Telestra Web Interface User Guide

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Product Name: Telestra

Telestra Web Interface User Guide

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Revision history

Date	Revision	Version	Comments
10/18/2023	A	0	Initial baseline version.

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1.0 Introduction

Welcome to the *Telestra Web Interface User Guide*, the official documentation for the Telestra web interface, a web-based platform for controlling and managing ASTi devices in simulation networks. This guide aims to help engineers, maintenance technicians, and program administrators configure and manage the Telestra server and its peripheral hardware via the web interface. It covers a variety of tasks, from basic server setup and configuration to advanced functionality, troubleshooting, and system management.

The Telestra web interface is a specialized web server that provides complete sight and control of all ASTi devices on the simulation network, ranging from stand-alone to multiple-site, exercise wide network configurations. Use this interface to configure the Telestra server's settings; manage hardware peripherals like audio distribution devices, input/output (I/O) devices, and amplifiers; oversee Studio projects; configure critical simulation protocols for interoperability; and troubleshoot errors using various health tools. You can also manage sound files, conduct spectral analysis for Level D simulator certification, and preview Telestra's built-in text-to-speech (TTS) voices.

Telestra's operating system supports Red Hat Enterprise Linux 8.0 or earlier. To access the web interface, you will need a modern web browser, such as Mozilla Firefox, Google Chrome, Microsoft Edge, or Safari. Hardware requirements vary depending on deployment size but should include a multicore processor, sufficient RAM, ample storage space, and network interface cards for connectivity. A stable and well-configured network connection is crucial for seamless operation. For more information about Telestra hardware requirements, go to the *Telestra Server Operations & Maintenance Manual* at support.asti-usa.com/media/pdf/t4/ace_target_om.pdf.

Getting started with Telestra is easy. Telestra is a plug-and-play solution, which means you don't need to install any software upon receipt. Just connect the Telestra server and its affiliated hardware to the network, point the server at a web browser, and log in, as described in Section 7.1, "Login" on page 23. You'll also need to complete the following setup tasks:

1. Install a USB License Key on **Setup** > **Licenses**. To learn more about Telestra licensing options, go to Section 9.3, "Licenses" on page 45.
2. Configure the Telestra server and network interface's (e.g., eth1) network on **Setup** > **Network**. For detailed Telestra network setup instructions, go to Section 9.1, "Network" on page 35.
3. Create user accounts for any network administrators on **Settings** > **User Management**, and change the default passwords for security. To learn more about adding and editing user accounts, go to Section 6.2, "User Management" on page 13.
4. Add and configure any hardware peripherals (e.g., ACU2, AI-Tango) on **Network Devices** > **Hardware**, as described on Section 10.1, "Hardware" on page 58.

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To view the full suite of Telestra documentation, go to **Settings** > **Documentation** in the top navigation bar. You can also view Telestra documentation on the Telestra Support page at support.asti-usa.com/telestra/index.html. The ASTi Support site contains a host of invaluable resources, including quick answers to common questions in the Telestra FAQs at support.asti-usa.com/faq/t4/index.html. If you're experiencing any issues with Telestra, contact ASTi Support at support@asti-usa.com or by phone at (703) 471-2104 for direct assistance.

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2.0 Project installer

In the top navigation bar, the project installer displays the project and layout currently installed on the Telestra server. Use this feature to quickly install or uninstall a project and layout, set a project and layout as the system default, pause the running model, or view an error message.

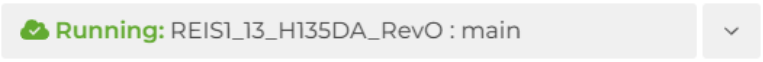

Figure 1: Project installer

This chapter discusses how to:

- Install a project and layout
- Pause the running model
- Set the default project and layout

2.1 Install a project and layout

To install a project and layout, follow these steps:

1. To open the project installer, select the chevron button ( ).
2. If you aren't already logged in, do the following:
   a. Select **Log in to make changes** .
   b. Log in with the following default credentials:

Username	Password
admin	astirules

3. Select **Project**, and choose a project from the dropdown list (e.g., **AH-1Z-RevB**).
4. Select **Layout**, and choose a layout from the dropdown list (e.g., **main**).

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5. Select Install.

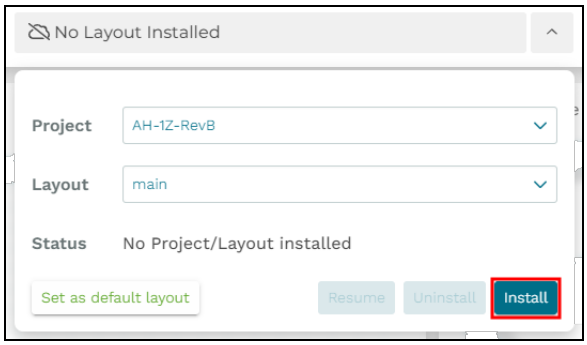

Figure 2: Install the project and layout

If the installation succeeds, the installer displays "**Running:** *project*: *layout*", where *project* is the project name and *layout* is the layout name. Likewise, **Status** displays "Installing..." and then "Running."

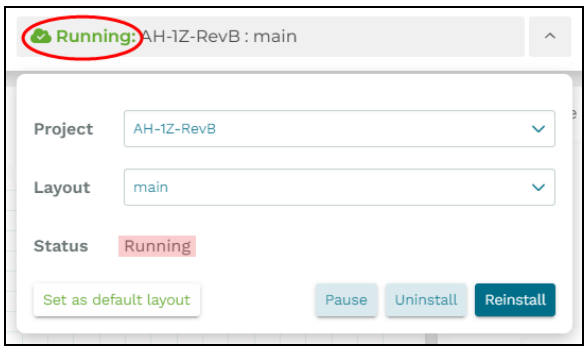

Figure 3: Running project

If the installation fails, the installer displays "**Error**". **Status** displays "Failed to Install Layout," along with an error message. To the right, a toast message states that "The system has encountered an error." If your project fails to install, contact support@asti-usa.com.

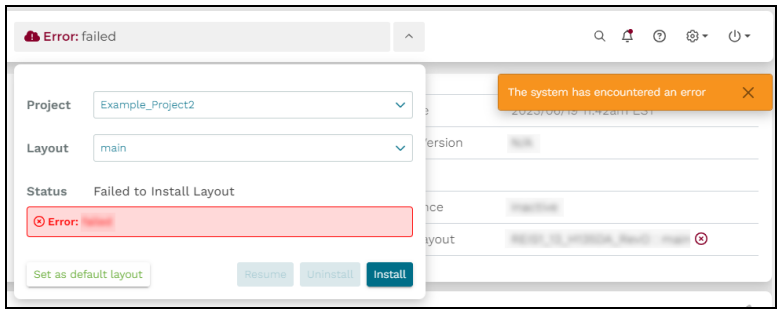

Figure 4: Failed to install project

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6. *(Optional)* To uninstall the project and layout, select Uninstall.
7. *(Optional)* To reinstall the project and layout, select Reinstall,

2.2 Pause the running model

To pause the running model, follow these steps:

1. To open the project installer, select the chevron button ( ).
2. Select Pause.

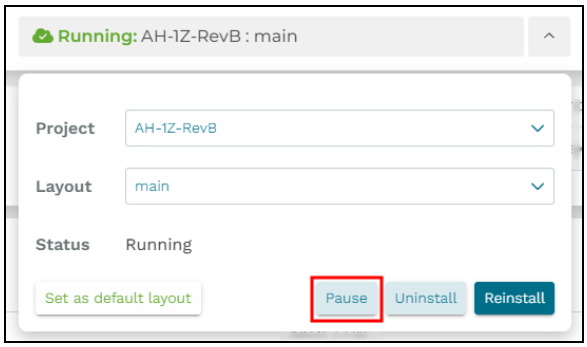

Figure 5: Pause the running model

Both the installer and **Status** display "Paused."

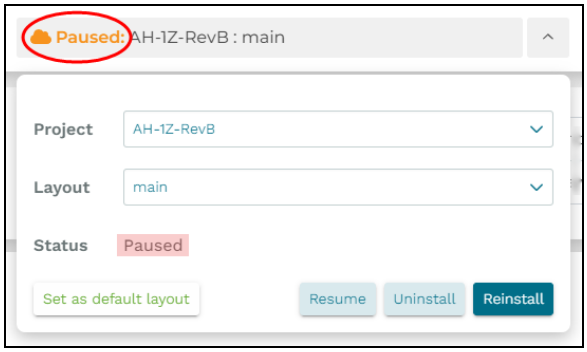

Figure 6: Paused model

3. To start running the model again, select Resume.

2.3 Set the default project and layout

To set the Telestra server's default project and layout, follow these steps:

1. To open the project installer, select the chevron button ( ).
2. Select **Project**, and choose a project from the listed options (e.g., **AH-1Z-RevB**).

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3. Select **Layout**, and choose a layout from the listed options (e.g., **main**).

4. Select Set as default layout.

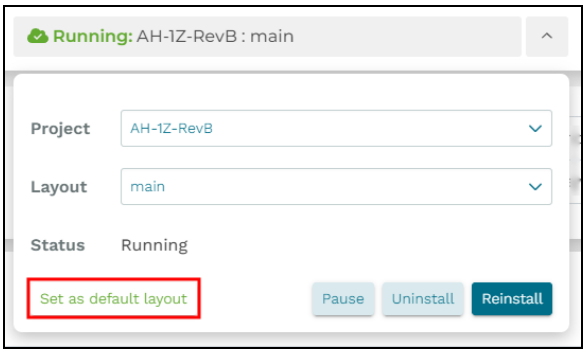

Figure 7: Set the default project and layout

A check mark (⊙) now displays next to the layout name:

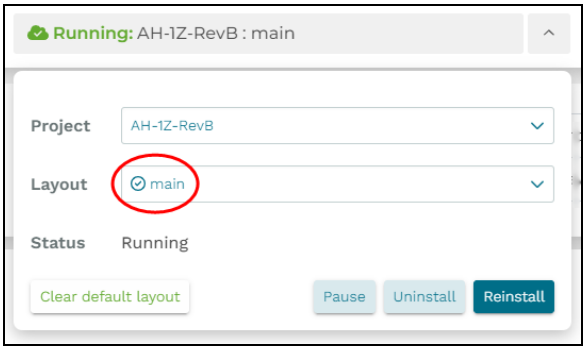

Figure 8: Default layout in installer

Dashboard > **System Info** also displays the default project/layout:

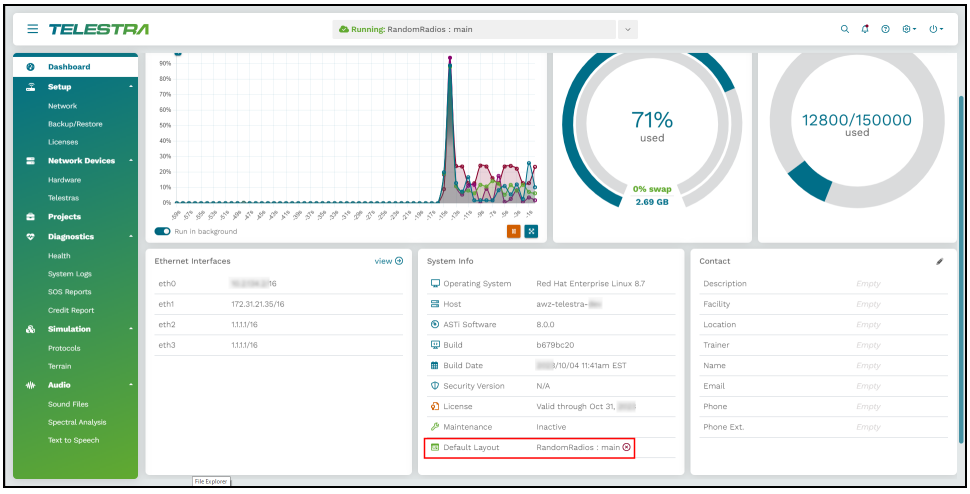

Figure 9: Default project/layout on the Dashboard

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5. *(Optional)* To clear the default layout, select Clear default layout.

Figure 10: Clear the default layout

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3.0 Search

The search feature provides a quick way to navigate to a page in the Telestra web interface. However, it exclusively filters page titles and does not retrieve interface element names or specific terms and phrases from the documentation.

To search for pages in the Telestra web interface, select the magnifying glass (🔍) icon in the top navigation bar, and a search bar appears.

Figure 11: Search icon

In the search bar, enter the name of a specific page in the Telestra web interface. Select **Navigate To** *page name* to open the page.

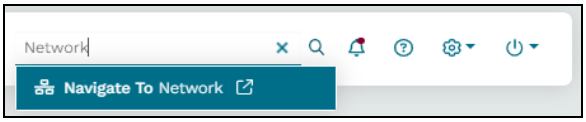

Figure 12: Search for a page

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4.0 Notifications

Notifications serve as important alerts and updates that inform you about various events, statuses, and changes within the Telestra server. These alerts provide timely information that helps maintain the system's integrity and performance. You might receive notifications for several reasons:

- License warnings, such as expired or insufficient licenses for the number of components or resources
- Audit logs reminders ensuring regulatory compliance or identifying unusual/noncompliant activities

Notifications appear in the top navigation bar. If alerts exist, a cranberry-red dot displays on **Notifications** (). To view the alerts, select the bell icon, and a panel opens:

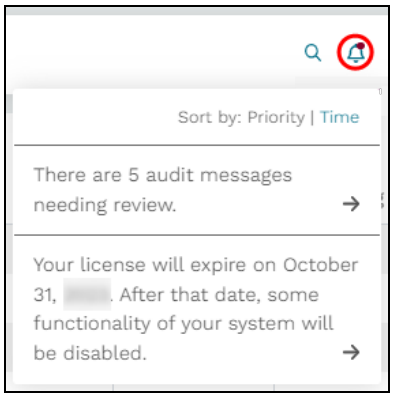

Figure 13: Notification panel

By default, the interface sorts messages chronologically. To view messages in order of importance, next to **Sort by:**, select **Priority**.

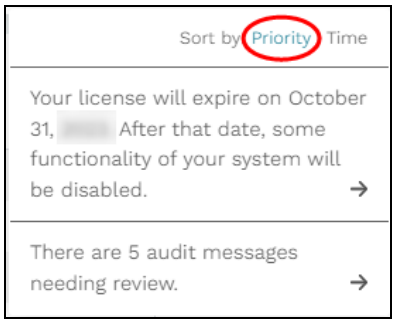

Figure 14: Sort notifications by priority

Select a message to open its corresponding page (i.e., **Audit Logs**, **Licensing**) and view more information.

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5.0 Help Text

The Telestra web interface offers a **Help Text** feature that provides contextual information about Telestra's various settings, options, and actions. This on-the-fly training may help you understand complex functionality, discover hidden or lesser-known settings, avoid or troubleshoot errors, and navigate the web interface effectively.

To turn on **Help Text**, select the question mark (?) icon in the top navigation bar.

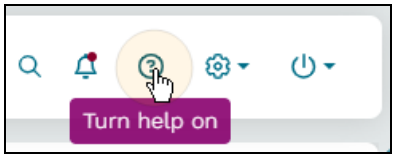

Figure 15: Turn on Help Text

When enabled, the question mark icon fills (?), and shaded boxes with dashes outline interface element names:

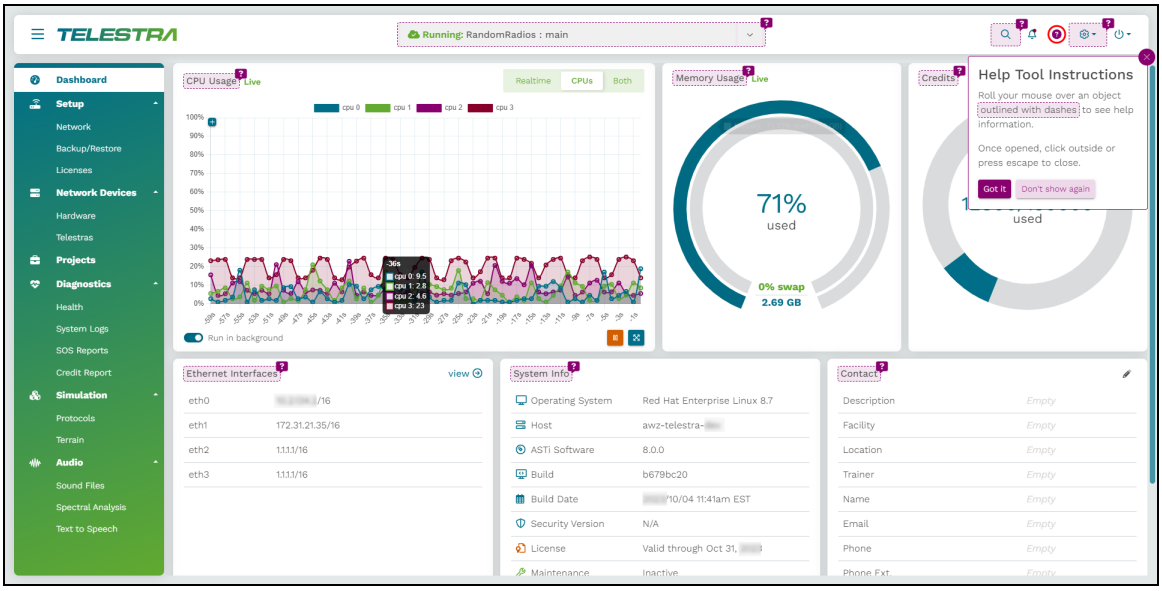

Figure 16: Enabled Help Text

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Help Text Instructions explains how to use the feature. Select the close button (⊗) or Got it to dismiss; alternatively, select Don't show again to prevent the instructions from reappearing.

