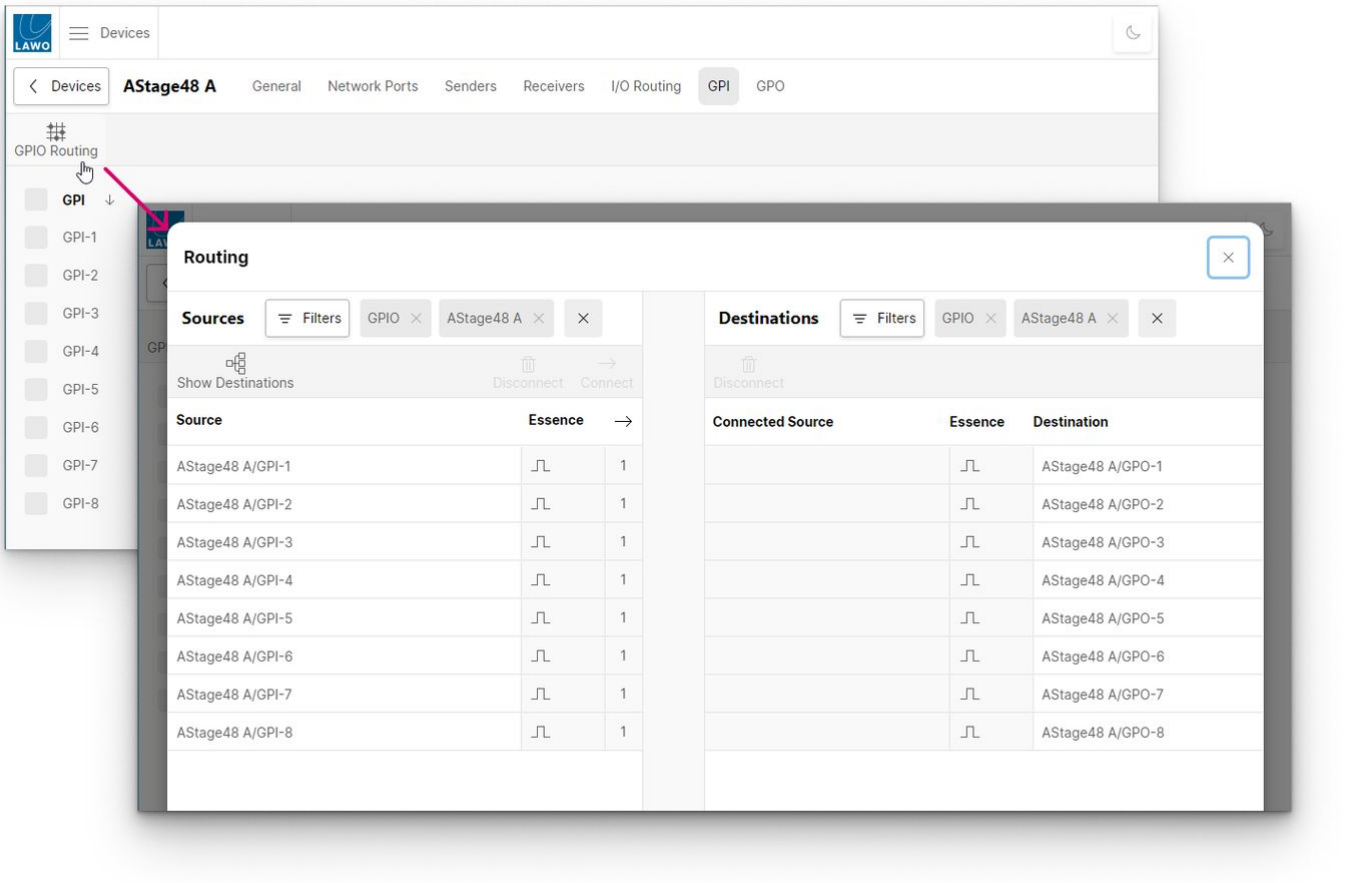
The operation is the same as described previously for senders and receivers. See I/O Routing.

5.6 HOME - Device GPIs and GPOs

The **Device** → **GPI** and **Device** → **GPO** tabs appear for all devices that support General Purpose Inputs and Outputs. They can be used to view (and edit) the streaming connections for the device's GPIO interfaces.

The operation is similar to that of the Stream Routing page, except that these tabs show only the connections from a single device. The example below shows the **GPI** tab. The method for GPOs is identical (but select the **GPO** tab).

1. To view all of the connections from the device, click on **GPIO Routing.**

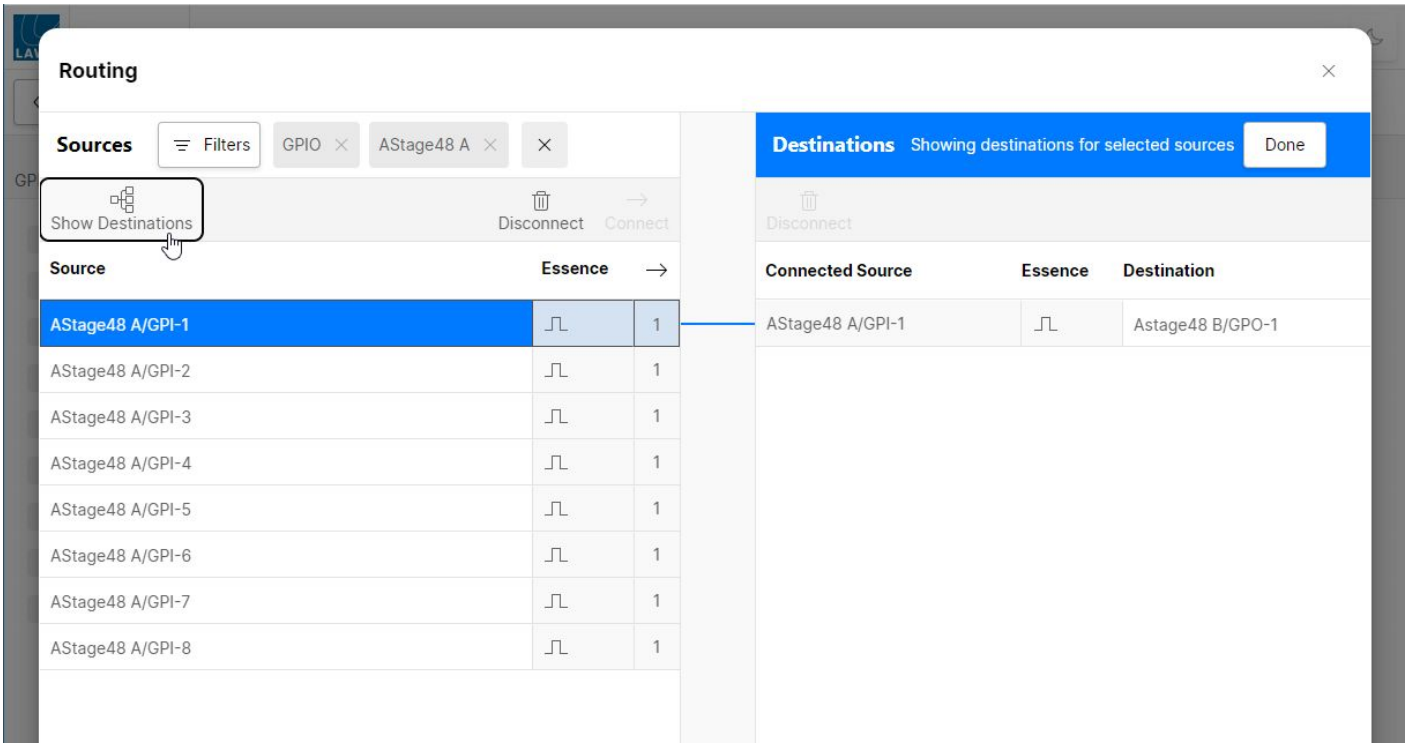


The list shows all of the device's GPI "Sources" (on the left) and the GPO "Destinations" (on the right).

- If a destination is connected, then the source label appears in the "Connected Source" column. If the source is also in view, then a solid line appears.
- If a source is connected, then a number appears in the "source used" column. This indicates the number of connections made. i.e. the number of times a source is used.

2. If a GPI is connected, then it can be interrogated as follows: select a source and click on **Show Destinations**.

The view updates to show only the destinations of the selected source (or sources).



3. Click on **Done** to exit the "Show Destinations" view and return to the list of all sources and destinations.

5.7 HOME - Device Advanced Parameters

The **Device** → **Advanced** tab appears if there are other parameters that are specific to the device.

For example, in Lawo's .edge systems, all of the available parameters for a processing blade can be accessed from the **Device** → **Advanced** tab.

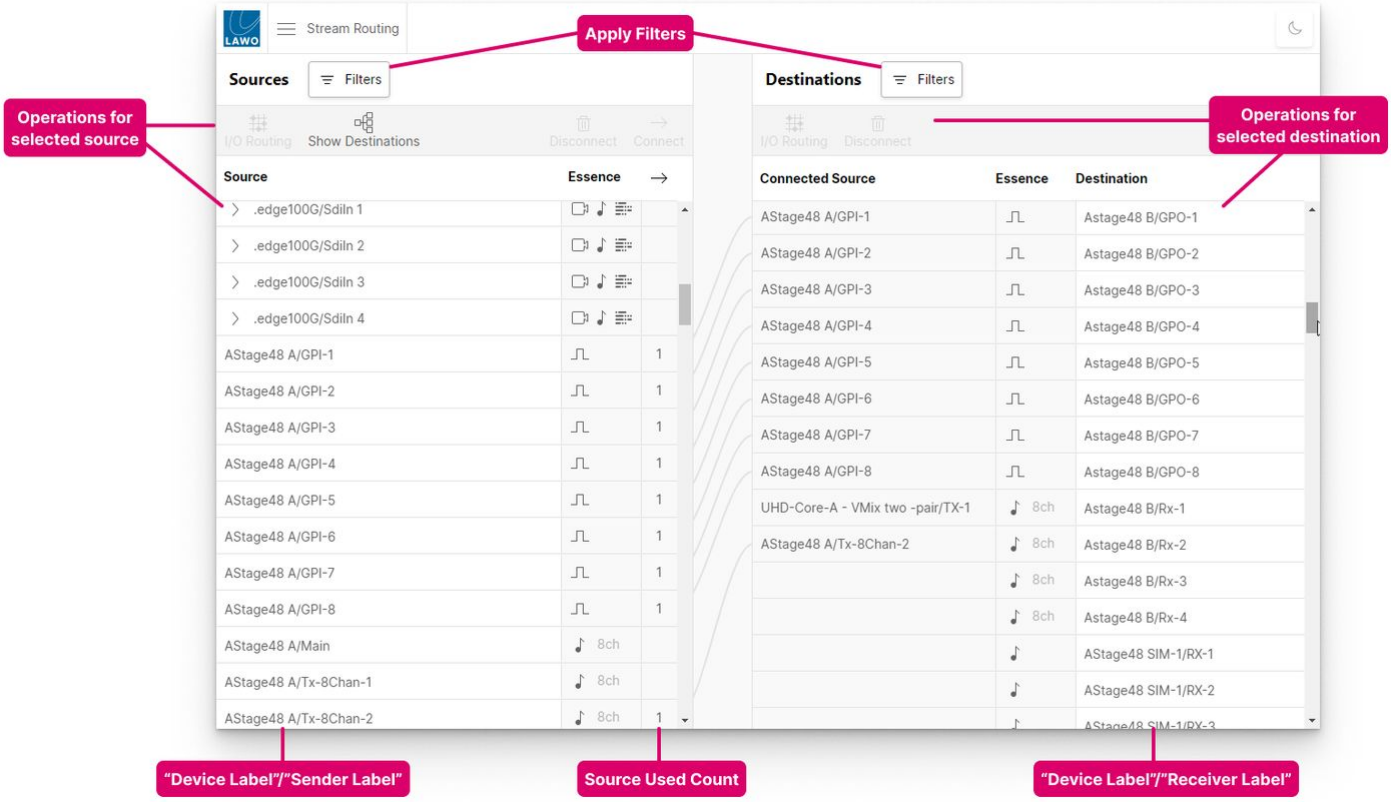
6 HOME - Stream Routing

This chapter describes how to manage the streaming connections.