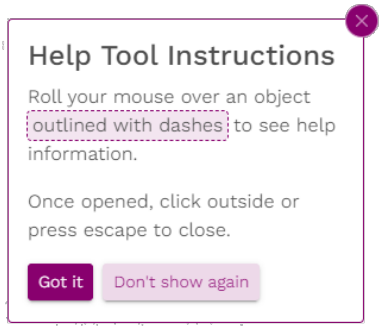

Figure 17: Help Text Instructions

Hover over the dotted lines to view a description of the setting.

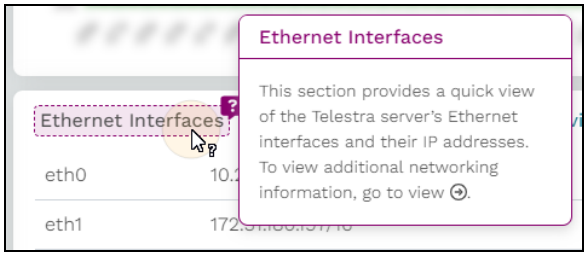

Figure 18: Help Text description

Select **Turn help off** (❓) to disable it.

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6.0 Settings

Located in the top navigation bar, **Settings** (⚙▾) provides access to the full suite of Telestra documentation, enabling you to set up and manage user accounts, monitor system activity, and customize the Telestra web interface's appearance.

This chapter discusses the following topics:

- Documentation
- User Management
- Audit
- Themes

6.1 Documentation

Telestra conveniently offers its full suite of documentation within the Telestra web interface. The **Documentation** page includes three sections: general documentation for the core Telestra product, detailed information about Studio, and comprehensive documentation for the Telestra server itself. Whether you're seeking an understanding of the main product's functionality, exploring Studio's capabilities, or delving into server-specific details, this page offers valuable insights. You can also access these resources on ASTi's **Telestra Support** page: support.asti-usa.com/telestra/index.html.

To access Telestra documentation, in the top navigation bar, go to ⚙▾ **Settings** > 📖 **Documentation**.

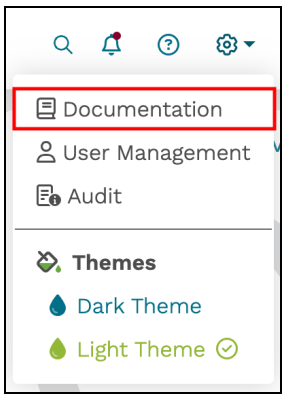

Figure 19: 📖 Documentation navigation

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Scroll down to view additional sections, or select a document to download it to your local system.

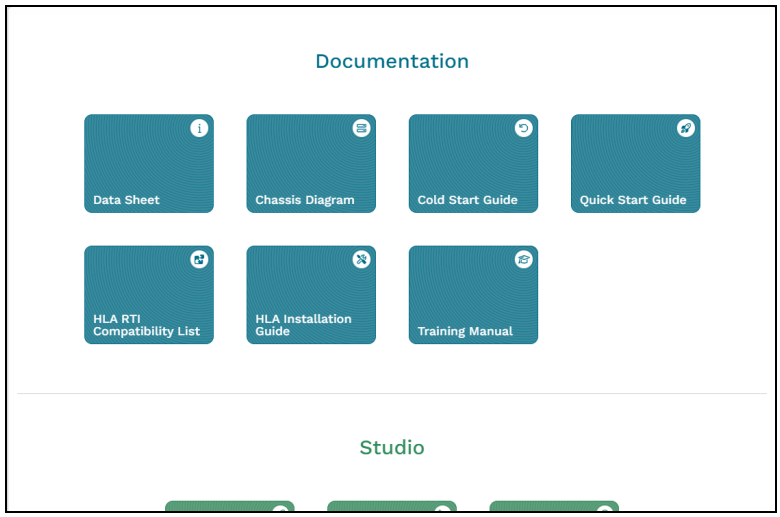

Figure 20: Telestra Documentation page

6.2 User Management

Located in the top navigation bar, **Settings** (⚙▾) > **User Management** enables you to perform various user-related administrative tasks. Whether you're creating user accounts, managing passwords, or deleting users, this page provides a simple and effective way to limit access to the Telestra web interface.

This chapter discusses how to:

- Add a user account
- Change a user's password
- Delete a user account

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6.2.1 Add a user account

Before you can take full advantage of the Telestra web interface, you'll need to log in as an administrator and set up any user accounts. These accounts are only applicable to the Telestra web interface, not Linux system user accounts.

To add a user account to the Telestra web interface, follow these steps:

1. In the top right navigation bar, go to **Settings** ( ) > **User Management**.

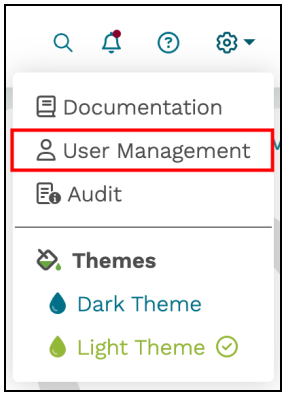

Figure 21: User Management navigation

2. Log in with the following default credentials:

Username	Password
admin	astirules

3. On **User Management**, select **Add a User** ( ), and **Add New User** populates on the right.
4. In **Username**, enter a unique identifier for the account (e.g., **LukeSkywalker**).
5. In **Password**, enter a password per the security configuration's requirements. Alternatively, select Generate Random Password to automatically create a strong and secure password.

***Note**: Write down the generated password for future reference.*

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6. In **Verify Password**, enter the new password again.

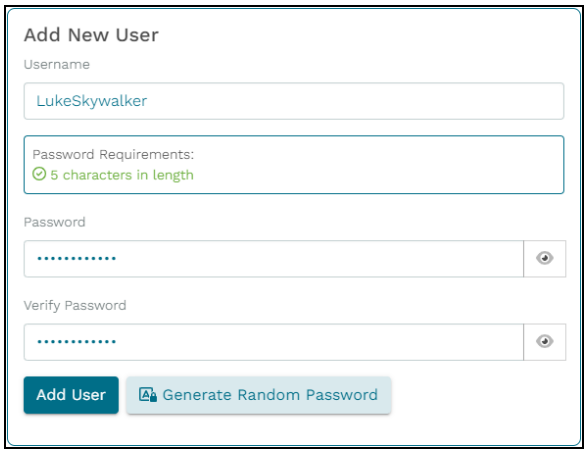

Figure 22: Add New User

7. *(Optional)* Select the eyeball icon (👁) to show or hide your password.

8. Select Add User.

   The new account appears on the left, under the **admin** account:

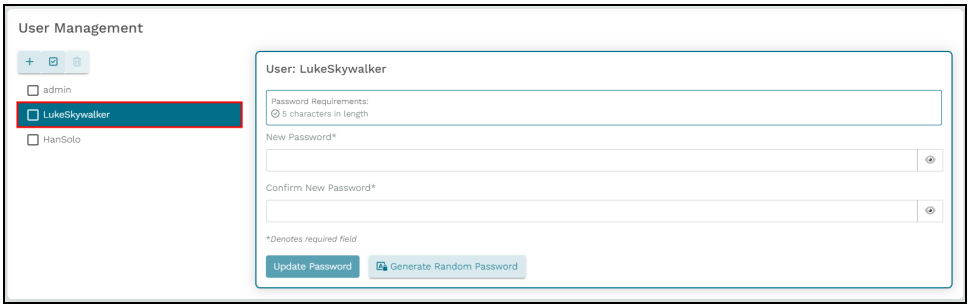

Figure 23: New user account

6.2.2 Change a user's password

User Management enables you to change users' passwords. You may wish to modify a password for multiple reasons, including potential compromises or suspicious activity, Security Technical Implementation Guide (STIG) requirements, and expired or forgotten passwords.

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To change a user's password, follow these steps:

1. On **User Management**, choose a user from the left.
2. In **Password**, enter a password per the security configuration's requirements. Alternatively, select Generate Random Password to automatically create a strong and secure password.

***Note**: Write down the generated password for future reference.*

3. In **Confirm New Password**, enter the new password again.

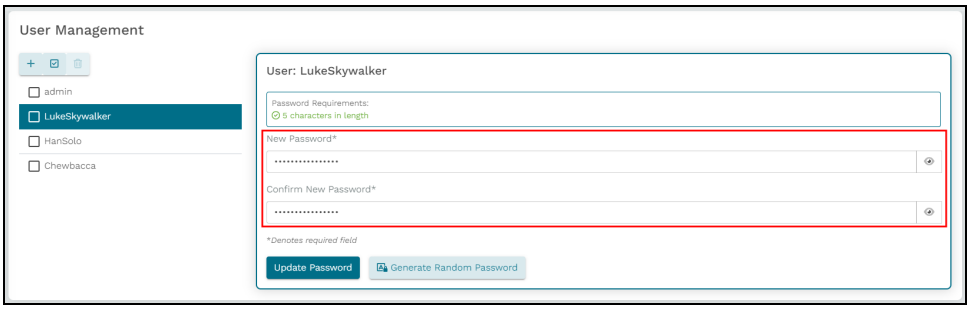

Figure 24: New passwords

4. *(Optional)* Select the eyeball icon (👁) to show or hide your password.
5. Select Update Password, and a "Password updated, successfully!" message appears.

6.2.3 Delete a user account

To delete a user account, follow these steps:

1. On **User Management**, choose a user from the left.
2. Select the trash can icon (🗑).

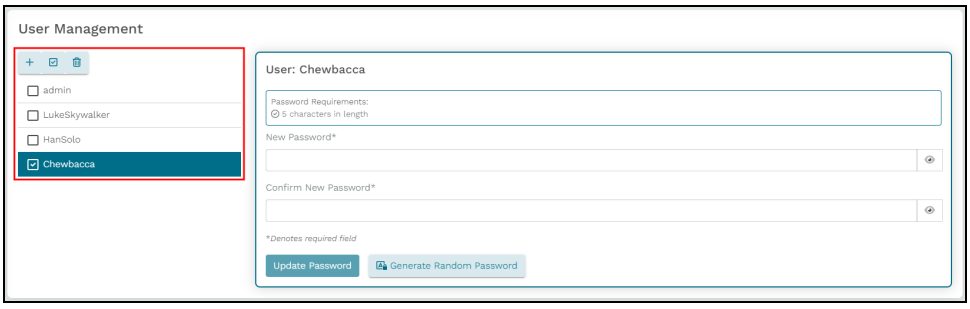

Figure 25: Delete a user

When the page refreshes, the deleted account no longer appears on **User Management**.

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6.3 Audit

Located in the top navigation bar, **Settings** (⚙▾) > **Audit** provides a centralized place to access audit log messages. These instructions describe how to review, archive, and retrieve security alerts on hardened Telestra systems. Whether you're ensuring Information Assurance (IA) compliance, investigating incidents, or monitoring system activities, this feature helps enforce and maintain robust security measures.

This section discusses how to:

- Review and archive audit logs
- Retrieve archived audit logs

6.3.1 Review and archive audit logs

To review and archive audit logs, follow these steps:

1. From the top navigation bar, go to ⚙▾ **Settings** > **Audit**.

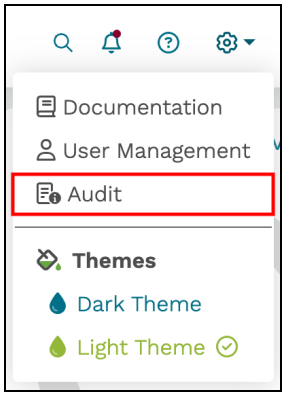

Figure 26: Audit Log navigation

2. Log in with the following default credentials:

Username	Password
admin	astirules

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3. *(Optional)* To view the hidden password, select **Show Password** (👁).

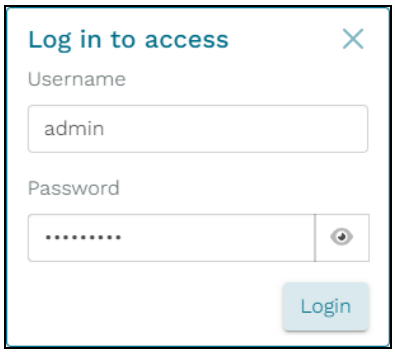

Figure 27: Login pop-up window

4. Select Login.

5. Under **Message**, review the list of incidents. This view only shows messages related to critical system functionality (e.g., users, passwords, reboot, and shut down). **Timestamp** displays the date and time that the incident occurred.

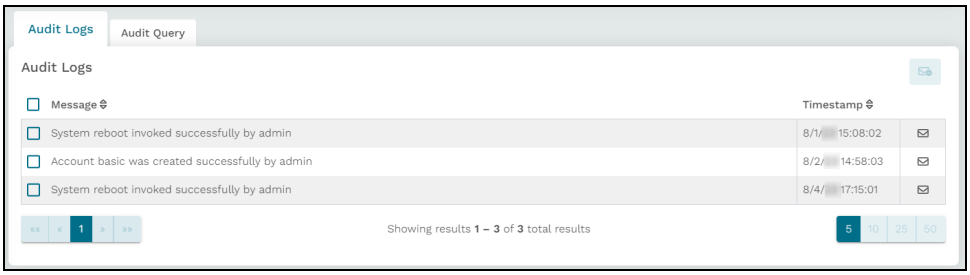

Figure 28: Audit Log messages

6. To archive an audit log message, select **Mark as reviewed** (✉). A progress spinner replaces the envelope icon. Select the ⊗ to cancel.

Figure 29: Progress spinner on Audit Log

When the archive is complete, Telestra strikes through the message, and it disappears from the page.

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7. *(Optional)* To archive multiple items simultaneously, choose which items to archive, and select **Mark selected items as reviewed** ( ) in the top right.

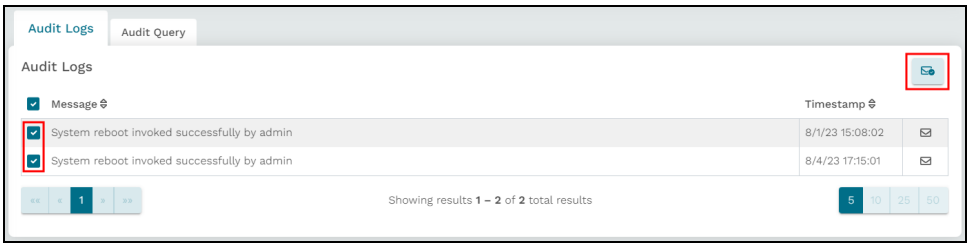

Figure 30: Archive multiple messages

6.3.2 Retrieve archived audit logs

Audit Query monitors and tracks activity on the Telestra server, whereas an agent (e.g., a user, software application, or server) enacts one or more events upon a subject (e.g., another user, a backup, or an SOS report). Examples of events might include license updates, log-out instances, or session timeouts. Each event has an outcome of **Successful**, **Failed**, **Unknown**, or **None**.

Adjust the filter parameters to find specific audit log messages. Once you submit a query, the page generates a list of relevant events, which include a time stamp and event description. This information might be useful for security, compliance, and troubleshooting purposes. Select a message's corresponding envelope to mark it as "reviewed."

To retrieve archived **Audit Log** messages, follow these steps:

1. From **Audit Logs**, go to **Audit Query**.
2. In **Date Range**, specify a start and end date for the audit log filter.

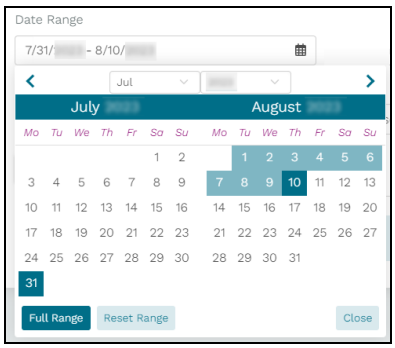

Figure 31: Audit Query Date Range

Select Full Range to view all dates containing audit logs or Reset Range to view logs from the last week. Select Close to close the calendar picker.

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3. To filter results by an audit log's **Event Outcome**, choose **Successful**, **Failed**, **Unknown**, or **None**.

4. To filter results by a log's **Reviewed** status, choose **Reviewed** or **Unreviewed**.

5. To view the logs a specific user reviewed, select **Reviewed By**, and choose one or more usernames.

6. Select **Agents** to filter by the specific entities that triggered an event (e.g., users, APIs, software applications, servers). Enter the name of an agent in the search bar, and choose one or more agents.

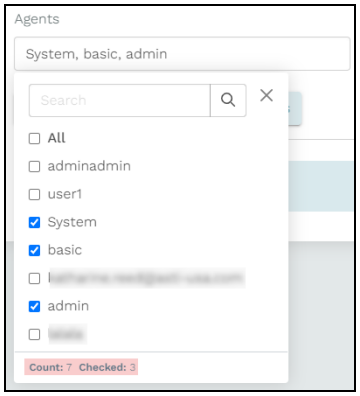

Figure 32: Audit Log Agents

At the bottom, **Count** displays the total number of agents, whereas **Checked** displays the number of selected agents. To disable this filter, select **All**.

7. Select **Subjects** to filter by the targets of an agent's action, such as user accounts backups, or SOS reports.

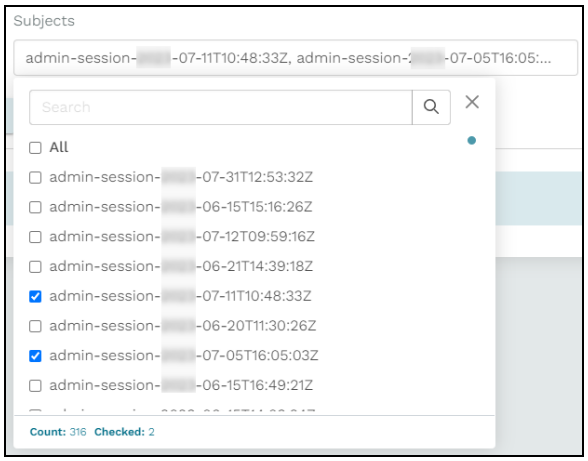

Figure 33: Audit Log Subjects

At the bottom, **Count** displays the total number of agents, whereas **Checked** displays the number of selected agents. To view all target actions, leave the default value of **All**.

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8. Select **Event Types** to filter by the kind of event, such as a license update, log-out instance, or session timeout.

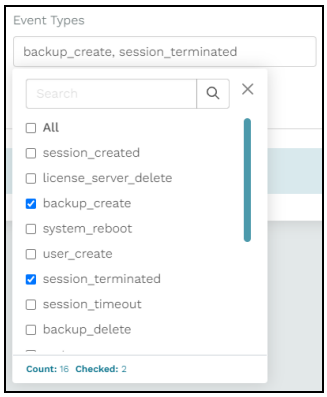

Figure 34: Event Types

9. *(Optional)* To remove all filters from this page, select Clear All Filters.

10. Select Query Events to view filtered results, which display at the bottom of the page.

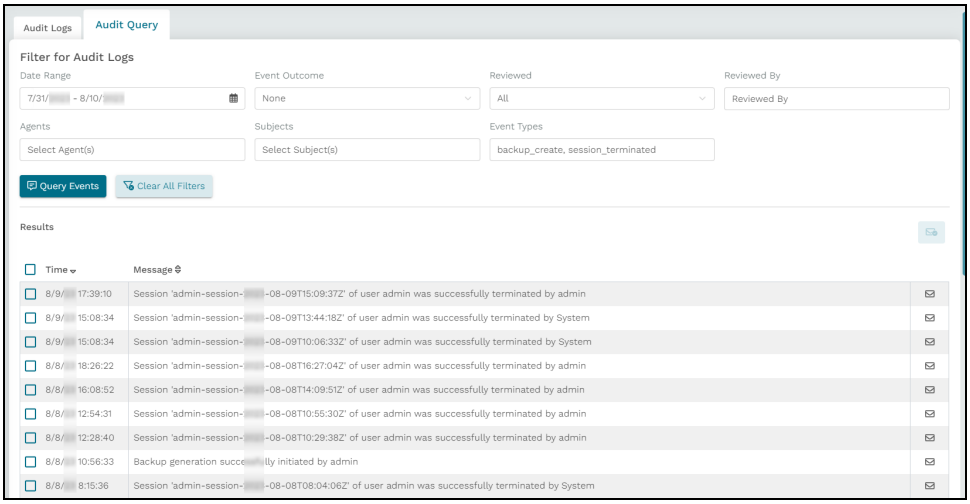

Figure 35: Audit Query results

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6.4 Themes

By default, the Telestra web interface is set to **Light Theme**. To change the web interface to **Dark Theme**, from the top navigation bar, go to **Settings** (⚙) > **Dark Theme**.

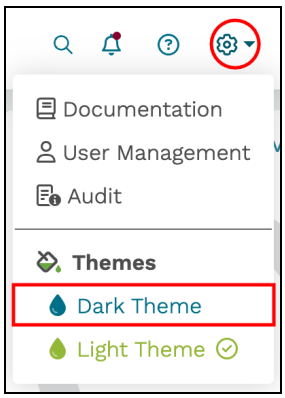

Figure 36: Turn on Dark Theme

A check mark (✓) displays next to **Dark Theme**, and the overall color scheme changes from light to dark:

Figure 37: Dashboard with a Dark Theme

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7.0 System

Located in the top navigation bar, use **System** to perform server-specific actions, such as logging into the Telestra web interface as an administrator or rebooting and shutting down the Telestra server.

This chapter discusses the following topics:

- Login
- Reboot/Shut Down

7.1 Login

To log into the Telestra web interface as an administrator, follow these steps:

1. Open a web browser on a computer sharing a network with the Telestra server.
2. In the address bar, enter the Telestra server's IP address.
3. In the top-right corner, select **Log In** ( ).
4. Log in with the following default credentials:

Username	Password
admin	astirules

5. *(Optional)* To view the hidden password, select **Show Password** ( ).

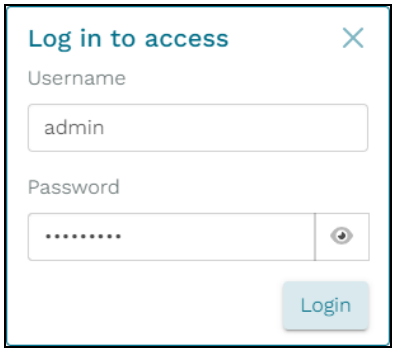

Figure 38: Login pop-up window

6. Select Login.

7.2 Reboot/Shut Down

This section explains how to reboot or shut down the Telestra server. Rebooting may be helpful to troubleshoot issues, apply software updates, or stabilize the system. Similarly, you may need to shut down the server for maintenance, hardware replacement, or power management.

***Important**: Rebooting and shutting down interrupt the Telestra server's software (e.g., model operations).*

To reboot or shut down the Telestra server, follow these steps:

1. In the top-right corner, select **Log In** ( ).
2. Log in with the following default credentials:

Username	Password
admin	astirules

3. *(Optional)* To view the hidden password, select **Show Password** ( ).

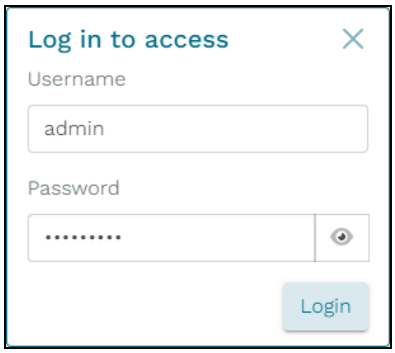

Figure 39: Login pop-up window

4. Select Login.

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5. To reboot the server, go to **System** (⏻) > **Reboot**.

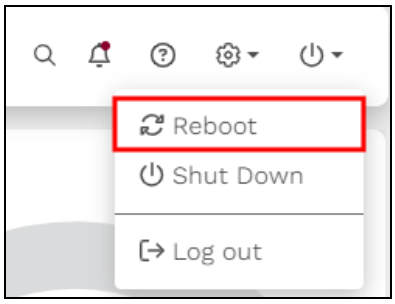

Figure 40: Reboot the Telestra server

In the confirmation message, select Confirm to continue.

***Note**: In most cases, the browser refreshes automatically. However, you may need to manually refresh if you see a message indicating that the Telestra server is down.*

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8.0 Dashboard

The **Dashboard** provides general information about your Telestra server's operation that you can use for troubleshooting:

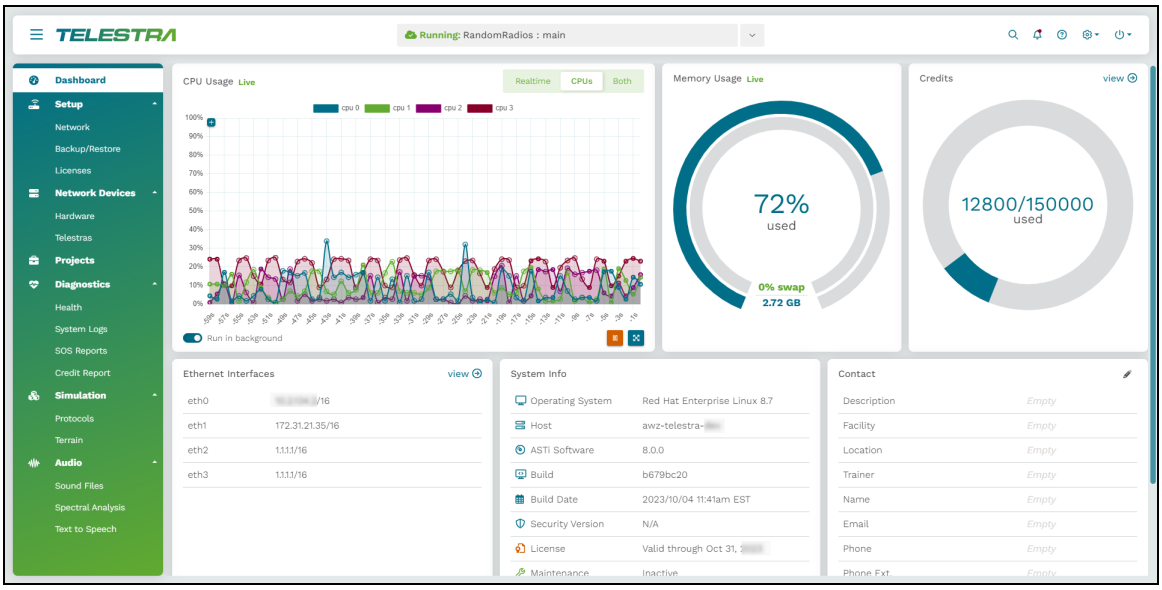

Figure 41: Dashboard

This chapter discusses the following topics:

- CPU Usage
- Memory Usage
- Credits
- Ethernet Interfaces
- System Info
- Contact

8.1 CPU Usage

CPU Usage shows the percentage of the Telestra server's central processing unit (CPU) utilization over a given period, monitoring performance and identifying potential bottlenecks. The X-axis represents time in seconds, while the Y-axis represents CPU utilization as a percentage. High CPU utilization can lead to slow response times, unresponsive applications, and overall poor system performance.

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Toggle **Realtime**, **CPUs**, and **Both** (

) to view different facets of the server's performance. On **Realtime**, blue represents the server's peak performance statistics, while green represents average performance.

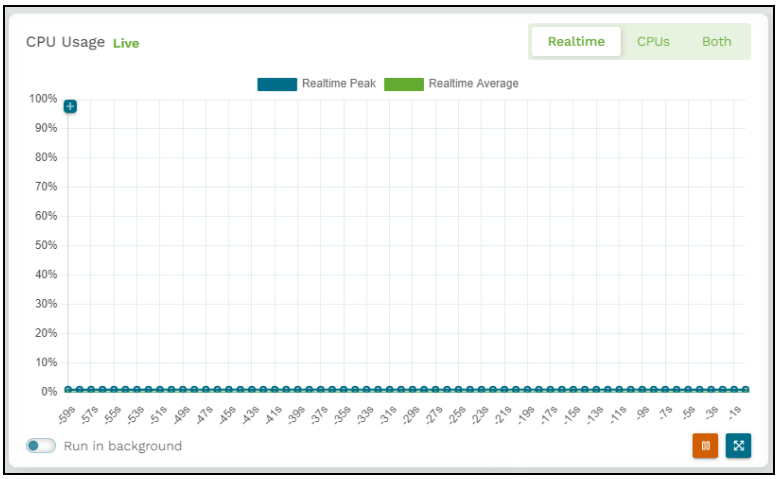

Figure 42: CPU Usage

On **CPUs**, each colored line represents a different CPU core.

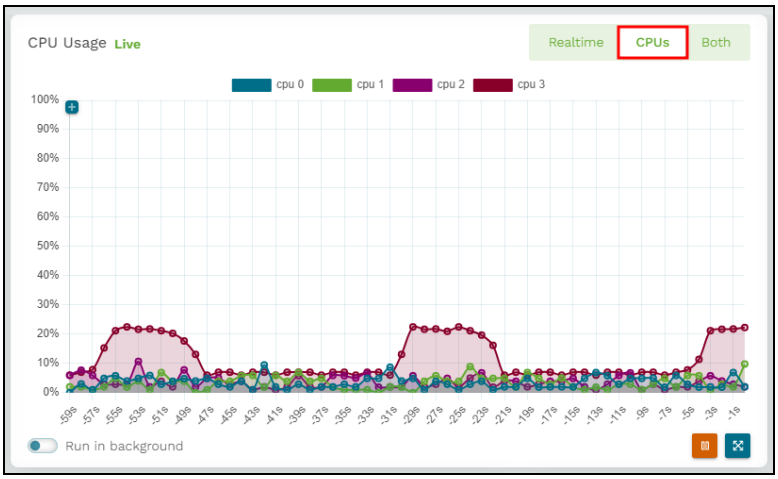

Figure 43: Cores on the CPUs tab

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Select **Both** to view **Realtime** and **CPUs** in tandem.

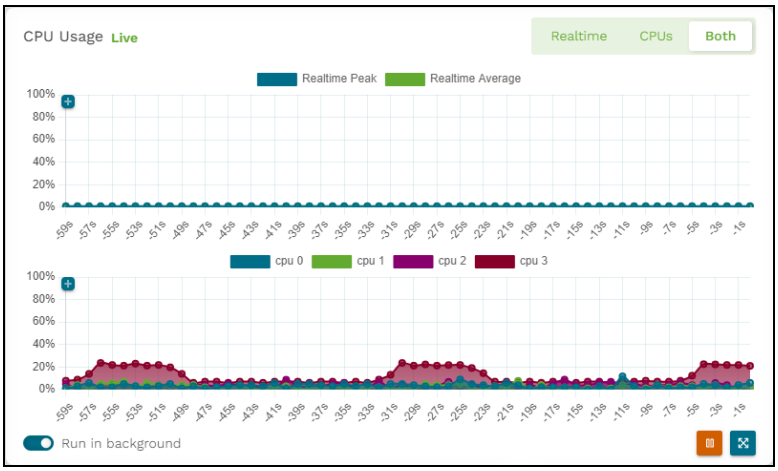

Figure 44: CPU Usage Both view

To view CPU plot points in more detail, select the plus sign (⊕) in the top left, and then select **Zoom in** (🔍). Select **Zoom out** (🔍) to view less detail or Reset to return to the default view.

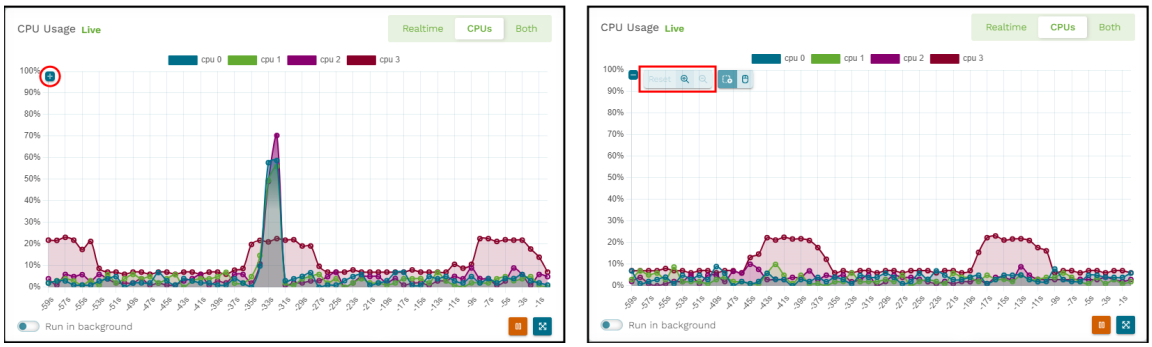

Figure 45: Zoom in/out of CPU plot plots

To view a particular section of the CPU graph's timeline, select and move your mouse over the area you want to inspect.

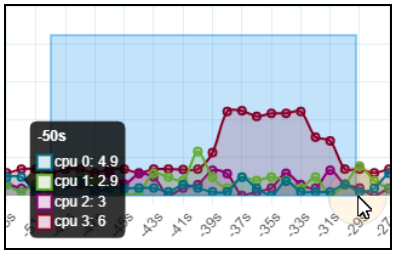

Figure 46: Select and drag to zoom

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Select the bidirectional arrows (, , ,) to move forward, backward, up, or down along the timeline.