- HOME - The Stream Routing Page

6.1 HOME - The Stream Routing Page

The "Stream Routing" page manages the streaming connections. From here you can connect a sender to a receiver, or interrogate the existing connections. The operation is identical to the I/O Routing page except that the connections are made at a stream level as opposed to a channel level.

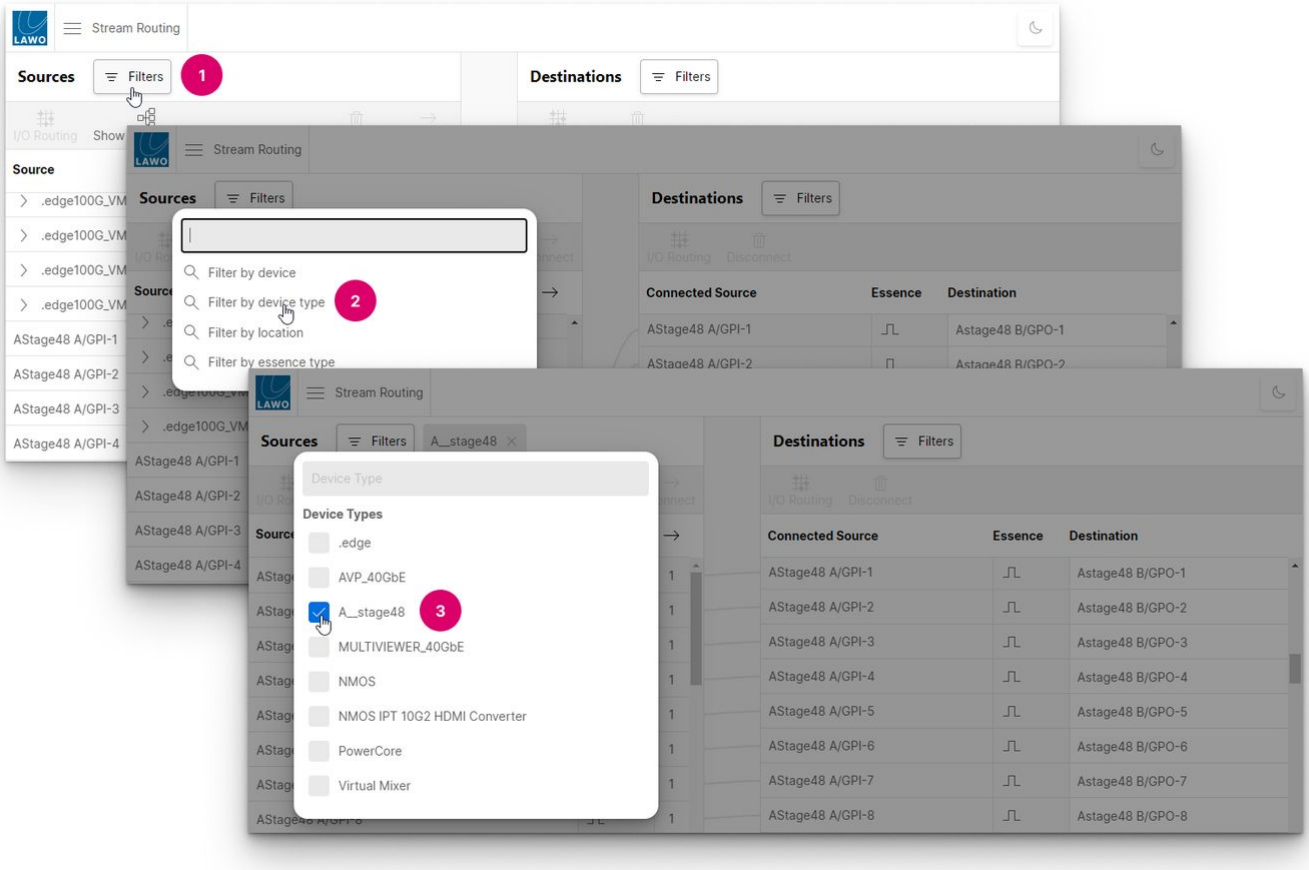


The page lists all available senders (on the left) and receivers (on the right). In each case, you will see two labels, one for the device and one for the sender or receiver. Use the vertical scroll bars to scroll up and down each list.

- If a destination is connected, then the source stream label appears in the "Connected Source" column. If the source is also in view, then a solid line appears.
- If a source is connected, then a number appears in the "source used" column. This indicates the number of connections made. i.e. the number of times a source is used.
- The **Essence** column describes the type of content: Video, Audio, Metadata or GPIO. If more than one type of content is supported, then an arrow appears beside the source or destination label. Click on the arrow to reveal the individual components.

Applying a Filter

To restrict the view, you can apply one or more filters. For example, to view all of the streaming connections from a particular device type.



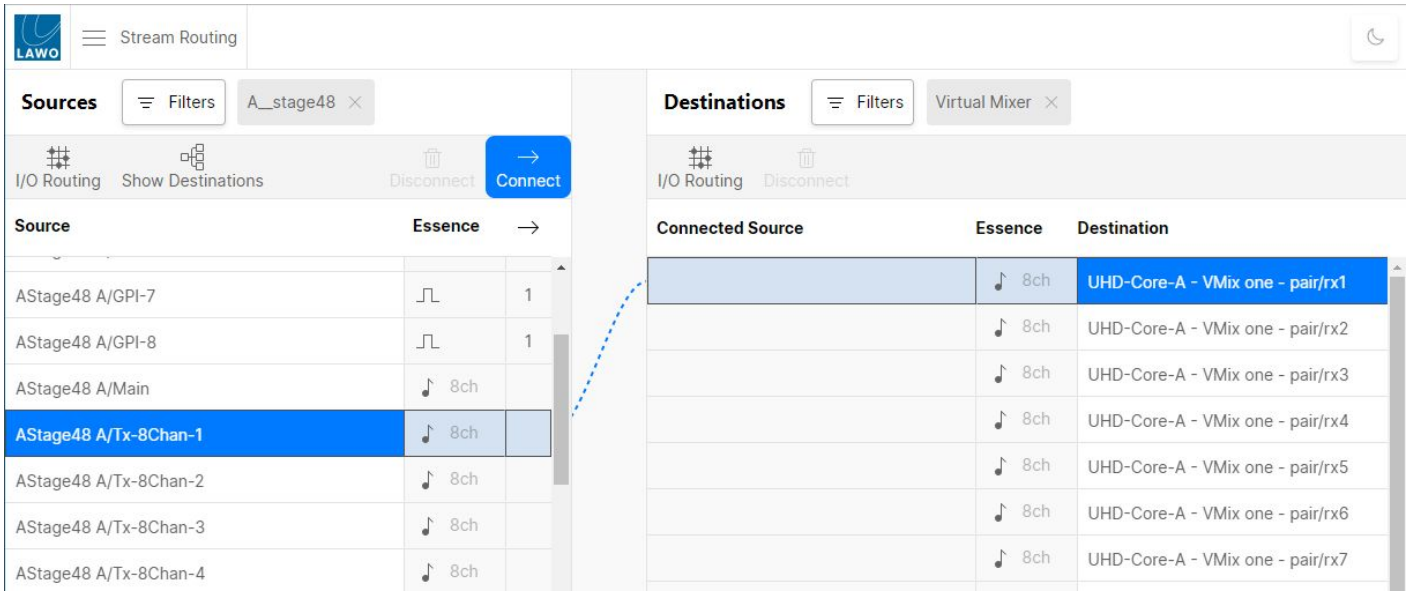
You should now see all of the A__stage48 senders (on the left). This view is ideal for connecting the device streams to other receivers on the network.

Making (and Unmaking) Connections

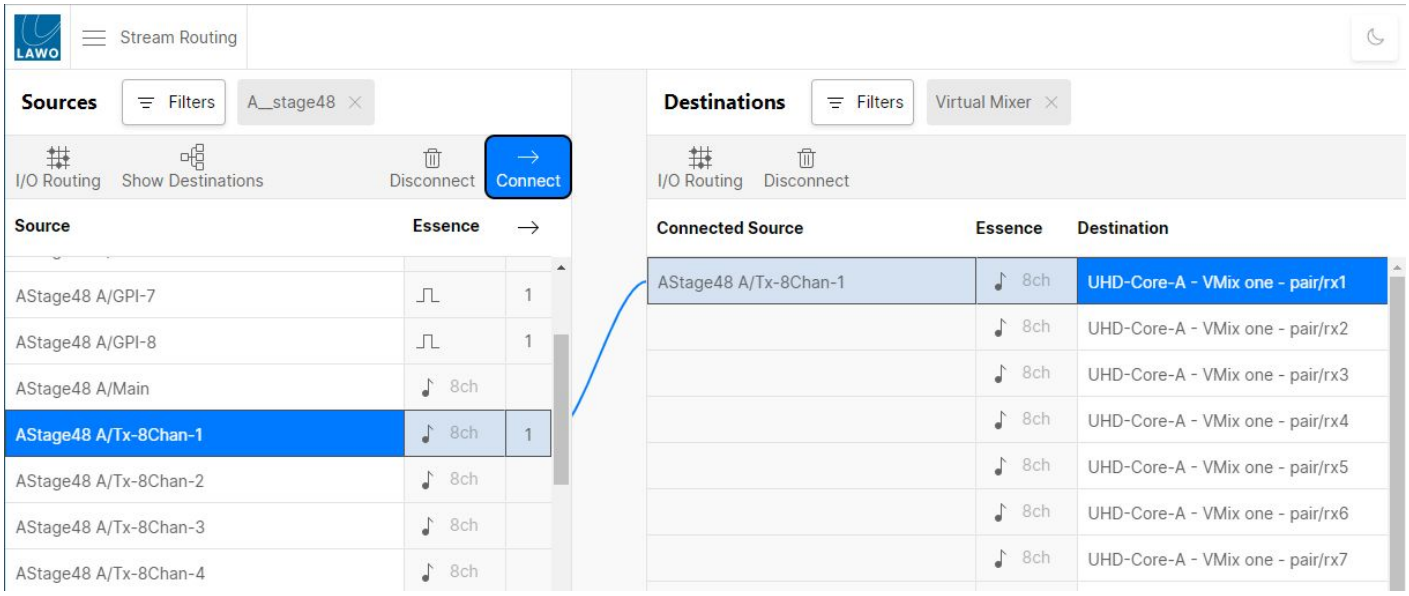
The **Connect** and **Disconnect** buttons are used to make and unmake the streaming connections.

Connecting a Sender to a Receiver

To make a connection, select a source and a destination.



Then click **Connect** - the dotted (preview) line changes to a solid line and the "Connected Source" field updates.



Using Disconnect

To remove a connection, select either a source or destination and click **Disconnect**.

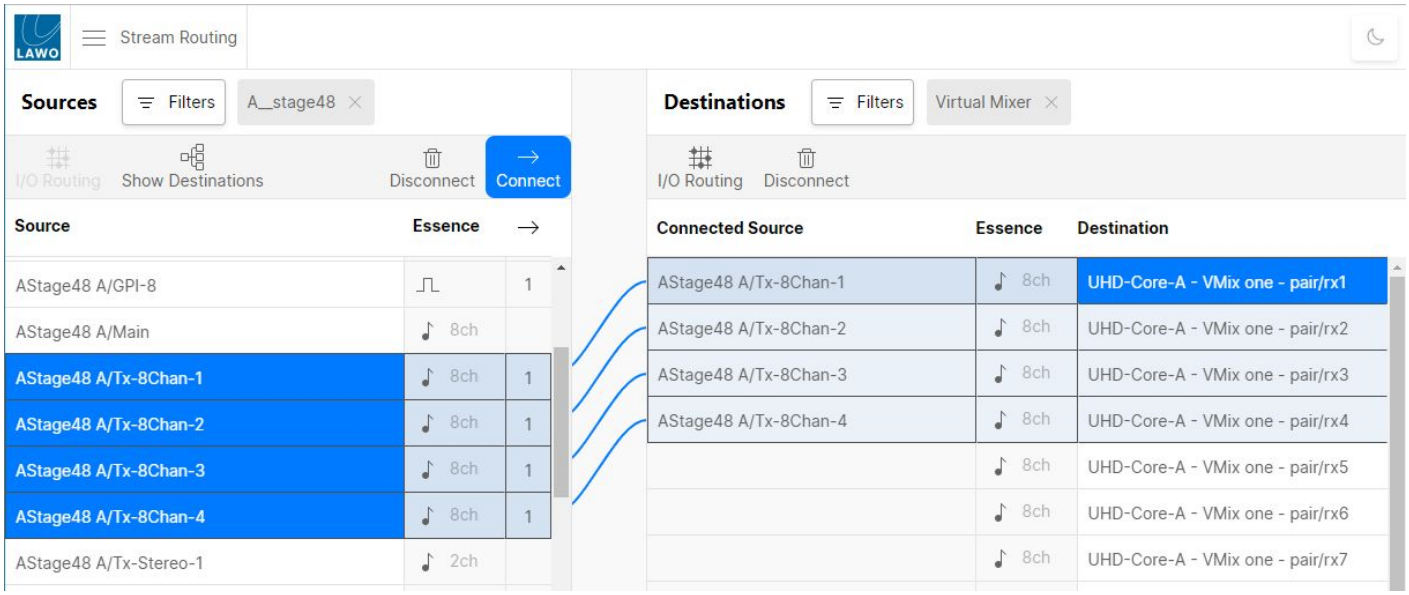
- If you disconnect a source, then all of its connections are removed and the "source used" field clears.
- If you disconnect a destination, then only the one connection is removed and the "Connected Source" field clears.

Connecting Multiple Senders to Multiple Receivers

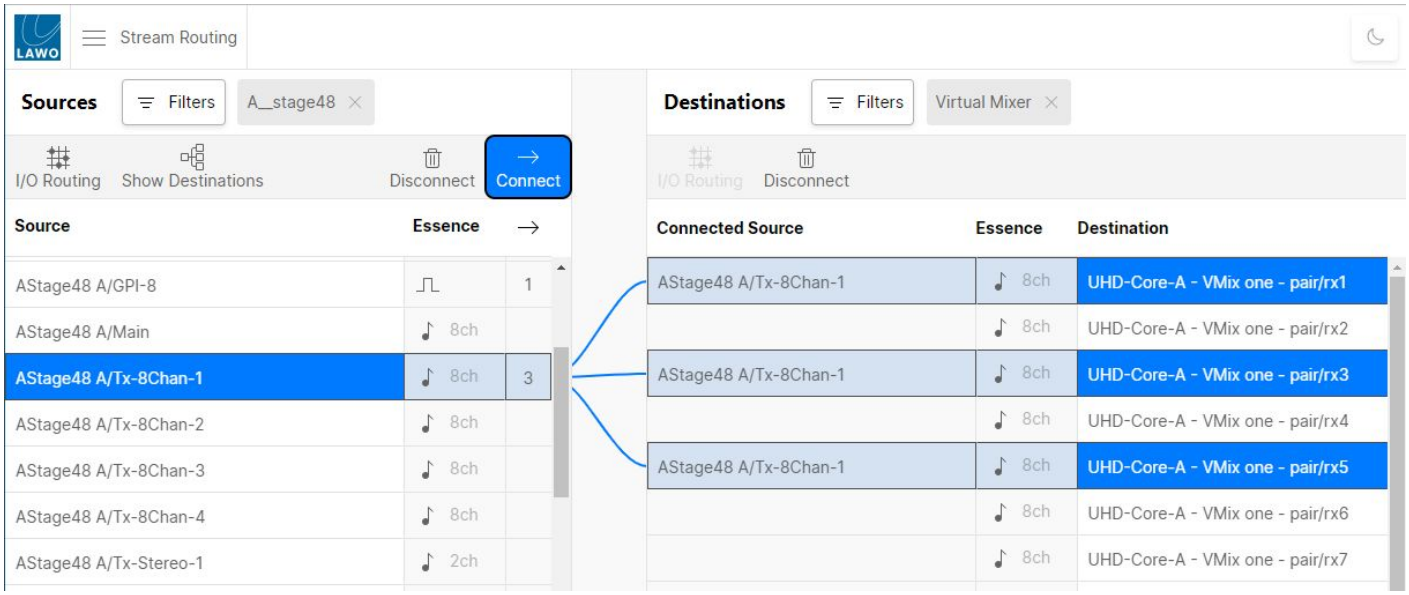
You can select multiple sources and destinations by pressing and holding the SHIFT or CTRL buttons on your keyboard. This makes it easy to connect or disconnect multiple streams in one operation.

Follow the same steps as before, but press and hold SHIFT to select a range. Once a range is selected, press and hold SHIFT to increase (or decrease) the selected range. Alternatively, press and hold CTRL to select (or deselect) individual streams.

When you click **Connect** (or **Disconnect**), the assignments are made in one operation. For example, to connect four senders to four receivers.



If there is a mismatch between the number of selected sources and destinations, then the sources are assigned consecutively to the available destinations. The exception is for a single source and multiple destinations: in this instance, the source is connected to all selected destinations (as shown below).

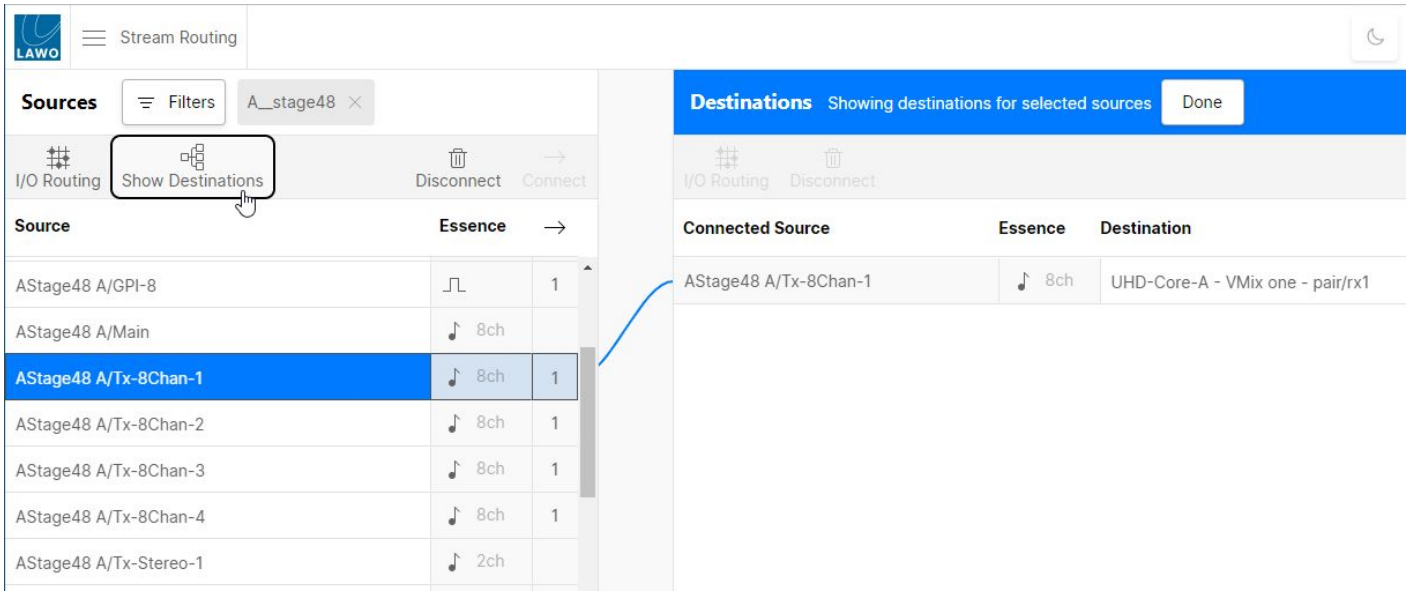


Interrogating the Connections

If a sender is connected, then it can be interrogated as follows.

1. Select a source and click on **Show Destinations**.

The view updates to show only the destinations of the selected source (or sources).



Tip: You can select a different source, or use SHIFT or CTRL to select multiple sources, while **Show Destinations** is active.

2. Click on **Done** to exit the "Show Destinations" view and return to the list of all sources and destinations.

Opening the I/O Routing

For convenience, it is possible to open the I/O Routing page for an audio sender or receiver. This allows you to map the stream's IP channels to the device I/Os, and vice versa.

1. Select a sender (or receiver) and click on **I/O Routing**.

The "Routing" window opens.

Note that the **I/O Routing** button is not available if you select more than one sender or receiver.

The operation is identical to that described earlier.

7 HOME - Configuration Backups

This chapter describes how to make a backup of the configuration.