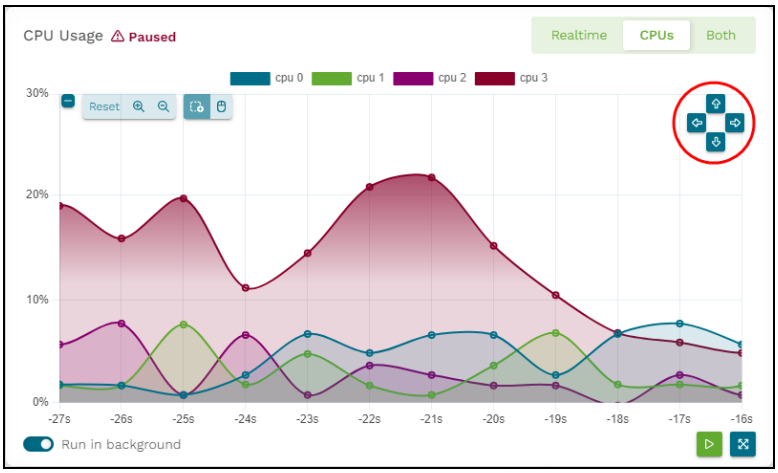

Figure 47: Bidirectional arrows in the CPU Usage graph

Alternatively, select **Scroll to Zoom** () to zoom by scrolling over an area with your mouse.

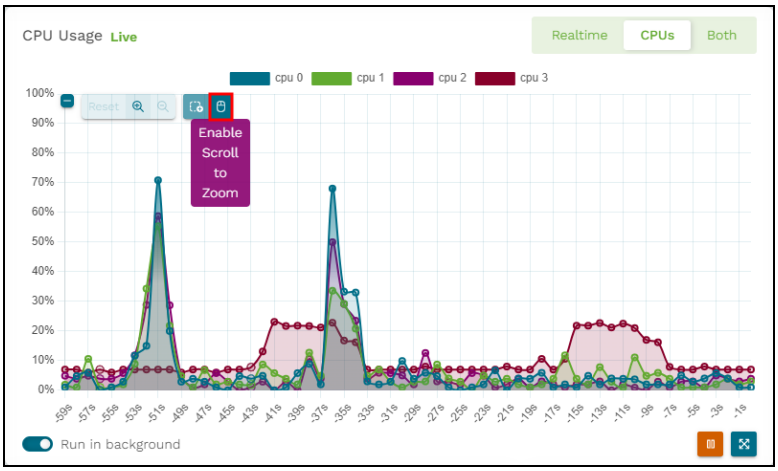

Figure 48: Scroll to Zoom in CPU Usage

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Zooming in to inspect part of the graph automatically pauses it, freezing the timeline in its current state. You can also select **Pause** ( ) at any time to temporarily stop the graph. When paused, the graph displays a ⚠ "Paused" alert next to the section title.

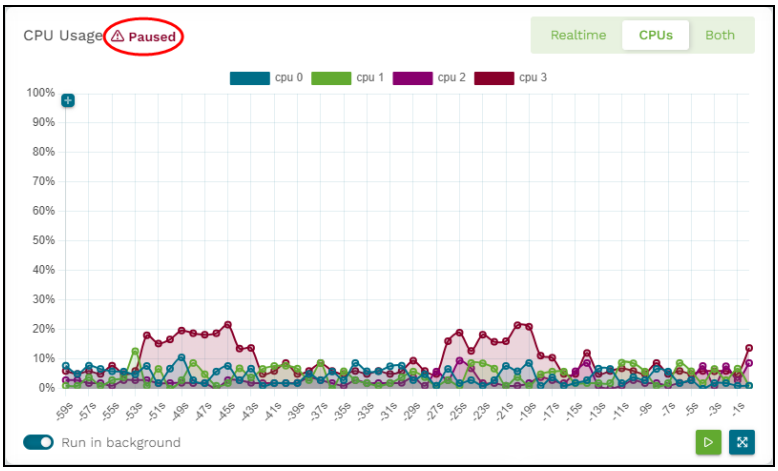

Figure 49: Paused CPU Usage graph

To allow the graph to continue recording and displaying real-time data points from the Telestra server, select **Resume** ( ).

To view a larger, full-screen version of **CPU Usage**, select **Enlarge View** ( ). Likewise, scroll down and select **Minimize View** ( ) to collapse the graph to its default size.

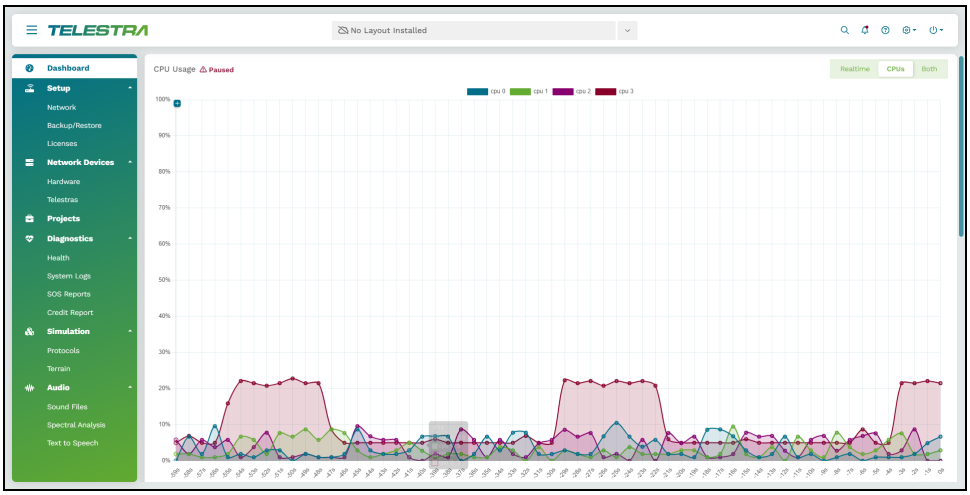

Figure 50: Expanded CPU Usage graph

***Note**: **Enlarge View** is not available on smaller screens.*

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To save processing power, the **CPU Usage** graph automatically pauses when the screen loses focus. To continue buffering data when the screen is out of focus, turn on **Run in background**.

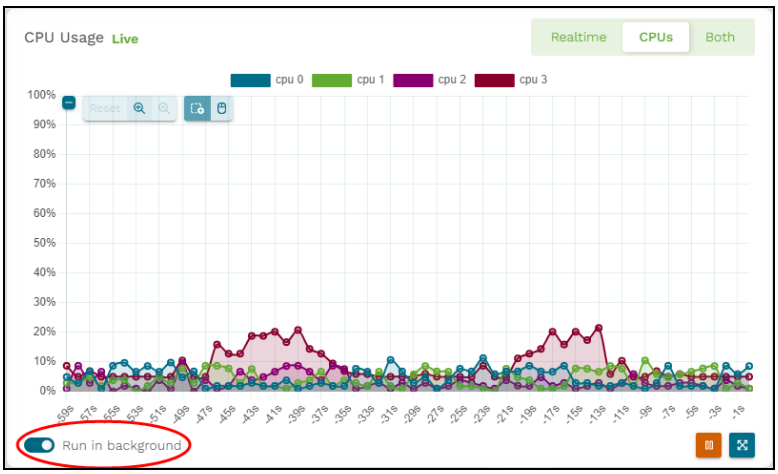

Figure 51: Run CPU Usage graph in the background

8.2 Memory Usage

Memory Usage shows the percentage and amount of memory in gigabytes (GB) the Telestra server is using at a given time. High-memory usage (e.g., 90 percent) means that Telestra is resource heavy, which is not an issue as long as the system is functioning normally. Hover over the outside memory bar to view more detailed information, such as Random Access Memory (RAM) usage.

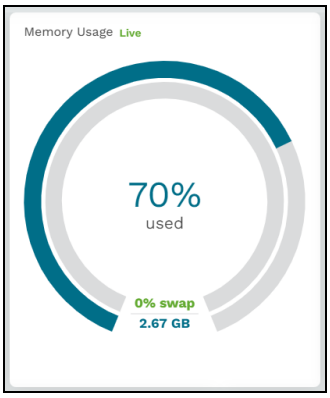

Figure 52: Memory Usage

Swap space creates temporary storage on the Telestra server's hard drive when the system runs low on memory. If Telestra needs more memory resources and its RAM is full, the server moves inactive pages in memory to the swap space, freeing up memory for other programs.

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When the Telestra server is using swap space, the inside bar turns red and displays how much swap it is using. Ideally, the server should not be using any swap. Contact ASTi at support@asti-usa.com if the swap percentage is higher than 0.

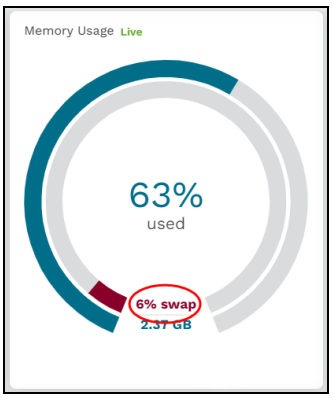

Figure 53: Swap utilization

8.3 Credits

Credits displays the total amount of used and available credits on the Telestra server. To view a full credit report and component summary, go to **View Credit Report** ⊕.

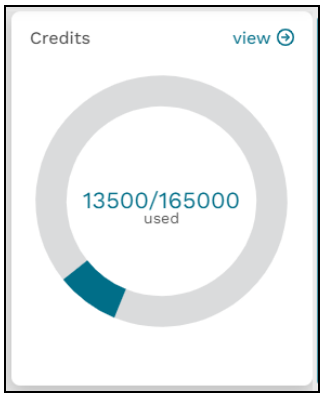

Figure 54: Credits

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8.4 Ethernet Interfaces

Ethernet Interfaces provides a quick view of the Telestra server's Ethernet interfaces and their IP addresses. To view additional networking information, go to **View Network Setup** .

Figure 55: Ethernet Interfaces

8.5 System Info

System Info displays helpful information about the Telestra server:

- ***Operating System**:* the version of Red Hat Enterprise Linux (RHEL) currently installed on this Telestra server.
- ***Host**:* the Telestra server's hostname; to edit the hostname, go to Section 9.1.2, "Edit an Ethernet interface's network" on page 38.
- ***ASTi Software**:* the current version of ASTi software installed on this Telestra server.
- ***Build**:* a unique combination of letters and numbers that represents the Telestra server's current build.
- ***Build Date**:* the date and time of the Telestra server's build.
- ***Security Version**:* the Information Assurance (IA) software version on hardened Telestra servers. If the system is not hardened, this line item displays "N/A" for "Not Applicable."
- ***License**:* the ID number of the currently installed license; this line item is blank if no license is installed.
- ***Maintenance**:* "Active" means this Telestra server is subscribed to ASTi's software maintenance plan, where "Inactive" means the server is not subscribed.
- ***Default Layout**:* displays the Telestra server's default project and layout. To clear the current defaults, select **Clear Default Layout**. To set new defaults in the project installer, go to Section 2.3, "Set the default project and layout" on page 5.

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Figure 56, "System Info" below shows the **System Info** card on the **Dashboard**:

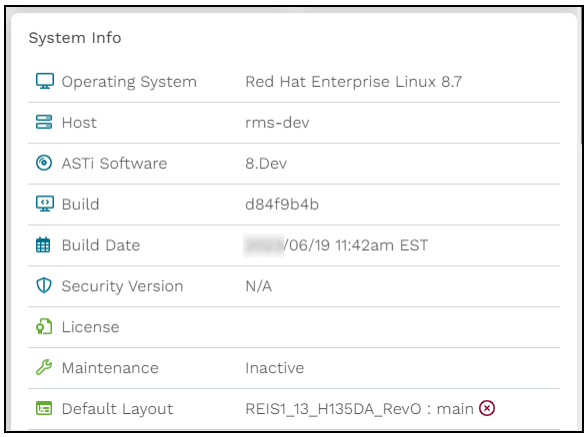

Figure 56: System Info

8.6 Contact

Fill out **Contact** with the system administrator or main technician's contact information, providing a brief description of the program and/or facility location, if applicable. This information might be useful if your Telestra server is experiencing issues or you have questions about Telestra's configuration. To edit the system's contact information, select **Edit** (✎).

Figure 57: Telestra contact information

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9.0 Setup

When you first receive your Telestra server, you must complete several configuration tasks on **Setup** to get your server up and running. These configuration tasks include configuring the server's network and installing USB License Keys. If you need to perform a cold-start procedure (i.e., software update), this section also enables you to archive and reinstall your system's current configuration.

Figure 58, "Setup pages" below shows **Setup** pages on the left:

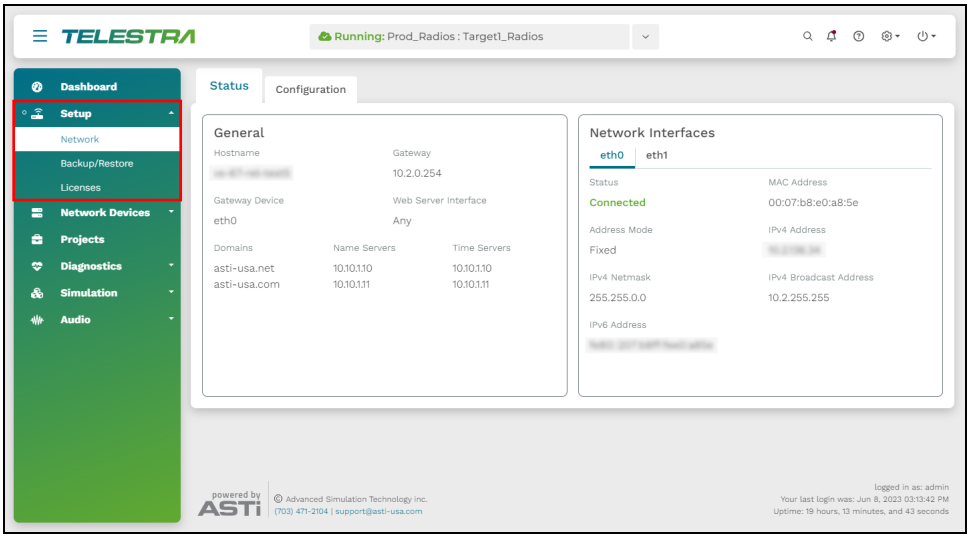

Figure 58: Setup pages

This chapter discusses the following topics:

- Network
- Backup/Restore
- Licenses

9.1 Network

View and configure network settings for your Telestra server and Ethernet interfaces on the **Network** page, which includes two important tabs:

- ***Status****:* view the current configuration of your Telestra server and Ethernet interfaces.
- ***Configuration****:* adjust the network settings of your server or Ethernet interfaces per your requirements.

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Figure 59, "Network" below shows the **Network** page:

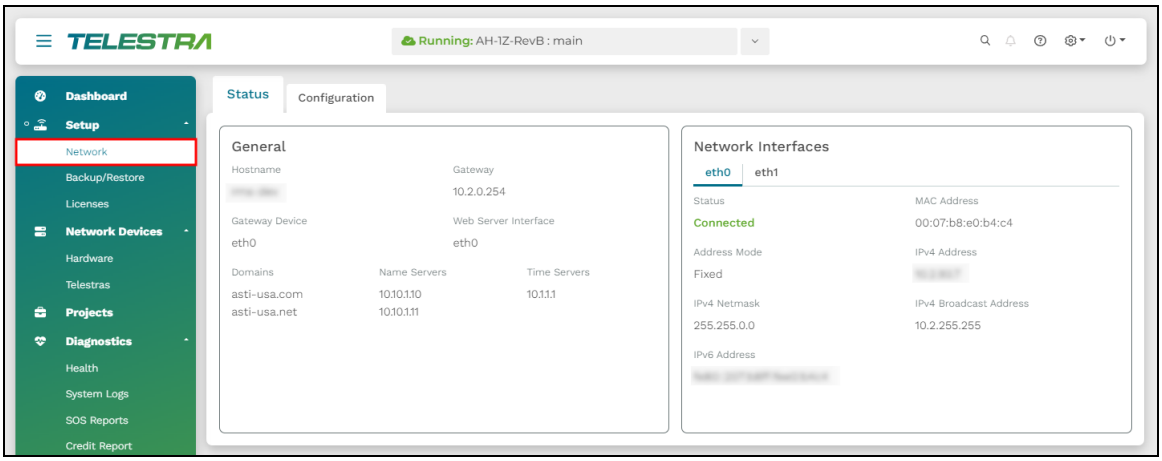

Figure 59: Network

This section discusses how to:

- Edit the Telestra server's network
- Edit an Ethernet interface's network

9.1.1 Edit the Telestra server's network

On **Network**, the **Configuration** tab provides an intuitive way to access and modify various aspects of the Telestra server's configuration. This section explains how to set up a unique host name, assign a cloud ID, determine the optimal routing method, and configure domain names, name servers, and time server addresses.

***Important**: Editing network settings may prevent you from accessing the Telestra web interface at its original IP address. Enter the new IP address in the browser.*

To modify the Telestra server's network configurations, follow these steps:

1. On **Network**, go to **Configuration**.
2. Log in with the following default credentials:

Username	Password
admin	astirules

3. *(Optional)* In **Hostname**, enter a hostname. This name identifies your server on the network. When the hostname changes, the cloud ID changes to match.