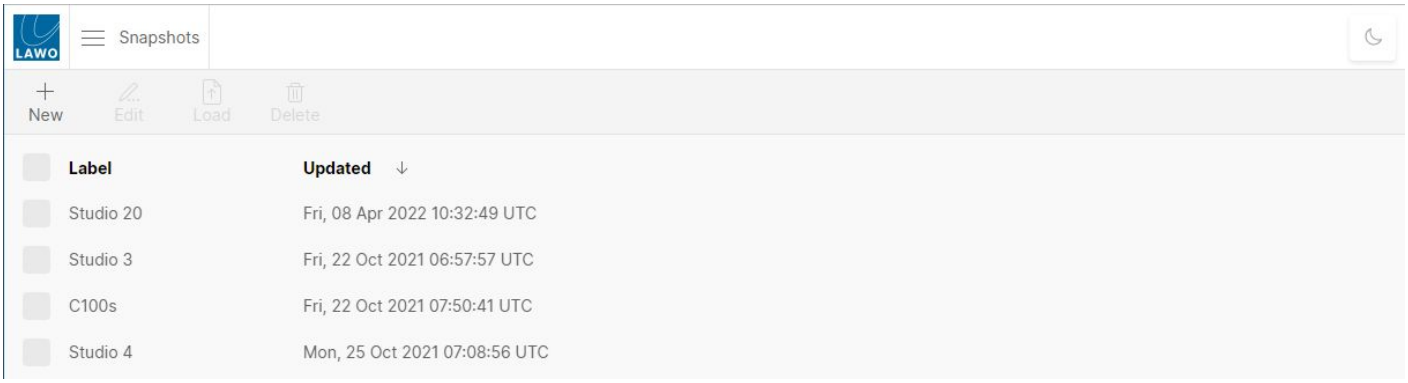
- HOME - The Snapshots Page

7.1 HOME - The Snapshots Page

Please note, that Home Snapshots must not be understood and used as partial snapshots, used to recall selected system parameters to parts of a system. Home Snapshots always contain a complete configuration of the entire system, including stream routing and system parameter settings for all devices, which have been online while saving the snapshot. If a Home Snapshot is recalled, all devices being online and part the snapshot will receive a status update.

Loading a snapshot can negatively impact your entire system, especially if you only want to restore some devices of the system.

The "Snapshots" page lists all available snapshots. These can be used to make a backup of the complete configuration. For example, to provide a level of undo while you are first setting up the devices and their streaming.



For each existing snapshot, you will see its label and timestamp (showing when the snapshot was last updated).

Snapshots should be loaded with caution as they store and recall the complete configuration of all devices and their stream routing.

Possible Operations

The following operations are possible.

1. Click on a column header to sort the list alphabetically.

Each click toggles the sort mode between ascending (A -> Z) and descending (Z -> A). An up or down arrow appears beside the header to indicate the current sort mode.

2. Click on the **New** button to create a new snapshot.

The "New Snapshot" window opens. Enter a label and click on **Create** to save a new snapshot.

3. Select a snapshot and click on **Edit** to edit the snapshot label.

The "Edit Snapshot" window opens. Enter a new label and click on **Done** to confirm.

4. Select a snapshot and click on **Load** to load a snapshot.

The "Load Snapshot" window opens. Read the information box carefully.

- To continue, enter the confirmation text and click on **Load**.
- To exit without loading, click on **Cancel**.

5. Select a snapshot (or snapshots) and click on **Delete** to delete the selected snapshot(s).

A confirmation window appears. Click on **Delete** to confirm or **Cancel** to cancel the operation.

8 HOME - Health

This chapter describes how to use the health monitoring provided by HOME.

8.1 HOME - Health Monitoring

The "Health" functionality of HOME supports users to get a comprehensive understanding of the current system status of their HOME-controlled environment.

What is being indicated and why?

HOME's health status page shows warnings and critical issues reported by devices and systems managed natively in HOME. Also HOME microservices report issues if they occur. Each device/system is responsible for the information reported. HOME native devices and systems follow a global specification for severities and reported data, to ensure that comprehensible information is presented. All data shown represents the current "momentary" status of the whole system. It should allow operators to identify all active issues immediately after they occur, and then choose the right measures.

Where is the information shown?

Health-related information is indicated in various ways and levels of detail.

The Health Icon

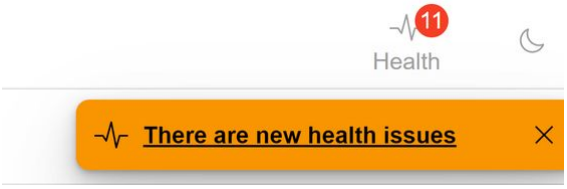
In the HOME status bar, a Health icon is shown on the far right side.

A notification counter shown on the icon informs about all active notifications. "19" means that 19 issues are currently queuing in the health issues list. The background color of the notifier indicates the severity of a reported issue. If the background color is "**orange**", the severity is a warning. Warnings are usually not affecting operation but should be monitored. Ideally, you plan actions accordingly. Critical issues are reported with a "**red**" notification. Critical Issues will overrun normal warnings, which means that a single critical issue will force a red notification icon to show up, even if various warnings (orange) are active in parallel. A critical issue usually should cause immediate interaction.

Clicking the health icon will navigate you to the "Health" page, where you will be able to explore all open issues.

The Health Issue Popup

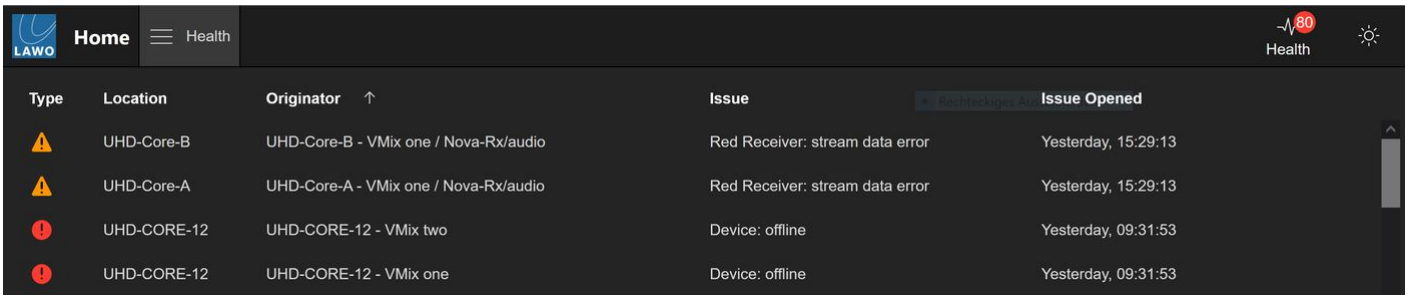
If you are working on other HOME pages than "Health", a popup will inform you about new issues that are occurring. The popup appears top-right of the HOME screen, just below the Health icon. It will appear for about 5 seconds before it disappears automatically. While the popup is shown, you can click the "X" icon to close the indicator. Alternatively, click the information "There are new health issues" to navigate to the Health page for details.



The background color of the popup indicates the category of the issue, which has triggered the popup. It does not reflect the severity of the triggering issue, but not the highest active issue severity.

The Health Page

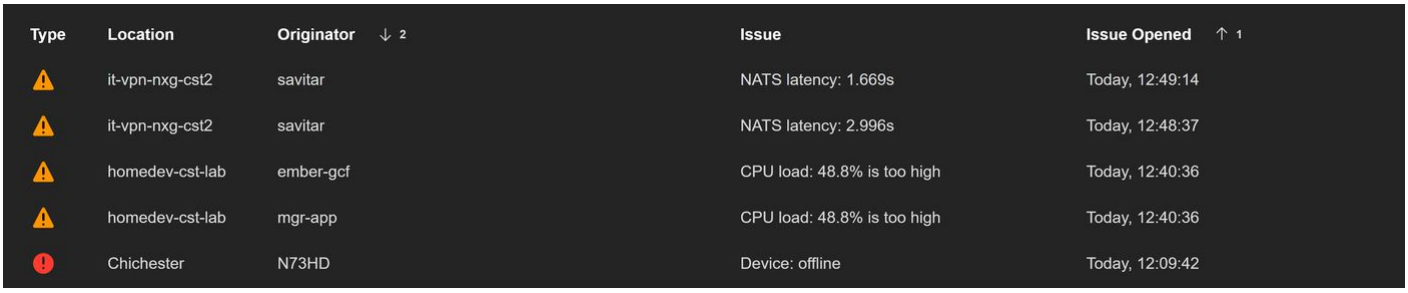
Clicking on the "Health" command in the menu will navigate you directly to the health page of HOME.



The health page shows all active issues reported to HOME. Active issues are shown in a table, each line represents one issue. The information shown is separated into various columns.

Column	Content	Detail
Type	Severity of the issue	Critical (red), Warning (orange)
Location	Location of the issue.	Shown, if location of originator has been set. If empty, location has not been set.
Originator	The source of the issue.	Can be a device, a virtual process or a service.
Issue	The actual issue.	Informs about what has happened. If you move your mouse pointer over the entry in the issue field, you will be prompted with additional information about the issue in a popup. A list of issues and potential help to be applied in case of occurrence can be found here.
Issue Opened	The date of first occurrence.	Indicates, when the issue first occurred. This column will change from version 1.6 into "Last Occurrence", showing the date of the last occurrence of a specific issue. This helps to identify the latest issue by sorting the list by that column.

The table provides a sorting function for all columns. You can sort each column ascending or descending by clicking the column header. You can swap the direction by clicking the column header again.



Type	Location	Originator ↓ 2	Issue	Issue Opened ↑ 1
⚠	it-vpn-nxg-cst2	savitar	NATS latency: 1.669s	Today, 12:49:14
⚠	it-vpn-nxg-cst2	savitar	NATS latency: 2.996s	Today, 12:48:37
⚠	homedev-cst-lab	ember-gcf	CPU load: 48.8% is too high	Today, 12:40:36
⚠	homedev-cst-lab	mgr-app	CPU load: 48.8% is too high	Today, 12:40:36
❗	Chichester	N73HD	Device: offline	Today, 12:09:42

For better visibility of issues, you can combine column sortings. To do so, click the header of the first column you want to use for sorting. Hold the "Shift" key, and then click the header of the second column. As a result, the content will be sorted by two columns.

An example is shown above: The first column, "issue opened", is used for initial sorting. It is sorted Ascending, showing the latest entries first, then older entries. If entries have occurred at the same time, the second sorting is helpful. Here, the second sorting is applied to column "Originator". The hierarchy of the sortings is indicated by small index numbers shown in each column header. The number of applicable sortings equals the number of columns.

Understanding what is shown

If you are examing health issues via the "Health" page for the first time, it may be helpful to understand what exactly is presented there.

The data displayed in HOME's health screen represents momentary status information reported by devices and systems which are actively operated in the managed infrastructure. If a device faces a severe issue, it reports it to HOME, providing all data itself, including type and issue detail. The severity if an issue is defined within the device.

If a device has a broken PSU, you will be informed in HOME in either of two possible ways:

1. If the device has a redundant PSU, it will report a broken PSU to HOME. Very likely this issue will be classified as a critical issue, requesting you to replace the broken PSU short-term.
2. If the device has no redundant PSU, the device will not be able to report any critical warning. However, having known the device before, HOME will now warn you of a missing device, which has not been put "offline" officially. Consequently, you will be requested to take action.

In either case, the reported status will not change without your interference. Until it gets fixed, the reported issue will be permanently shown in the list, and the notifier on the health icon will be increased by 1. The fact the issue is permanently shown means that it is permanently present and does not change. **Since HOME indicates the live status, the PSU issue will disappear automatically from the list, as soon as the PSU is replaced and the device is sending the next status update to HOME.**

HOME's method of indicating live status results in a list of health issues, which are "currently" active. While some issues require external interference, other issues may disappear without any interaction. A possible example could be:

- A device operated in an air-conditioned room passes a temperature threshold and reports a warning. After a while, the warning disappears.
- Potential reason: The room's A/C was switched off for a short while to be serviced. During that time, the device temperature increased beyond the warning threshold. It normalized after the A/C was back on.

Questions and Answers

Why does the number of notifications increase and decrease automatically?

- Some issues occur temporarily and disappear after a while. Systems exceed thresholds of parameters, such as temperature or fan speeds, which may normalize after a while. Such issues cause the notifications number to increase and decrease.

Why do I get new issues indicated, but they don't seem to appear at the top of the list?

- Some issues occur frequently. If an issue occurs initially, it will be logged on the health page. If it occurs again at a later stage, this will cause a "new issue" popup to be shown, but it will not add a new entry to the list, as it exists in the list already, and has not been resolved yet.

Can I filter the list or apply any displaying options to the health page?

- It is possible to apply sorting options to the information presented on the health page. Filtering of data is currently not possible. Setting any displaying options is currently also not supported yet.

How can I export log data from my system for further processing?

- System status issues and other information are stored within HOME. It is possible to export application logs from HOME for external analytics. Follow this link to learn more.

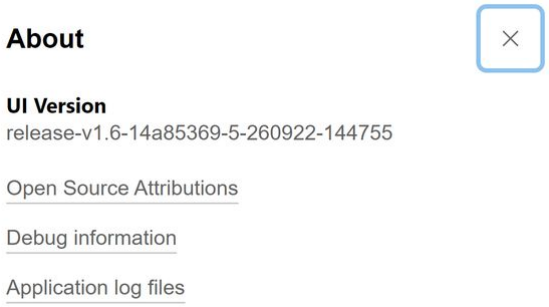
8.2 HOME - Application Log Files

This topic describes how to export an application log file for external investigation.

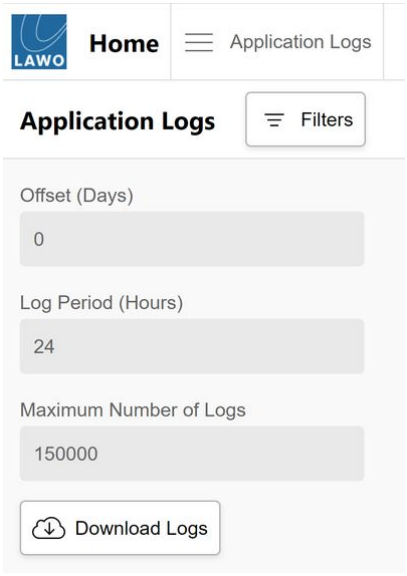
Issues prompted to HOME's health page are also logged into data storage. Should you need assistance analyzing unexpected system behavior, it is possible to export the log data into a file. The file contains archived log data and is meant to be shared with Lawo's support team for further processing.

How to Export a Log Data File

1. Click on the Lawo Logo top-left of the HOME Screen. An information pop-up appears.



2. To get to the log exporter, click on the "Application Log Files" entry at the bottom. This takes you to the export page.



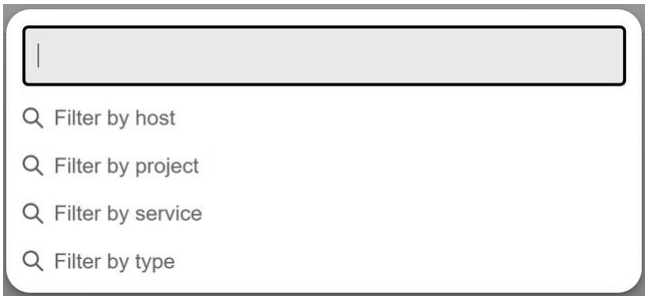
3. The export function requires some parameters to generate the correct export as follows:

- Offset (Days): Log data is exported backward in history, starting with the latest data. The "offset" allows you to adjust the start date of the export. "0" means no offset and starts the export with current data. "2" means an offset of 2 days, starting 2 days back from now.
- Log Period (Hours): The log period parameter defines the exported period of data. The period starts from "Now - Offset (Days)" and reaches back in history for the specified hours.
- Maximum Number of Logs: Defines the maximum amount of log entries exported out of the selected period. If the period contains more entries than defined here, the maximum entries value will limit the exported data.

4. Once the parameters are defined, click on the **Download Logs** button to start the export.

The exported file is copied to your browser's download directory.

Data logged into the storage includes all operational status information, including uncritical information. This makes exported data very comprehensive but also affects the file size of the generated archive. You can apply **Filters**, to customize fetching data.



A filter can be set to say "type = Issue" to export all warnings and critical over the defined period.

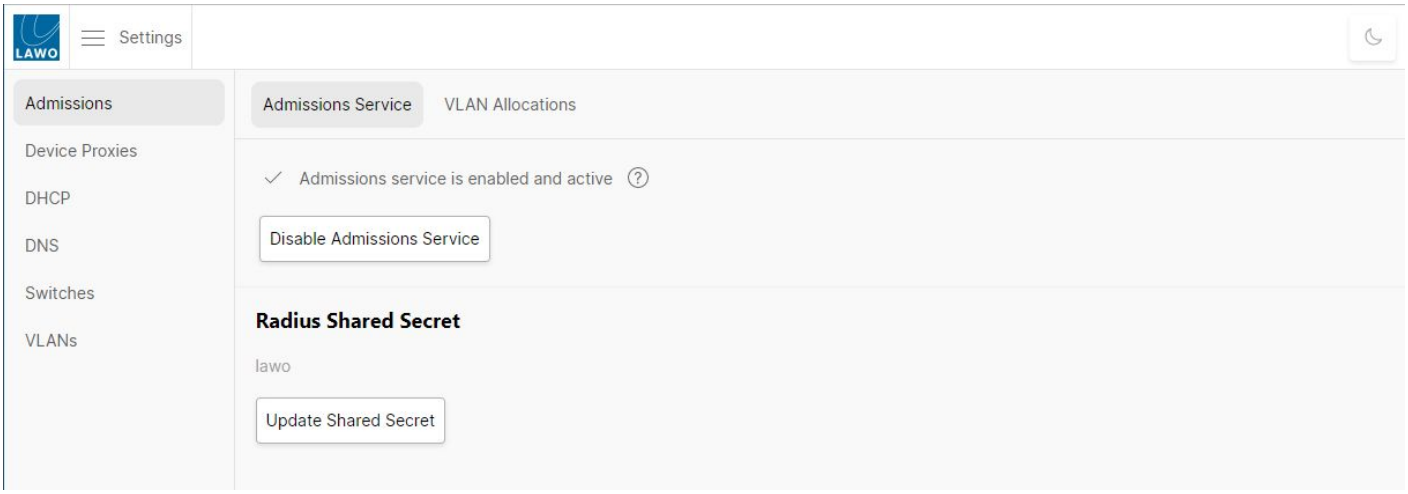
The exported file format is a ZIP file that can contain many separate text files.

9 HOME - Advanced Settings

This chapter describes the advanced settings.

9.1 HOME - The Settings Page

The "Settings" page provides access to more advanced settings such as the DHCP setup, device proxies and VLANs.



Use the sub-page menu (on the left of the working area) to access each group of settings. In the current release, there are six pages:

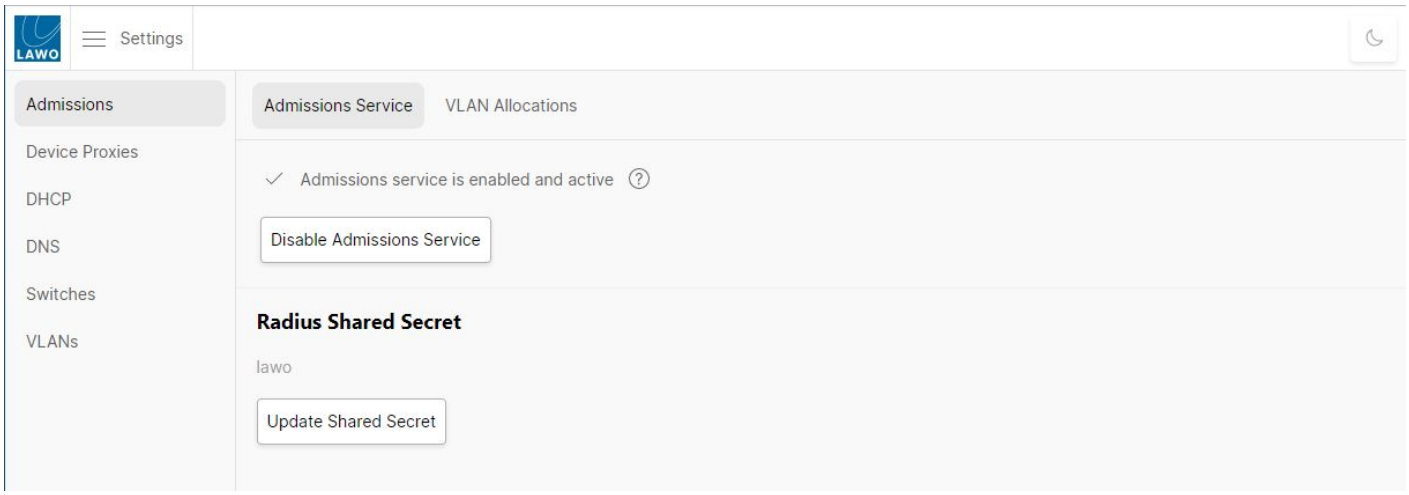
- Admissions
- Device Proxies
- DHCP
- DNS
- Switches
- VLANs

9.2 HOME - Admissions

The **Settings** → **Admissions** page can be used to manage the admissions service or view the VLAN allocations. Use the tabs at the top of the working area to navigate between the two subpages.

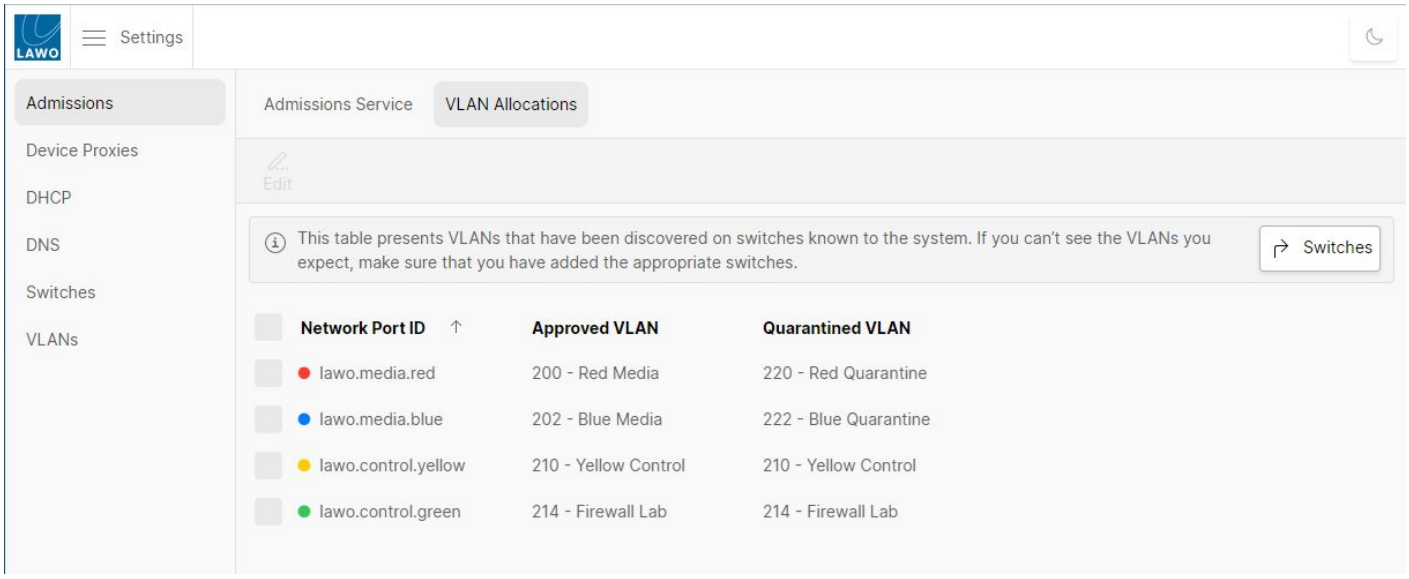
Admissions Service

From here you can disable the Admissions Service or update the Radius Shared Secret.