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4. Under **Routing**, assign one of the following routing methods to the Telestra server:

   - ***Gateway**:* route traffic to and from other networks via a gateway IP address and network interface. Choose a gateway interface (e.g., eth0), and enter the gateway's IP address.
   - ***Default Interface**:* route traffic to and from other networks by selecting a default Ethernet interface (e.g., eth0).
   - ***None**:* do not assign a routing method to the Telestra server.

5. To restrict web server access to a single interface (i.e., eth0, eth1, eth2), select **Web Server Interface**, and choose an interface. To allow web server access on all interfaces, select **Any**.

6. To set the default interface for Studio and/or the Radio Monitor, select **Studio/Radio Monitor Interface**, and choose an interface.

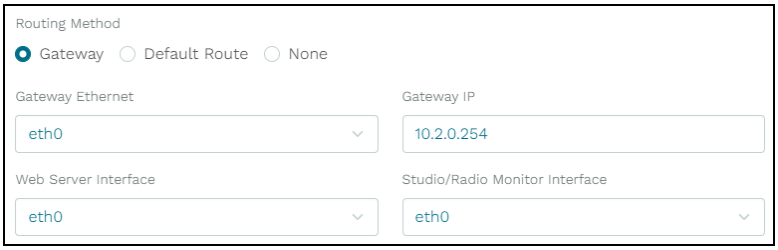

Figure 60: Default device settings

7. In **Domains**, enter unique names for the domain servers. Telestra uses these domain names to perform name look-ups for other servers on the network.

8. In **Name Servers**, enter the IP addresses of up to three servers. Telestra queries these servers when attempting to match host names to IP addresses.

9. In **Timeservers**, enter the IP addresses of up to three Network Time Protocol (NTP) servers. Telestra references these servers to synchronize the system clock.

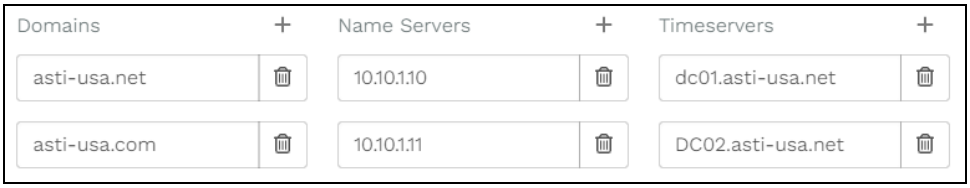

Figure 61: Domain, Name Server, and Time Server addresses

10. In **Changes**, review your modifications, and select Save.

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9.1.2 Edit an Ethernet interface's network

To edit an Ethernet interface's network configuration, follow these steps:

1. On **Configuration**, in **Network Interfaces**, go to an interface tab (e.g., eth1).
2. Select **Address Mode**, and choose the Ethernet device's mode of operation:
   - ***Off****:* disables the Ethernet interface.
   - ***DHCP****:* requests IPv4 and subnet mask information from another server on your network.
   - ***Fixed****:* requires an IP address and subnet mask.
3. In **IPv4 Netmask**, enter the Ethernet interface's subnet mask (e.g., **255.255.0.0**). Contact your network administrator for help with this setting.
4. *(Optional)* In **DHCP Client ID**, enter a unique identifier for the interface to use when it requests an IP address from the DHCP server (e.g., **MyDevice001**). This setting is disabled unless **Address Mode** is **DHCP**.
5. *(Optional)* **Ignore DNS** prevents this interface from updating the Telestra server's Domain Name System (DNS) setting for name resolution. You might turn on **Ignore DNS** if Dynamic Host Configuration Protocol (DHCP) provides conflicting DNS servers on multiple interfaces. This setting is disabled unless **Address Mode** is **DHCP**.

   Figure 62, "Network Interfaces" below shows Ethernet interface network settings:

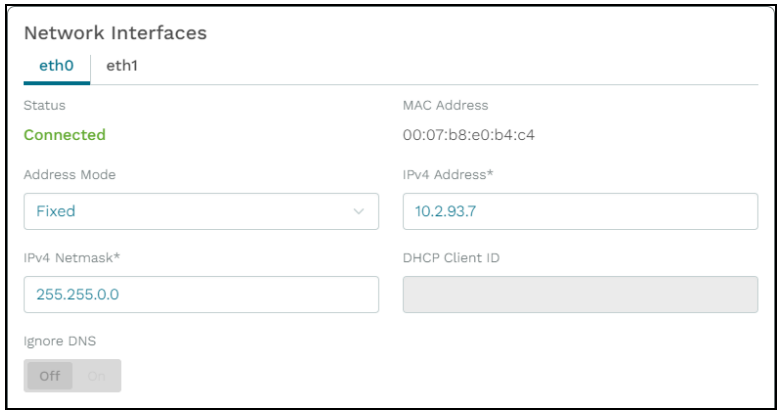

Figure 62: Network Interfaces

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9.2 Backup/Restore

Backup/Restore provides a convenient way to back up and restore system configurations on the Telestra server. You might use this feature to recover a system configuration after a hardware failure or data corruption, revert to a previous working state after a cold-start procedure (i.e., software update), facilitate testing and development in a separate environment, or export a system configuration to another Telestra server.

Figure 63, "Backup/Restore" below shows the **Backup/Restore** page:

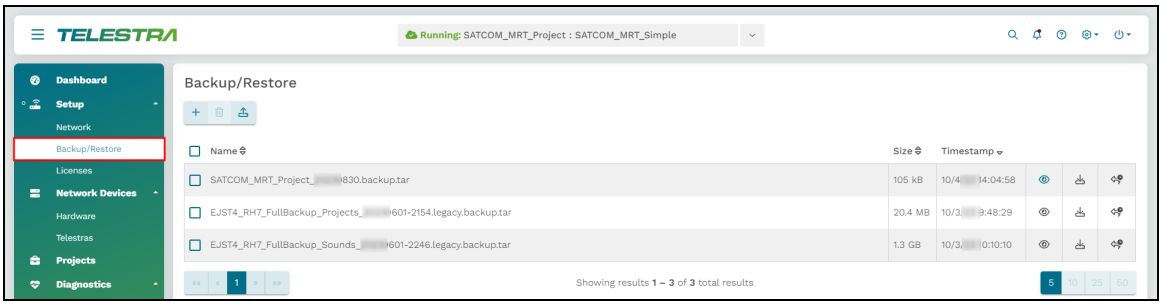

Figure 63: Backup/Restore

This section discusses how to:

- Back up a system configuration
- Restore a system configuration
- Delete a system configuration

9.2.1 Back up a system configuration

To back up a system configuration, follow these steps:

1. On the left, under **Setup**, go to **Backup/Restore**.

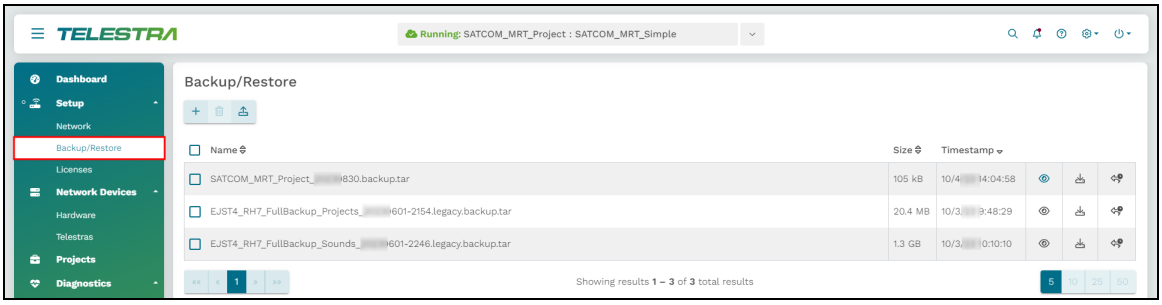

Figure 64: Backup/Restore navigation

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2. Log in with the following default credentials:

Username	Password
admin	astirules

3. Select **Add a backup** ( ).
4. *(Optional)* In **Select Resources to Back up**, select the arrow ( ) to view the contents of each section. To view all available resources, select Expand All.
5. Choose which resources to back up:
   - ***Licenses****:* saves the license file and/or license server configuration on the Telestra server.
   - ***Networking****:* saves the Telestra server's network configuration, such as the hostname and network settings.
   - ***Project Archives****:* saves all of the Telestra server's projects.
   - ***RecordReplay****:* saves any Telestra Sound Recording (.tsr) files from the **RecordReplay** or **LevelDCapture** components or .wav files from the **StereoWavRecord** component.
   - ***Sound Library****:* saves all wavesets on the Telestra server.
   - ***System Configuration****:* saves **Audit Logs**, internal features, HTTP API server configuration and data, Level D configurations, system **Contact** information, and **User Management** information (i.e., usernames, passwords).
   - ***Telestra Configurations****:* saves the configuration file enabling you to use custom or customer-specific components.
   - ***Custom SR Models****:* saves any speech recognition (SR) models built or installed on the system.

   Important*: Some options may not display depending on your Telestra server's configuration.*
6. *(Optional*) In **Prefix**, enter a unique name for the backup. If this field is blank, Telestra uses the server's hostname followed by a string of unique characters.
7. *(Optional)* Select **Text Only?** to remove project history (i.e., Mercurial) from the backup. This setting is ideal for secure facilities that are unable to transmit binary data.

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8. Select Back up.

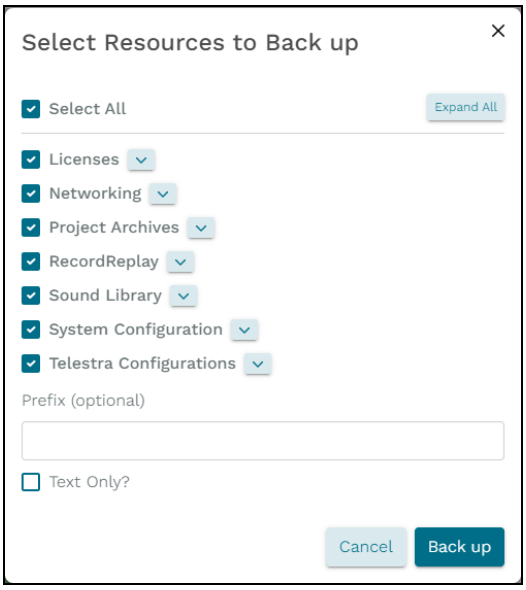

Figure 65: Select Resources to Back up

When the backup is complete, a "Backup was successful" message appears.

9. *(Optional)* Find the new backup in the table, and select **Download** (⬇).

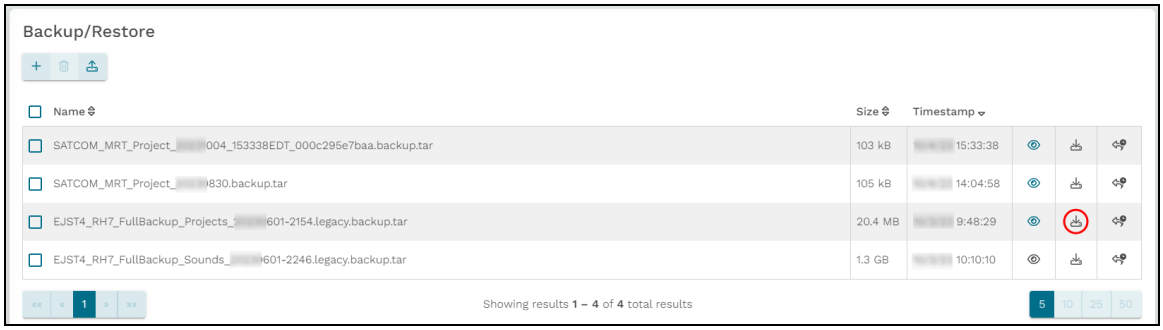

Figure 66: Download a backup

9.2.2 Restore a system configuration

To restore a backup on the Telestra server, follow these steps:

1. On **Backup/Restore**, select **Restore** (⟲).
2. To upload a backup to the Telestra server, select **Upload** (⬆).

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3. In **Upload Backups**, select Browse Files, and find the backup file on your local system. Accepted file types include tape archive, GNU zip, and backup tape archive formats (**.tgz**, **.backup.tar**).

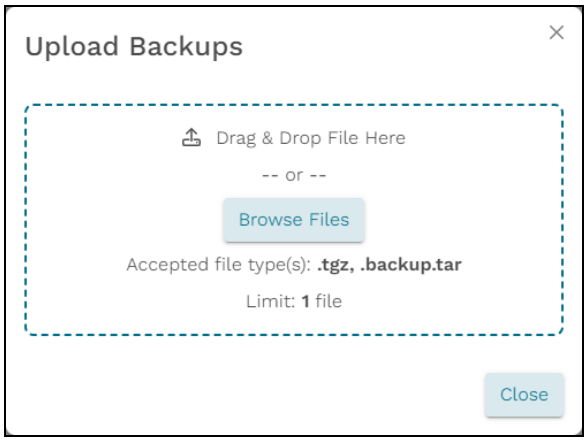

Figure 67: Find a backup file

4. Select Upload 1 file. Close the window when the upload is complete.

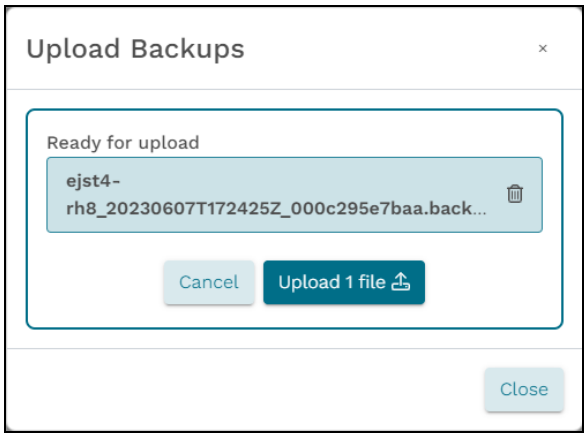

Figure 68: Upload a backup file

5. *(Optional)* To view the contents of a backup, select **View Restore Files** (). Once the system loads, select the eyeball icon again.

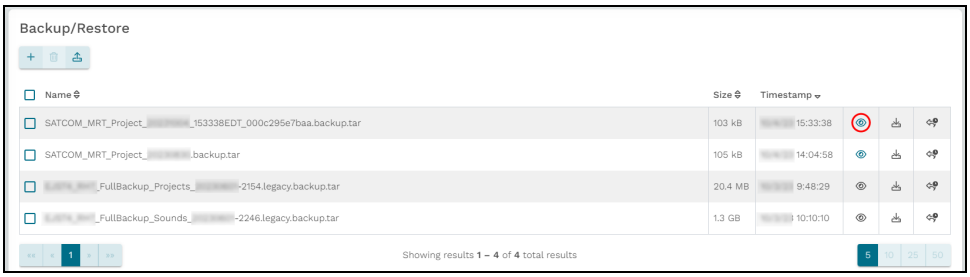

Figure 69: View Restore Files icon

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A pop-up window opens, displaying paths to files and sound files in the backup. Scroll down to view the full list of items.

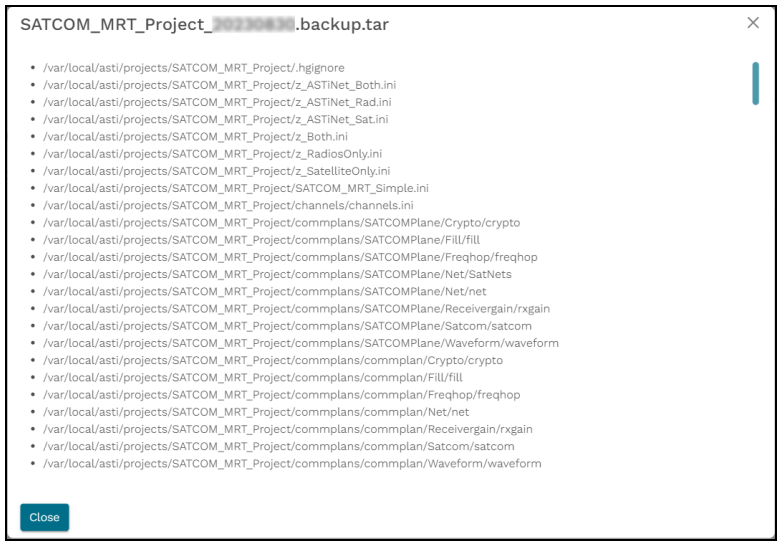

Figure 70: View the contents of a backup

6. To restore the uploaded backup, select **Restore** ( ).

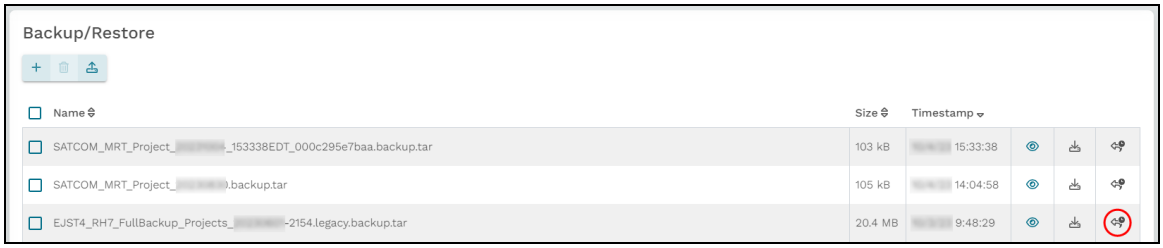

Figure 71: Restore a backup

7. *(Optional)* In **Select Resources to Restore**, select the down arrow ( ) to view the contents of each section. To view all available resources, select Expand All.

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8. Choose which resources to restore:

   - ***Licenses**:* saves the license file and/or license server configuration on the Telestra server.
   - ***Networking**:* saves the Telestra server's network configuration, such as the hostname and network settings.
   - ***Project Archives**:* saves all of the Telestra server's projects.
   - ***RecordReplay**:* saves any Telestra Sound Recording (.tsr) files from the **RecordReplay** or **LevelDCapture** components or .wav files from the **StereoWavRecord** component.
   - ***Sound Library**:* saves all wavesets on the Telestra server.
   - ***System Configuration**:* saves **Audit Logs**, internal features, HTTP API server configuration and data, Level D configurations, system **Contact** information, and **User Management** information (i.e., usernames, passwords).
   - ***Telestra Configurations**:* saves the configuration file enabling you to use custom or customer-specific components.
   - ***Custom SR Models**:* saves any speech recognition (SR) models built or installed on the system.

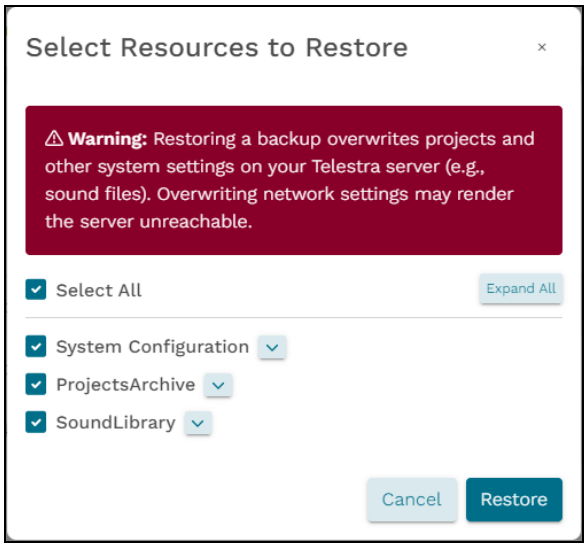

Figure 72: Select Resources to Restore

***Important**: Some options may not display depending on your Telestra server's configuration.*

9. Select Restore. After Telestra restores the configuration, a “Restore was successful” message appears.

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10. Ensure a valid USB License Key is installed on the Telestra server. For more information about USB License Keys, go to Section 9.3, "Licenses" below.

9.2.3 Delete a system configuration

To delete one or more system backups, follow these steps:

1. On **Backup/Restore**, select the backups you want to delete.
2. Select **Delete selected backups** ( ), and the backups disappear from the table.

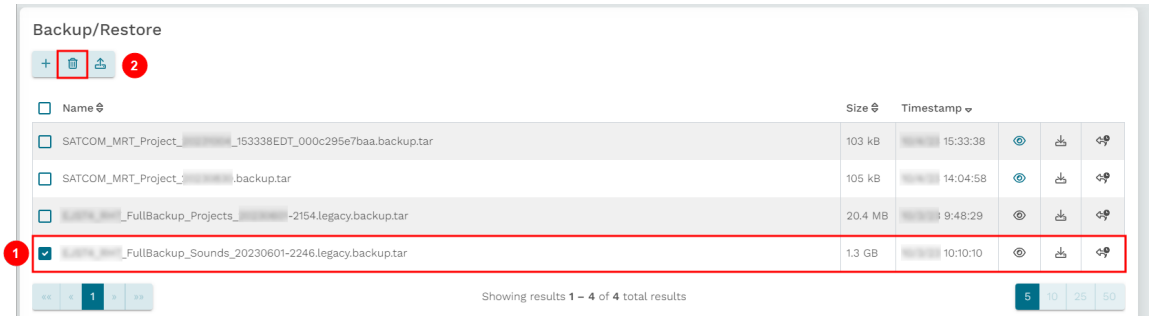

Figure 73: Delete system backups

9.3 Licenses

ASTi's licenses are tied to USB License Keys, which are DoD-approved devices covered under ASTi's Authority to Operate (ATO) and Risk Management Framework (RMF) accreditation. Upon delivery, each USB License Key activates a predefined set of software functionality for any system running Telestra software. This includes ASTi-provided hardware, customer-furnished equipment (CFE), government-furnished equipment (GFE), and virtual machines (VMs). USB License Keys also give you the ability to transfer functionality among systems and receive loaner and trial licenses. To learn more about USB License Key benefits and FAQs, go to “USB License Keys and your ASTi System (#123)” at support.asti-usa.com/appnotes/123.html.

This section discusses how to:

- Install a USB License Key
- View licensing information
- Update a USB License Key
- Manage network license servers

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9.3.1 Install a USB License Key

When you first receive an ASTi USB License Key with a shipment, you must install your license on the applicable Telestra server. To connect multiple licenses to a network license server, go to Section 9.3.4, "Network license servers" on page 52. If you're updating an existing license, follow the instructions in Section 9.3.3, "Update a USB License Key" on page 50.

To install a USB License Key and verify it is active, follow these steps:

1. Insert the USB License Key into the Telestra server.
2. Open a web browser on a computer sharing a network with the Telestra server.
3. In the address bar, enter the Telestra server's IP address.
4. In the top-right corner, select **Log In** ( ).
5. Log in with the following default credentials:

Username	Password
admin	astirules

6. *(Optional)* To view the hidden password, select **Show Password** ( ).

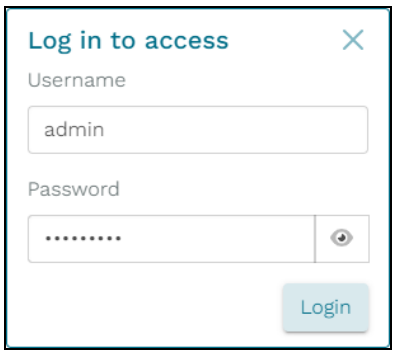

Figure 74: Login pop-up window

7. Select Login.

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8. On the left, go to **Licenses**.

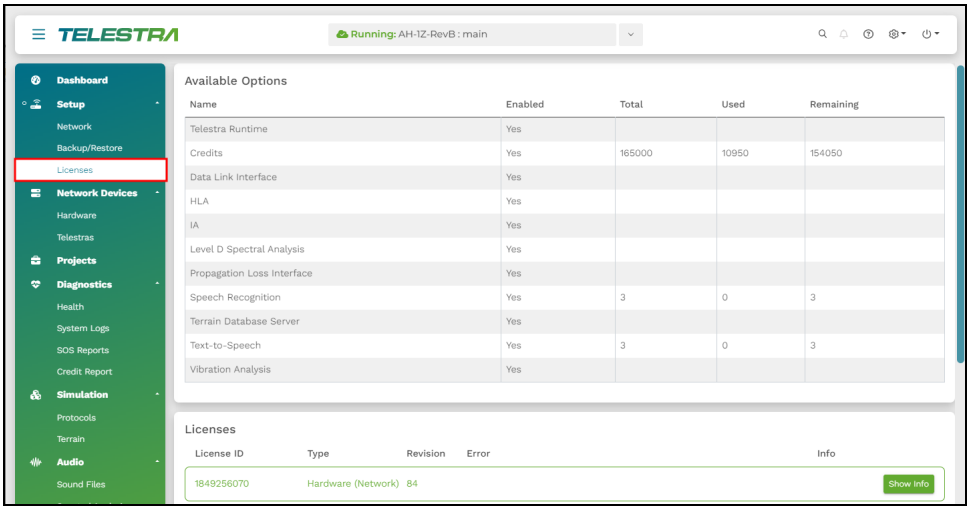

Figure 75: Licenses navigation

9. Under **Licenses**, find the **License ID** to confirm that your license is active. This ID is printed on the tag attached to your USB License Key.

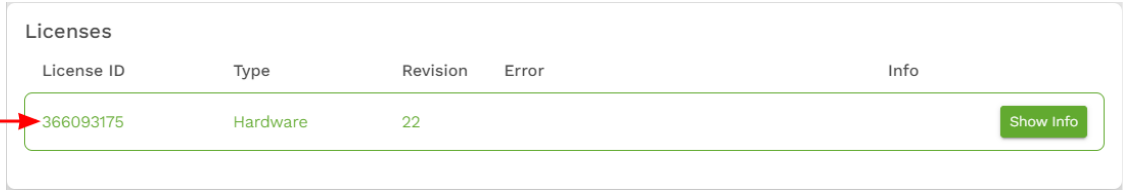

Figure 76: Active License ID

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9.3.2 View licensing information

Under **Available Options**, you can view a variety of information about licenses on your system:

- ***Enabled**:* enabled options (e.g., HLA, Speech Recognition, Text to Speech)
- ***Total**:* the total number of credits assigned to each option
- ***Used**:* the number of credits each option is using
- ***Remaining**:* the number of credits remaining to each option

Available Options

Name	Enabled	Total	Used	Remaining
Telestra Runtime	Yes			
Credits	Yes	150000	0	150000
Data Link Interface	Yes			
HLA	Yes			
IA	Yes			
Level D Spectral Analysis	Yes			
Propagation Loss Interface	Yes			
Speech Recognition	Yes	2	0	2
Text-to-Speech	Yes	2	0	2
Vibration Analysis	Yes			

Figure 77: Available Options

A list of installed USB License Keys displays under **Licenses**. This table specifies the following:

- License ID
- License type (i.e., hardware or software)
- License revision number
- Error messages

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Figure 78, "Installed licenses" below shows an example of installed licenses:

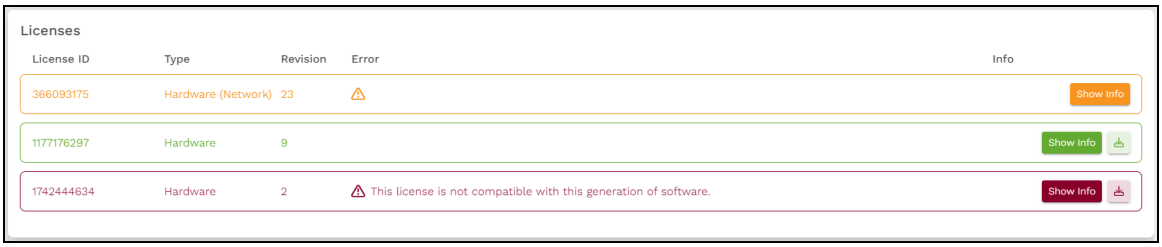

Figure 78: Installed licenses

Green licenses are active with no errors, while yellow licenses will expire in the next 90 days. Red licenses have already expired, as shown in the error message. If a system is unlicensed, a warning displays at the top of the page. Minimum functionality may still be available on unlicensed systems. However, if you would like to use the application's full feature set, contact ASTi to update your USB License Key.

To view specific information about the license, select Show Info:

- ***Name****:* options enabled on this license.
- ***Total****:* shows the total number of endpoints per option.
- ***Expired****:* indicates whether the option's capabilities have expired.
- ***Error****:* displays option-specific error messages (e.g., expiration).

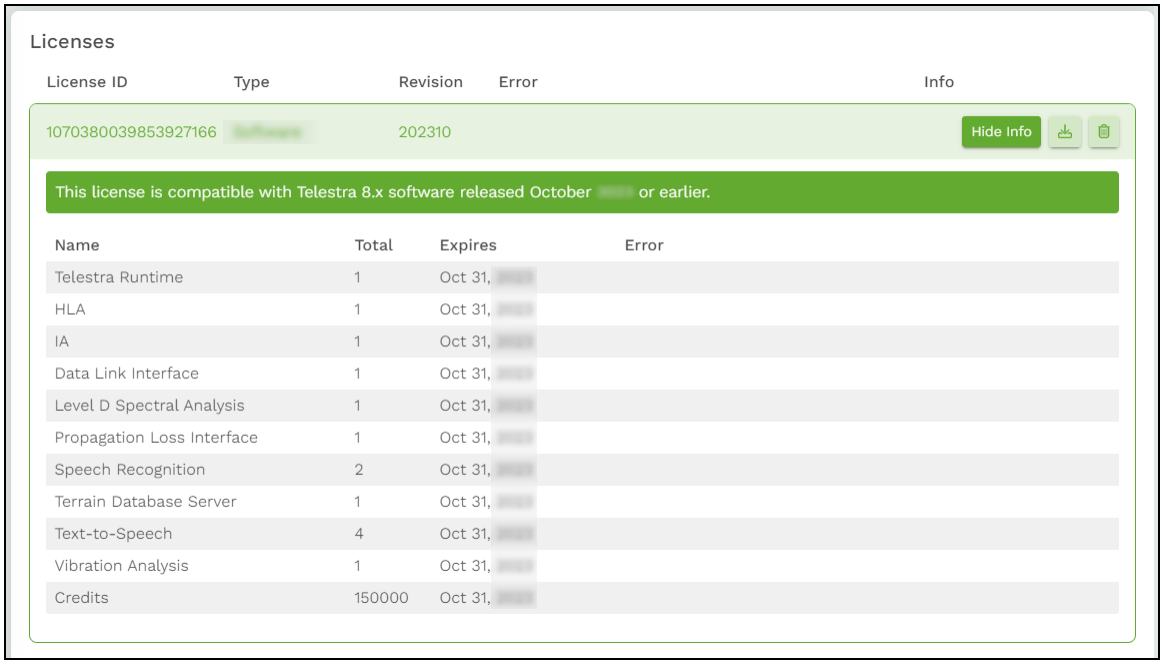

Figure 79: Additional license information

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9.3.3 Update a USB License Key

You may need to update one or more ASTi USB License Keys to expand or alter system functionality (e.g., receive a software trial, add more clients). ASTi provides a License Key Update (.lku) file that you can upload to the Telestra server. Updating a USB License Key or changing its license terms does not require returning it to ASTi. A single file can also update multiple keys.

To update USB License Keys, follow these steps:

1. Insert the USB License Keys into a Telestra server.
2. Open a web browser on a computer sharing a network with the Telestra server.
3. In the address bar, enter the Telestra server's IP address.
4. Log in with the following default credentials:

Username	Password
admin	astirules

5. *(Optional)* To view the hidden password, select **Show Password** (👁).

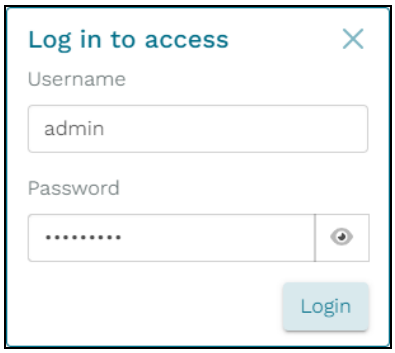

Figure 80: Login pop-up window

6. Select Login.

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7. On the left, go to **Licenses**.

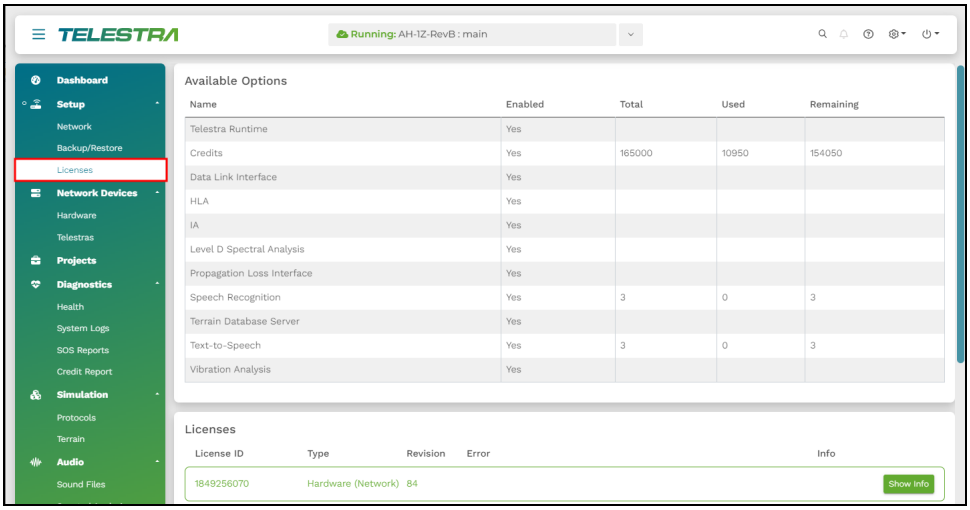

Figure 81: Licenses navigation

8. On **Licensing**, under **Update/Install a License**, select Browse Files, and find the License Key Update file on your local system. Alternatively, drag and drop the file to the browser.

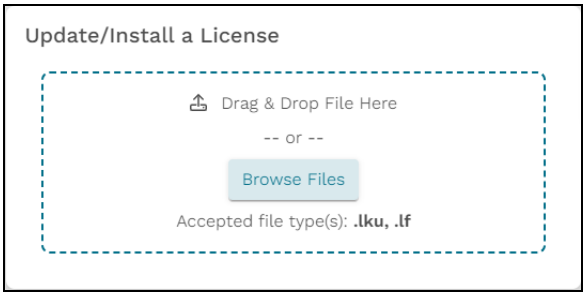

Figure 82: Update/Install a License

The updated License Key Update file displays under **Licenses**.