VLAN Allocations

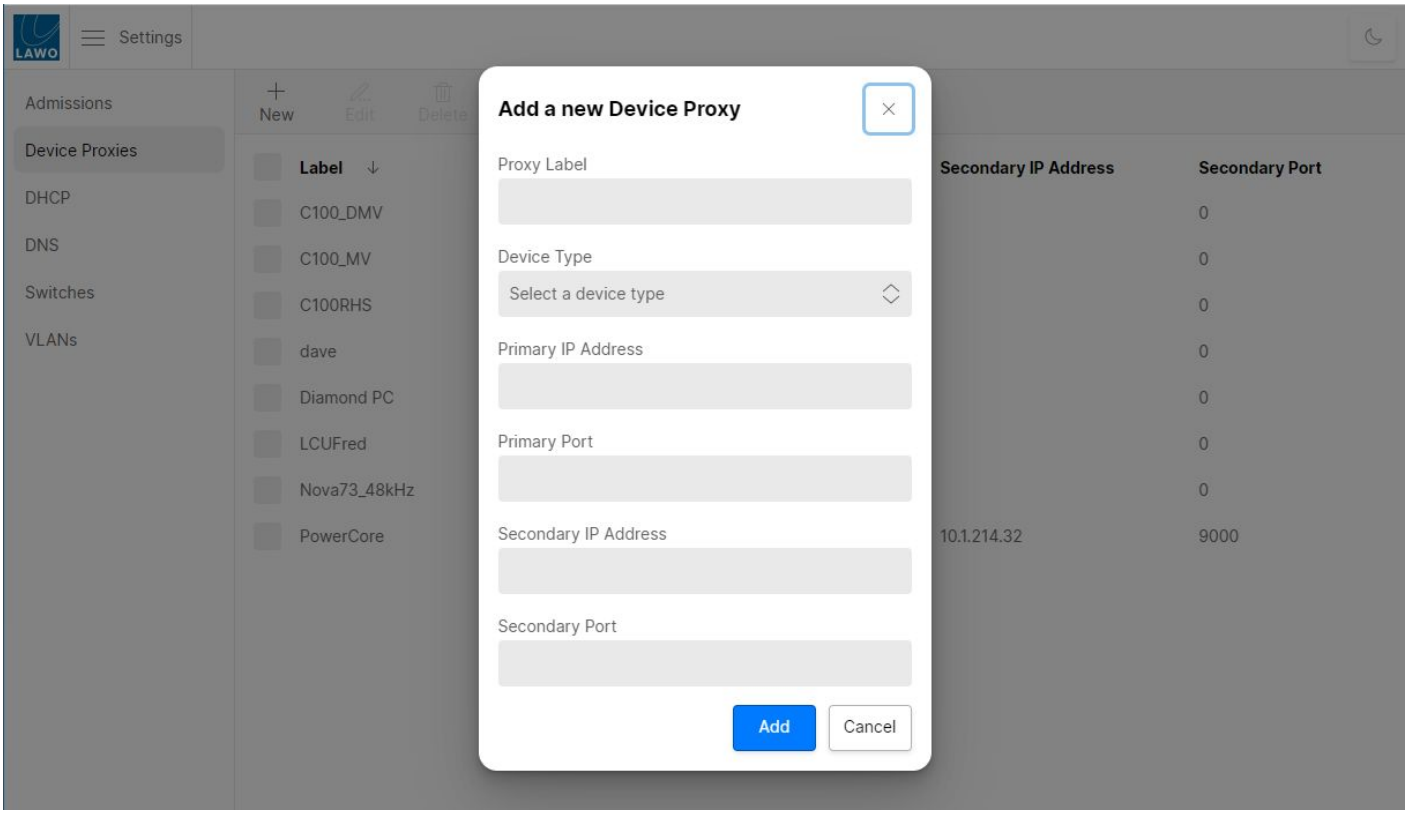
From here you can view the VLAN allocations. Click on **Switches** to navigate to the Settings -> Switches configuration.



9.3 HOME - Device Proxies

The **Settings** → **Device Proxies** page can be used to manually configure a device. This is useful if you have a device that is not automatically detected by HOME. For example, a third-party device or one of the following Lawo devices: Power Core, HD Core Ravenna 981/61 I/O card, V__matrix C100 or LCU (Lawo Commentary Unit).

1. Select the **New** button to open a pop-up where you can "Add a new Device Proxy".



2. Edit the fields as follows.

- **Proxy Label** - enter a label for the device.
- **Device Type** - choose a device type from the drop-down menu.
- **Primary IP Address** - enter the device's primary management IP address.
- **Primary Port** - enter a port number or leave the field blank to use port 0.
- **Secondary IP Address** & **Port** - if the device supports redundant control, then enter the device's secondary management IP address and port number.

3. Select **Add** to add the device.

The device will now appear in the main "Devices" list. From here, you can click on its label to configure its parameters in the usual manner: Network Ports, Senders, Receivers, etc.

4. If you select an existing device, then the following operations are possible.

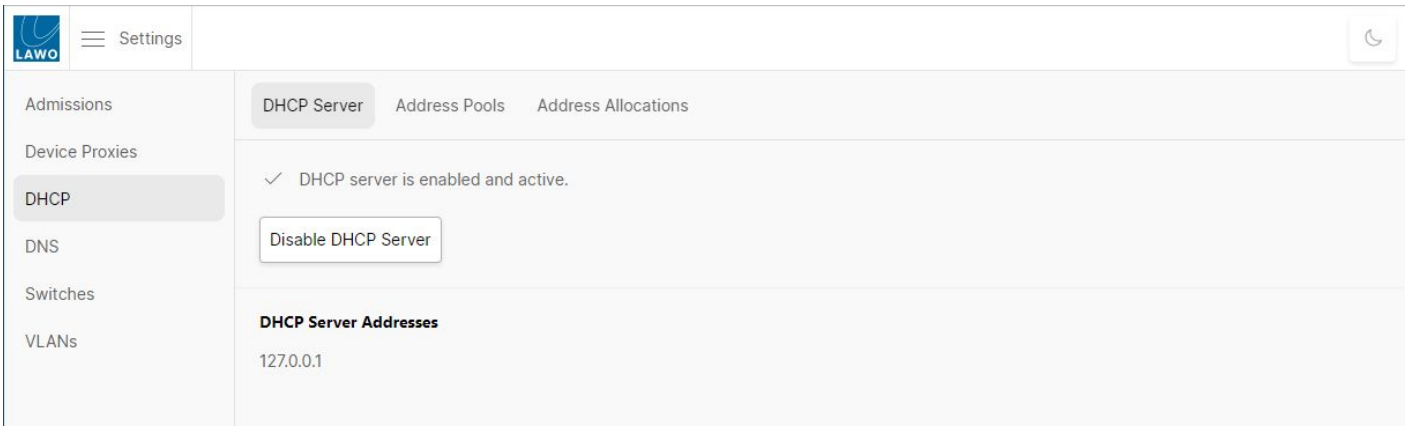
- **Edit** - click to edit the settings (as above).
- **Delete** - click to delete the device.

9.4 HOME - DHCP Server

The **Settings → DHCP** page can be used to disable the DHCP server, manage the DHCP address pools or view the DHCP address allocations. Use the tabs at the top of the working area to navigate between the three subpages.

DHCP Server

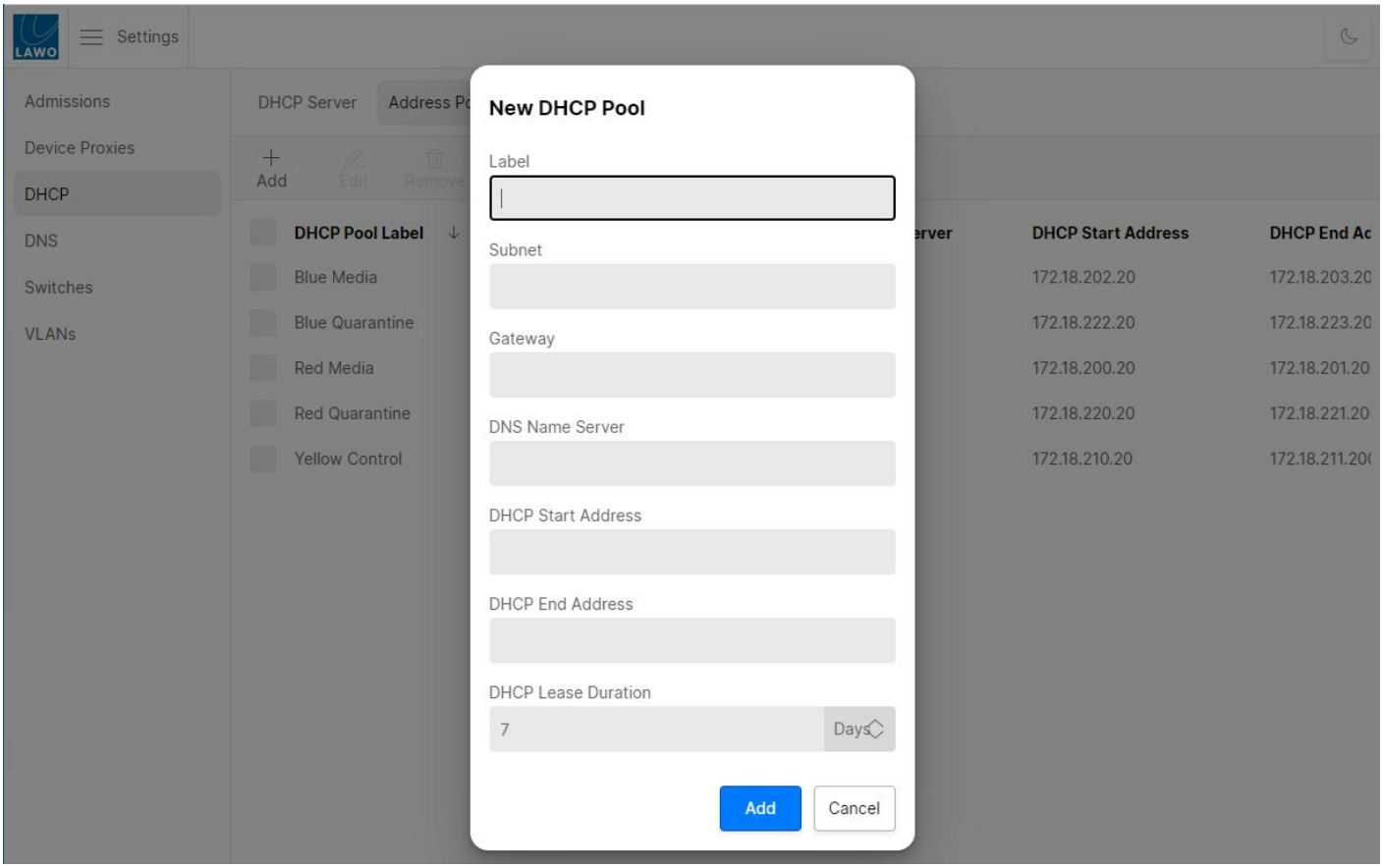
From here you can disable the DHCP server and view the address range.



Address Pools

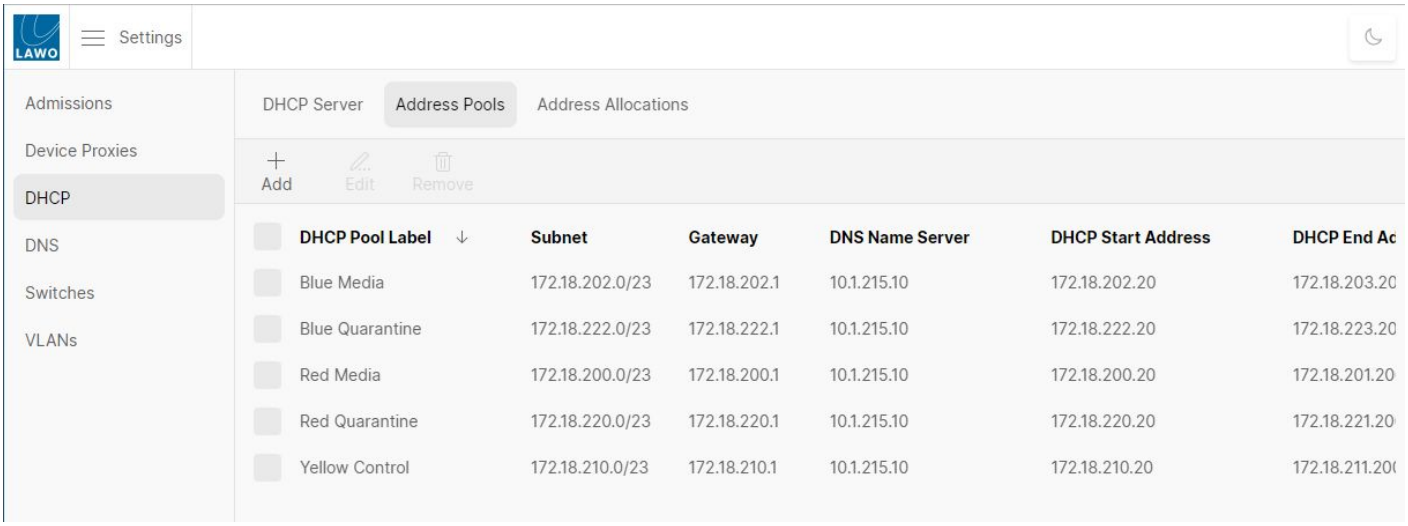
From here you can define the address pools used by the DHCP server.

1. Select the **Add** button to open a pop-up where you can add a "New DHCP Pool".



2. Edit the fields to define the DHCP address pool.

3. Select **Add** to add the address pool to the DHCP server.

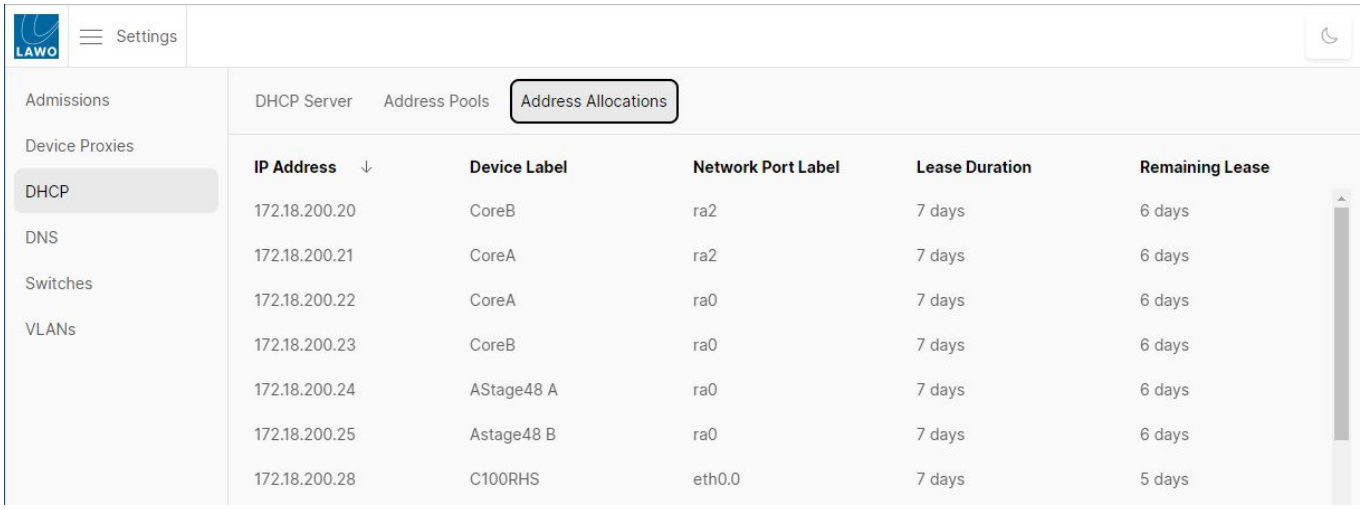


4. If you select an existing DHCP pool, then the following operations are possible.

- **Edit** - click to edit the settings (as above).
- **Delete** - click to delete the DHCP address pool.

Address Allocations

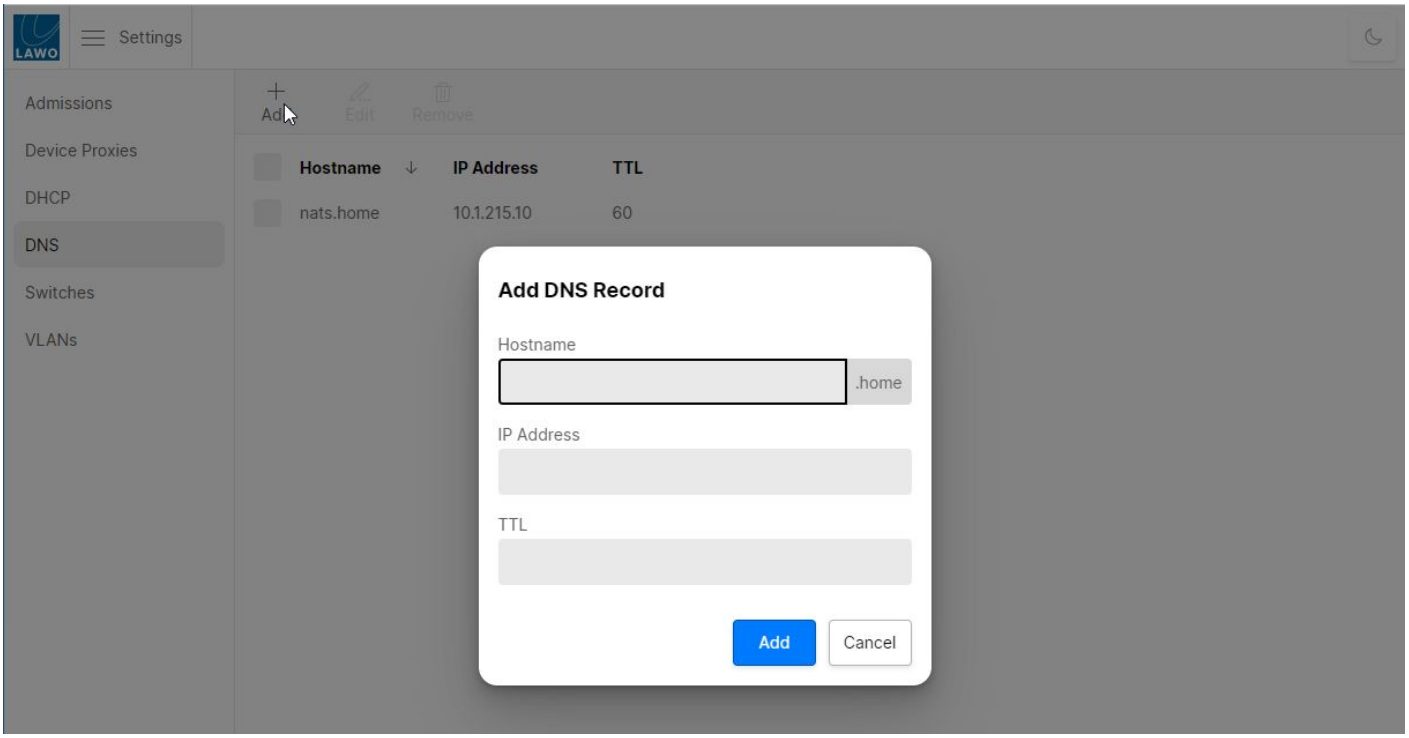
From here you can view the IP addresses assigned by the DHCP server.



9.5 HOME - DNS Connections

The **Settings → DNS** page can be used to configure a connection to an external DNS server. This allows devices to be addressed via domain names as opposed to IP addresses.