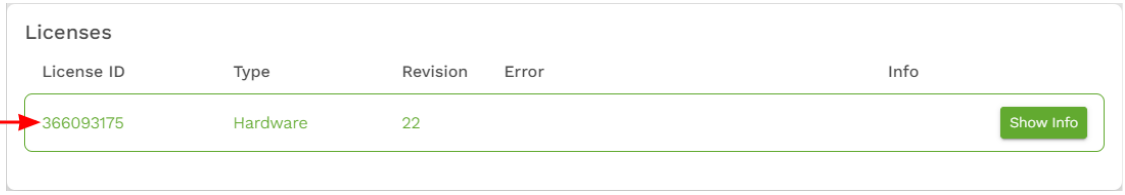

Figure 83: Updated license

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9.3.4 Network license servers

A network license server is a service running on a customer-furnished computer that hosts ASTi licenses for Telestra servers on the network. This configuration can consolidate USB License Keys for multiple servers into a single location and support virtual machine deployments without physical USB ports. ASTi must enable Telestra licenses for network use. By default, Telestra licenses are not network-enabled.

This section discusses how to:

- Install license server software
- Connect or disconnect a license server in Telestra
- Claim or release licenses from a license server
- Update USB License Keys on a license server

9.3.4.1 Install license server software

To set up a license server, you must install third-party, Sentinel software on your license server. These instructions are only valid for Windows operating systems. To install license server software on other operating systems (e.g., Linux), contact ASTi at support@asti-usa.-com.

To install license server software, follow these steps:

1. Download the ASTi-provided executable file (i.e., **haspdinst.exe**) on the license server, which must share a network with the Telestra server.
2. Open a terminal, and log into the system as an administrator.
3. At the prompt, enter **haspdinst.exe -i**, and press Enter. Wait approximately two minutes for installation to complete.
4. Insert the USB License Keys into the license server, as described in Section 9.3.1, "Install a USB License Key" on page 46. Note down the key IDs for future reference.
5. Open a web browser, and go to **localhost:1947**. The **Sentinel Admin Control Center** opens.
6. From **Options**, go to **Sentinel Keys**.

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7. Under **Key ID**, confirm the key IDs that you noted in Step 4 appear among the listed options:

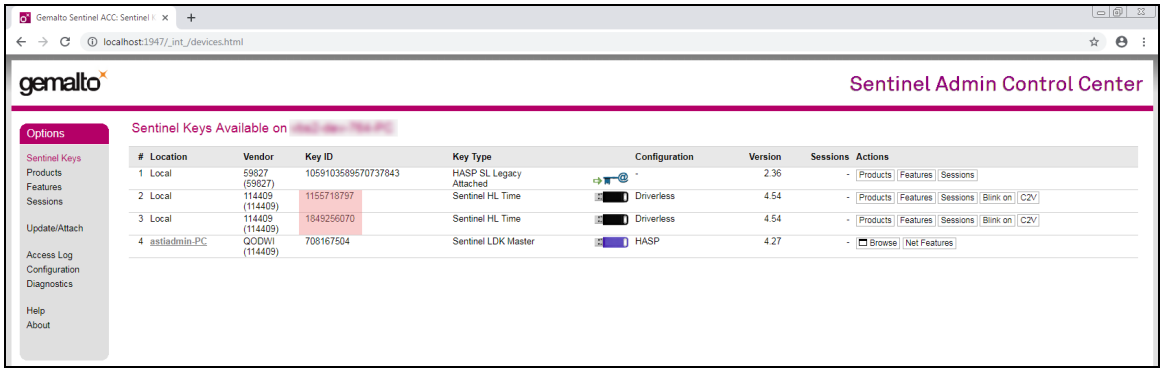

Figure 84: Confirm license key IDs

9.3.4.2 Connect or disconnect a license server in Telestra

To connect or disconnect a license server in the Web Interface, follow these steps:

1. On the left, go to **Licenses**.

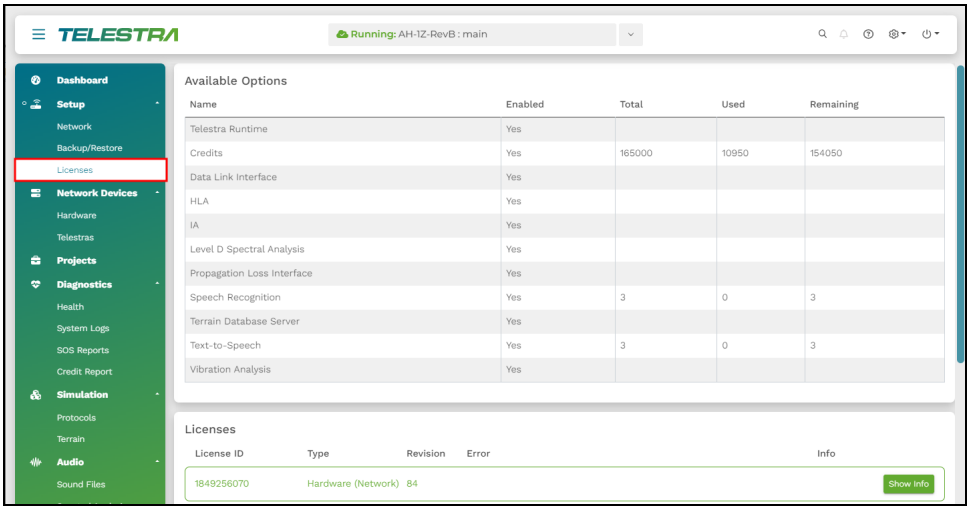

Figure 85: Licenses navigation

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2. On the right, hover over the orange tab ( ), and select **Log in to edit**.

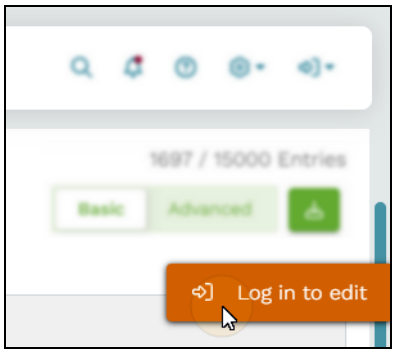

Figure 86: Log in to edit

3. Log in with the following default credentials:

Username	Password
admin	astirules

4. *(Optional)* To view the hidden password, select **Show Password** ( ).

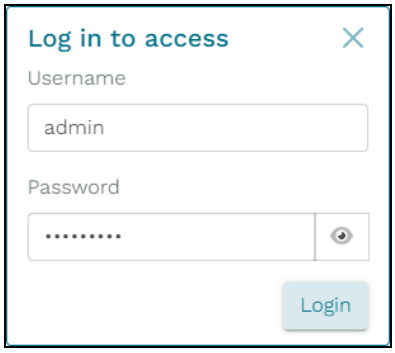

Figure 87: Login pop-up window

5. Select Login.

6. In **License Servers**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the license server's IP address.

7. To connect to the license server, select the plus sign ( ), or press Enter.

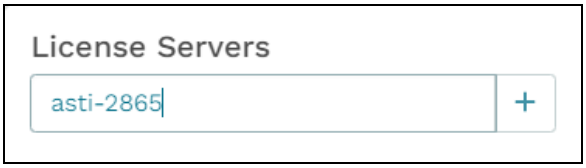

Figure 88: Add a license server

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License Servers shows the following information:

- ***Host/IP****:* the license server's host name or IP address
- ***Count****:* the total number of licenses available to claim on the license server
- ***Status****:* the number of licenses the Telestra server has claimed

8. To view all licenses available on the license server, select Show Info .

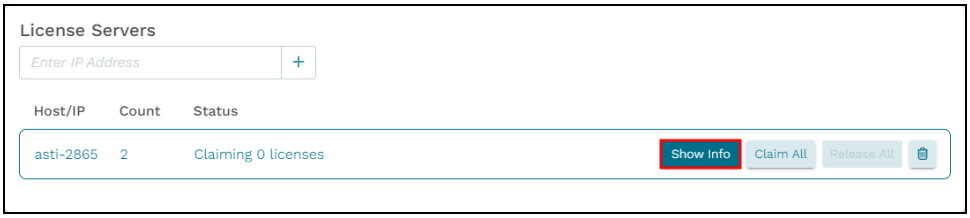

Figure 89: View licenses available to claim

9. To disconnect a license server from the Web Interface, select the trash can icon ( ).

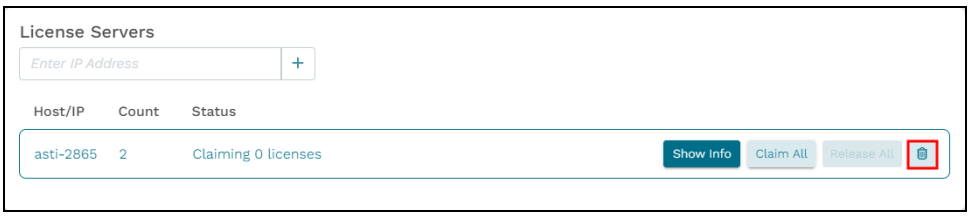

Figure 90: Disconnect a license server

9.3.4.3 Claim or release licenses from a license server

To claim a specific license, choose a license, and select Claim. When the server prompts you to reboot, select Confirm.

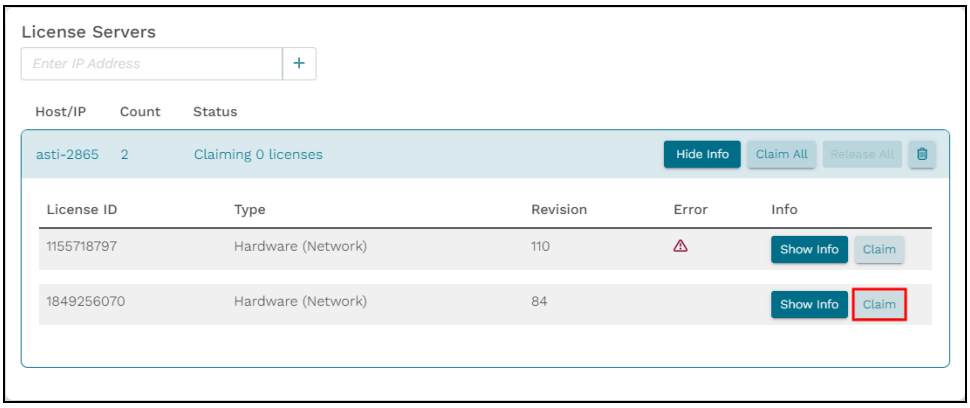

Figure 91: Claim a license

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The license server's **Status** reads “Claiming 1 license:”

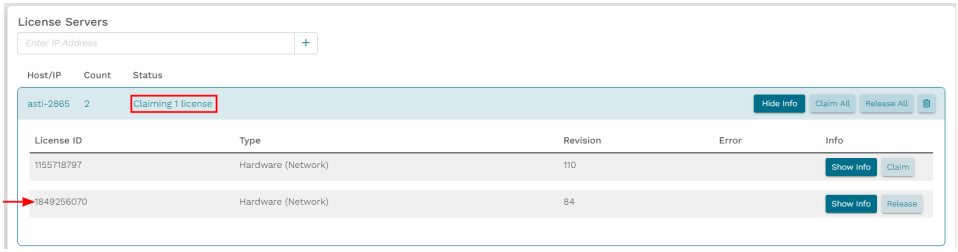

Figure 92: “Claiming all licenses” message

To automatically claim all current and future licenses on the license server, select Claim All.

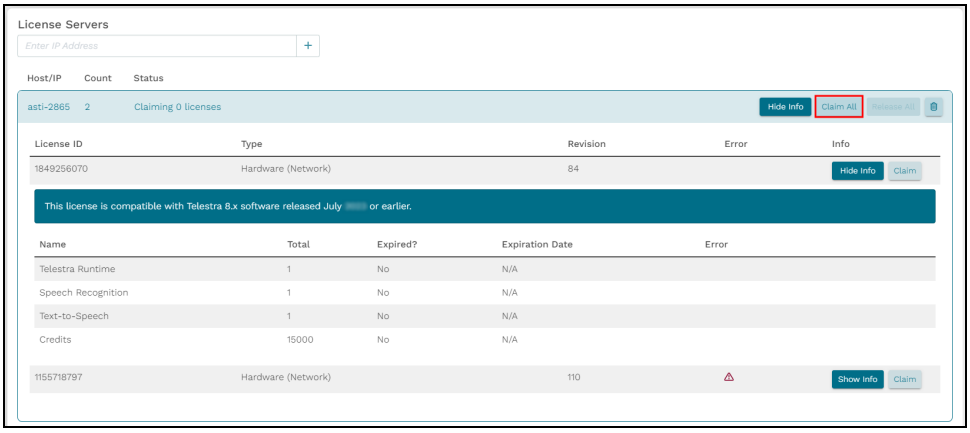

Figure 93: Claim all licenses

***Note**: To view additional information about individual licenses, select **Show Info**. For more information about these interface elements, go to Section 9.3.2, "View licensing information" on page 48.*

To release a specific license from the license server, select Release.

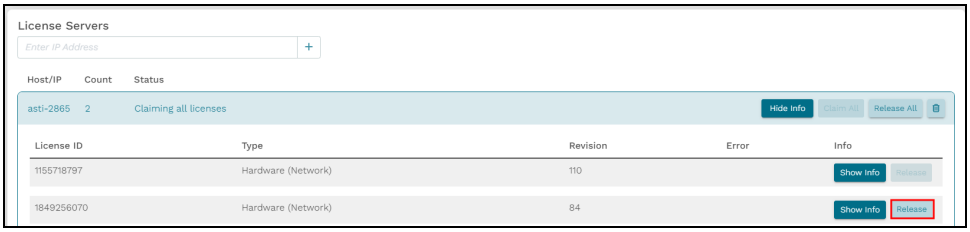

Figure 94: Release a license

***Note**: If the license server is in the “Claim All” state, you cannot release an individual license.*

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To release all licenses from the license server, select Release All.

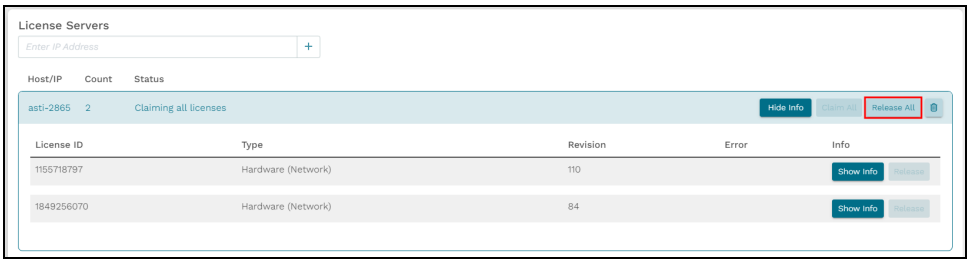

Figure 95: Release all licenses

9.3.4.4 Update USB License Keys on a license server

You must update USB License Keys on the network license server itself (i.e., the Windows computer running Sentinel license server software). The Web Interface cannot update USB License Keys installed on a license server; it can only update license keys on a Telestra server.

To update USB License Keys on a license server, follow these steps:

1. Contact support@asti-usa.com for license update (.v2c) files. You will receive one file per USB License Key installed on your license server. Save these files to your local system.
2. Verify that all USB License Keys you want to update are plugged into the license server.
3. On the computer running license server software, open a web browser, and go to **localhost:1947**. The **Sentinel Admin Control Center** opens.
4. From **Options**, go to **Update/Attach**.

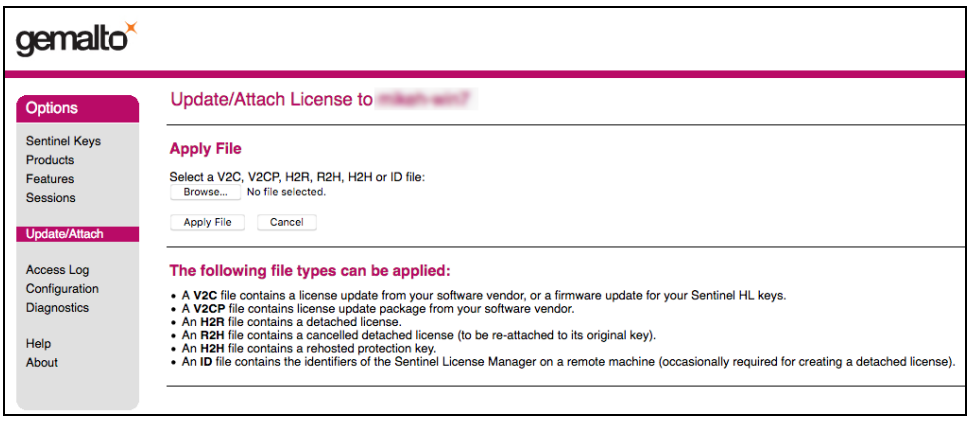

Figure 96: Update/Attach navigation

5. Under **Apply File**, select **Browse**. Find the .v2c files that you received in Step 1.
6. Select **Apply File**. The page reads, “Your update was applied successfully.”