1. Select the **Add** button to open a pop-up where you can "Add DNS Record".



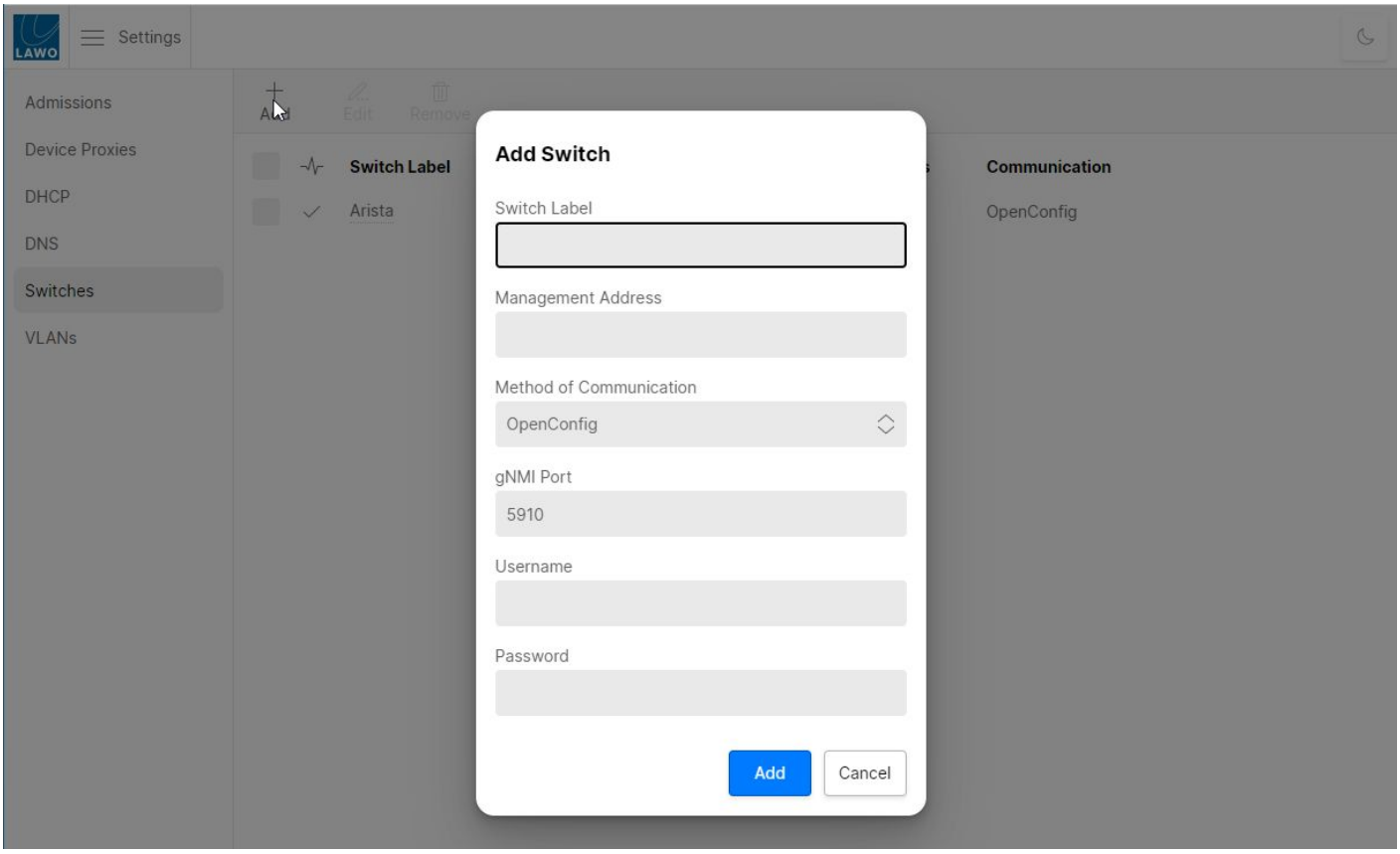
2. Edit the fields to define the connection to the DNS server.
3. Select **Add** to add the DNS server.
4. If you select an existing DNS server, then the following operations are possible.

- **Edit** - click to edit the settings (as above).
- **Delete** - click to delete the DNS server.

9.6 HOME - Network Switches

The **Settings → Switches** page can be used to tell HOME about any switches connected to the network. This allows any VLANs configured by a switch to be discovered automatically.

1. Select the **Add** button to open a pop-up where you can "Add Switch".



2. Edit the fields to define the connection to the network switch.
3. Select **Add** to add the switch.
4. If you select an existing switch entry, then the following operations are possible.

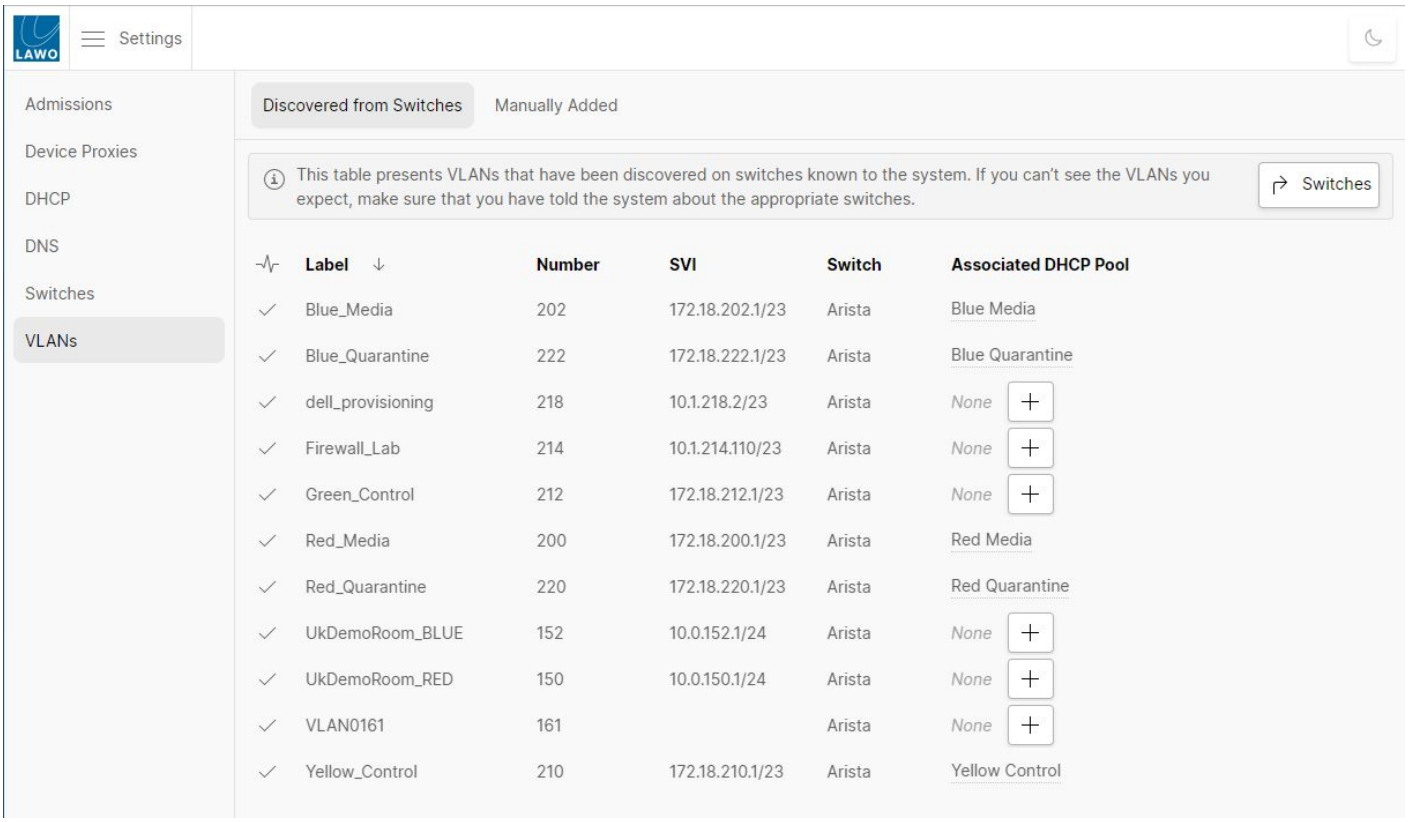
- **Edit** - click to edit the settings (as above).
- **Delete** - click to delete the network switch.

9.7 HOME - VLANs

The **Settings → VLANs** page can be used to manage the VLANs. Use the tabs at the top of the working area to navigate between the two subpages.

Discovered from Switches

From here you can view the VLANs that have been discovered automatically (from switches known to the system).



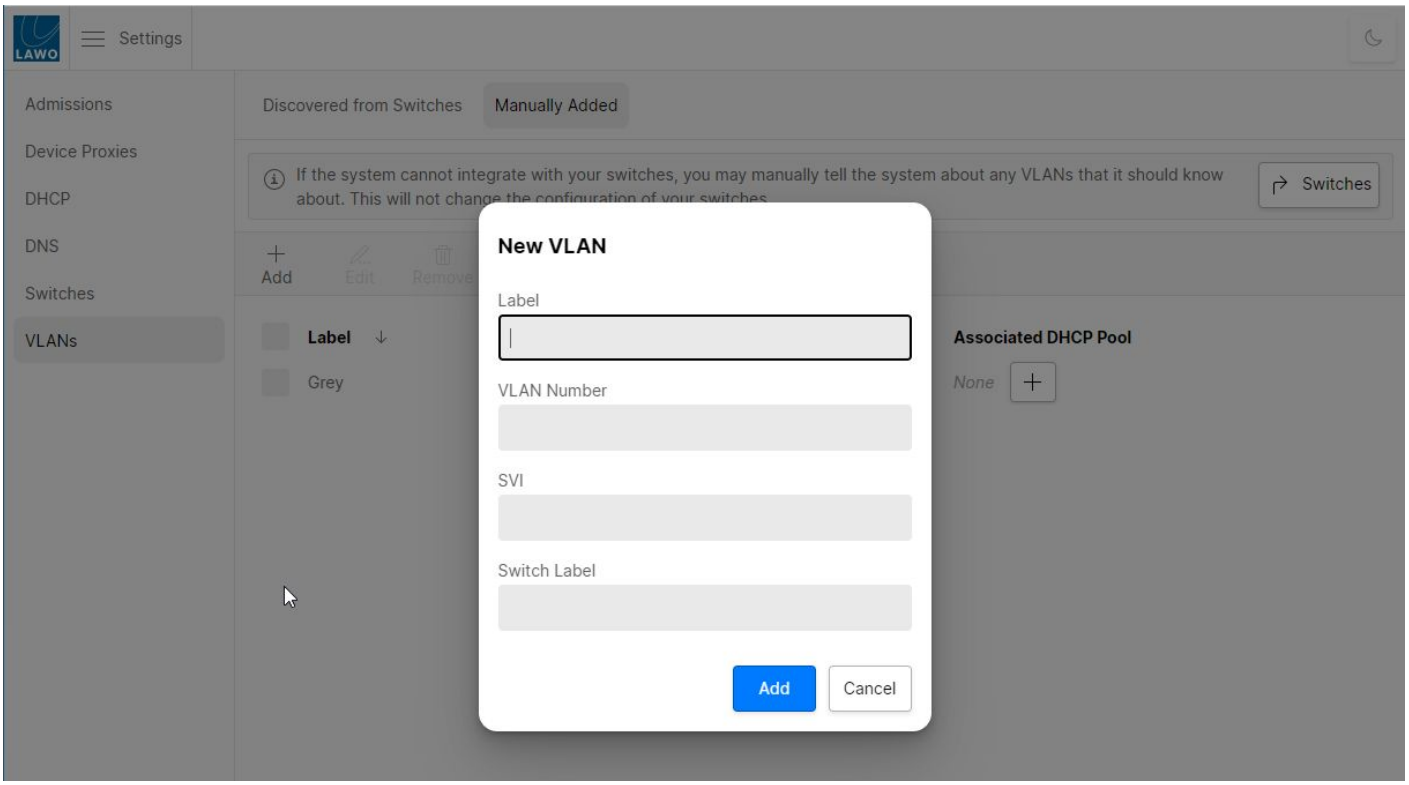
The known switches are defined in the "Settings -> Switches" page. Click on **Switches** to navigate to this page.

For an existing VLAN, you can define a new DHCP address pool by clicking on the **+** button (in the "Associated DHCP Pool" column).

Manually Added

From here you can manually tell HOME about any VLANs that it should know about. Note that this will not change the configuration of your network switches.

1. Select the **Add** button to open a pop-up where you can add a "New VLAN".



2. Edit the fields to define the VLAN settings.
3. Select **Add** to add the VLAN.
4. If you select an existing VLAN entry, then the following operations are possible.

- **Edit** - click to edit the settings (as above).
- **Delete** - click to delete the VLAN.