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10.0 Network Devices

Network Devices allows you to manage Telestra servers and audio and I/O hardware devices connected to the Telestra web interface. Figure 97, "Network Devices" below shows **Network Devices** on the left:

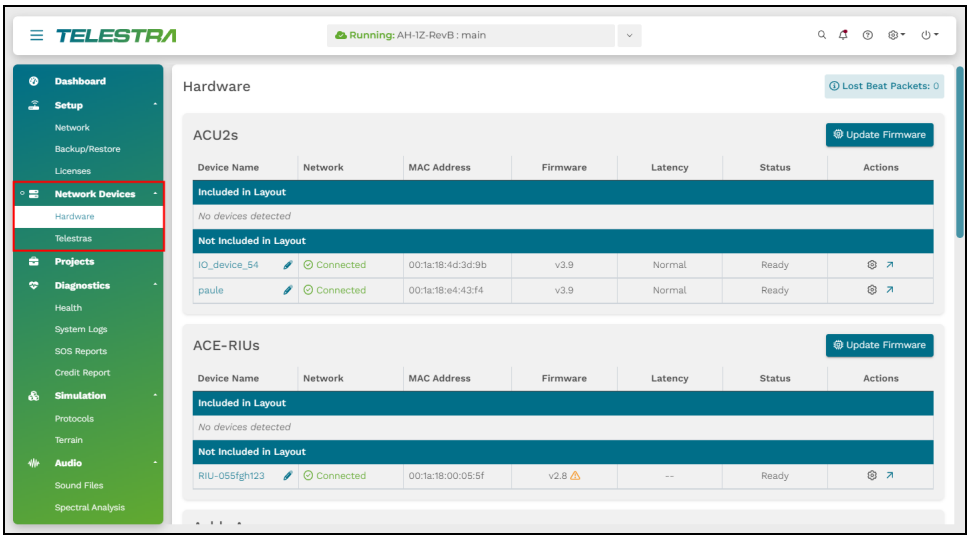

Figure 97: Network Devices

This chapter discusses the following topics:

- Hardware
- Telestras

10.1 Hardware

Network Devices > **Hardware** displays all of the audio distribution devices, input/output (I/O) devices, and amplifiers connected to the Telestra server. Use this page to view information about hardware devices and edit their settings, such as audio input/output gains, microphone power, alternate gains. Telestra supports the following device types:

- ACU2s
- ACE-RIUs
- Ashly Power Amplifiers
- AI-Tangos
- ACUs
- Crown Power Amplifiers

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Go to “Hardware User Guides” at support.asti-usa.com/hardware/index.html to learn more about the technical specifications of ASTi hardware devices.

Most hardware categories display expected devices (i.e., devices mapped to a Studio layout) under **Included in Layout** and unexpected devices under **Not Included in Layout**. Figure 98, "Hardware devices" below shows ACU2s and ACE-RIUs under **Not Included in Layout**:

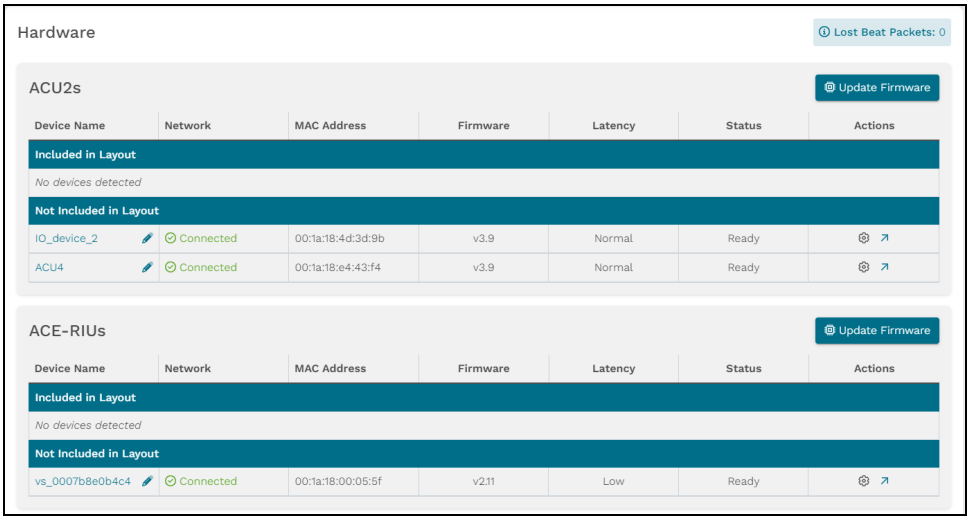

Figure 98: Hardware devices

Unlike other **Hardware** categories, **AI-Tangos** only displays devices **Discovered on Network**. Disconnected devices do not appear in the table:

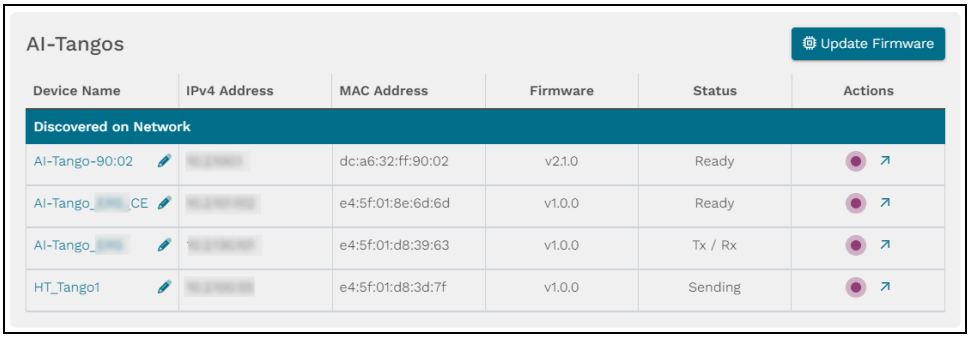

Figure 99: AI-Tango table

If a device category is empty, it appears at the bottom of the page and displays “No devices detected.”

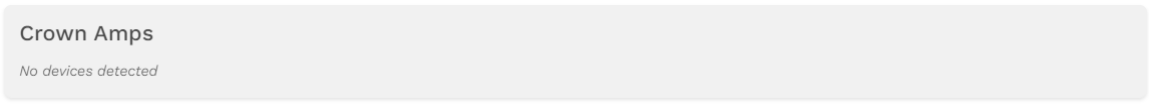

Figure 100: No devices detected

ACU2, ACE-RIU, Ashly Power Amplifier, ACU, and Crown Power Amplifier tables include the following columns:

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- ***Device Name**:* this column shows the device's name. By default, Telestra assigns unique names to devices by combining an abbreviation of the device type with the last four digit's of the device's MAC address (e.g., ACU2-3d:9b). Each device must have a unique name and number. Select **Edit Device Name** (✎) to change the device's name.
- ***Network**:* this column shows each device's connection status. Devices included in a Studio layout may be “Connected” or “Disconnected” from the Telestra server.
- ***MAC Address**:* this column shows the device's MAC address (e.g., 00:1a:18:00:05:5f).
- ***Firmware**:* this column shows the device's current firmware version. To update to the latest firmware version, go to Section 10.1.12, "Update a hardware device's firmware" on page 88.
- ***Latency**:* This column displays the device's latency as either **Normal** or **Low**.

  ***Note**: Ashly Power Amplifiers do not include **Latency**.*

- ***Status**:* This column displays one of the following statuses:
  - *Ready:* the device is ready to use.
  - *Boot:* the device is in boot mode and ready for a firmware update.
  - *Dashes:* the device's status is unavailable because it's offline (i.e., disconnected from power, or the Telestra server can't detect it on the network).
  - *Error:* if the device throws an error, select **Open Channel Settings** (⚙) to view the full error message. Contact ASTi at support@asti-usa.com for further troubleshooting assistance.
- ***Actions**:* this column lets you view channel statuses, errors, or advanced information about the device, such as specific channel statistics.

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In addition to **Device Name**, **MAC Address**, and **Firmware** above, the AI-Tango table includes several unique columns:

- ***IPv4 Address****:* this column displays the AI-Tango's IP address or multicast address.
- ***Status****:* this column reflects the current state of the AI-Tango's LED status indicator. Possible statuses include "Pending Setup," "Updating," "Error," "Find Me," "Sending," and "Tx / Rx" (i.e., sending/receiving)
- ***Actions****:* select the arrow (↗) to go to the device's advanced settings; alternatively, turn on **Find Me** (●), which causes the device's LED to blink purple for ID purposes.

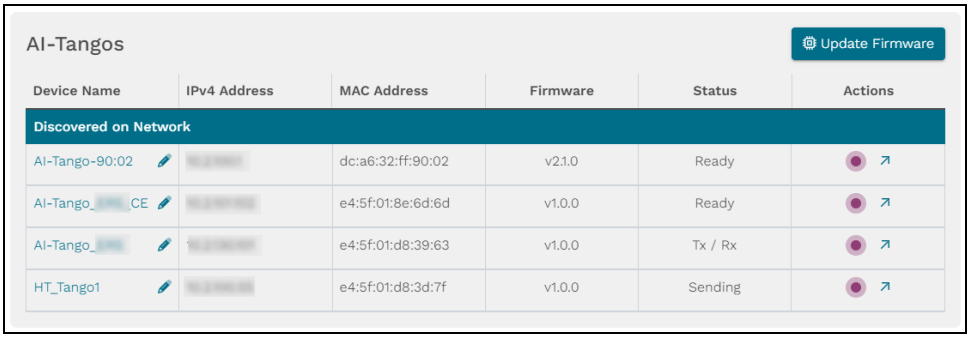

Figure 101: Unique columns in the AI-Tango table

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This section discusses how to:

- Edit a hardware device's name
- View the channel statuses of an audio device or amplifier
- Edit an ACU2 or ACU's microphone power and gains
- Edit an ACU2 or ACU's alternate gains
- Edit an Ashly Power Amplifier's filters and gains
- View an AI-Tango's network status
- Edit AI-Tango network, transmit, and receive settings
- View the AI-Tango's live pin data
- Identify an AI-Tango via Find Me
- Turn on the AI-Tango's digital output defaults
- Reset an AI-Tango or Ashly Power Amplifier
- Update a hardware device's firmware
- View an audio device or amplifier's network statistics
- Reset Lost Beat Packets

10.1.1 Edit a hardware device's name

This section explains how to change the name of a hardware device, customizing it to your specific requirements or preferences. By default, Telestra assigns unique names to devices by combining an abbreviation of the device type with the last four digit's of the device's MAC address (e.g., ACU2-3d:9b). You can modify a device's name in two places: on the **Hardware** page or on the device's details page.

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To edit a hardware device's name, follow these steps:

1. On the left, go to **Network Devices** > **Hardware**.

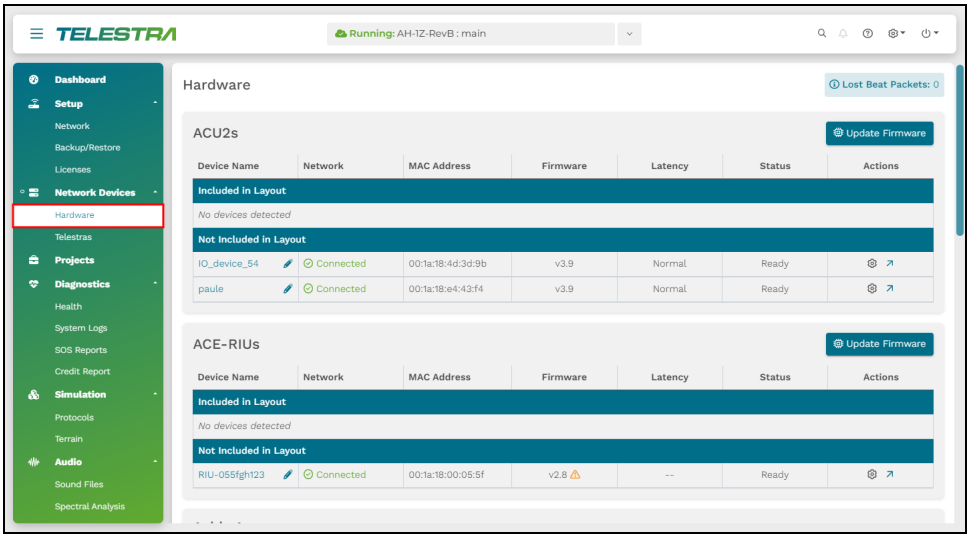

Figure 102: Hardware navigation

2. On the right, hover over the orange tab ( ), and select **Log in to edit**.

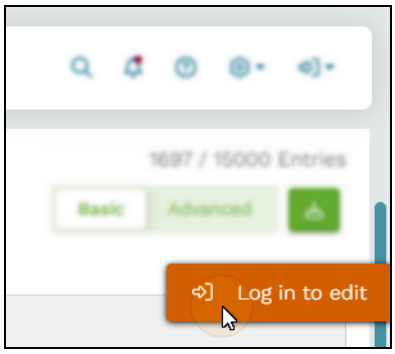

Figure 103: Log in to edit

3. Log in with the following default credentials:

Username	Password
admin	astirules

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4. *(Optional)* To view the hidden password, select **Show Password** (👁).

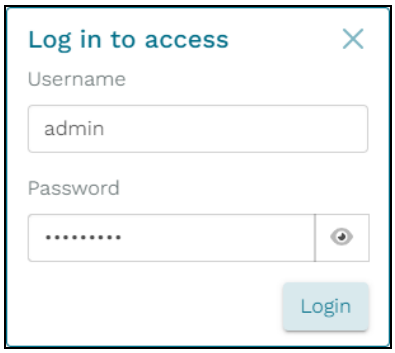

Figure 104: Login pop-up window

5. Select Login.
6. On **Hardware**, choose a device to edit.
7. Under **Device Name**, select **Edit Device Name** (✎).

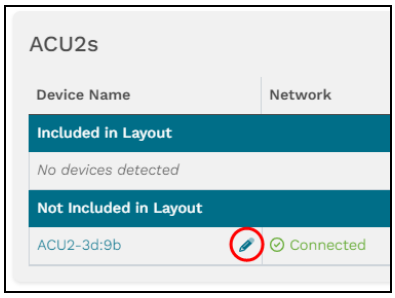

Figure 105: Edit Device Name icon

8. Enter a unique name for the hardware device, and select ✓ to save or ✗ to discard.

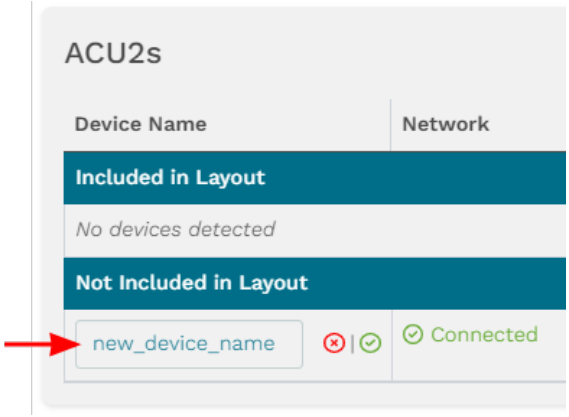

Figure 106: Enter a new device name

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The new name appears in the table:

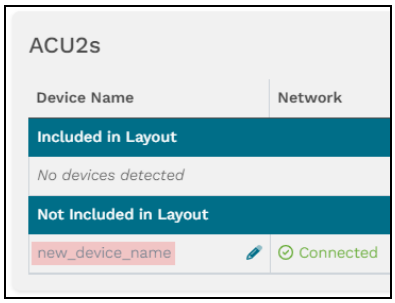

Figure 107: New device name

10.1.2 View the channel statuses of an audio device or amplifier

This section describes how to view the channel statuses of audio distribution devices and amplifiers. You can access this information in one of two ways: the quick-access view in the device's **Hardware** table and on the device's details page. These instructions apply to the ACU2, ACE-RIU, Ashly Power Amplifier, ACU, and Crown Power Amplifier. They do not apply to the AI-Tango.

To view a device's channel status in the quick-access view, follow these steps:

1. On **Hardware**, choose a hardware device.
2. Under **Actions**, select the gear icon (⚙).

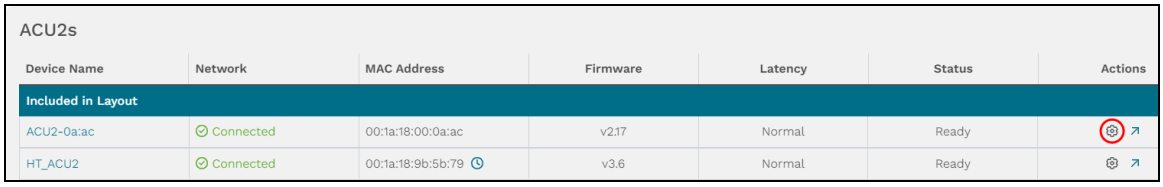

Figure 108: Open quick-access view

The table row expands, displaying a row for each channel and a column identifying the channel's **Status**:

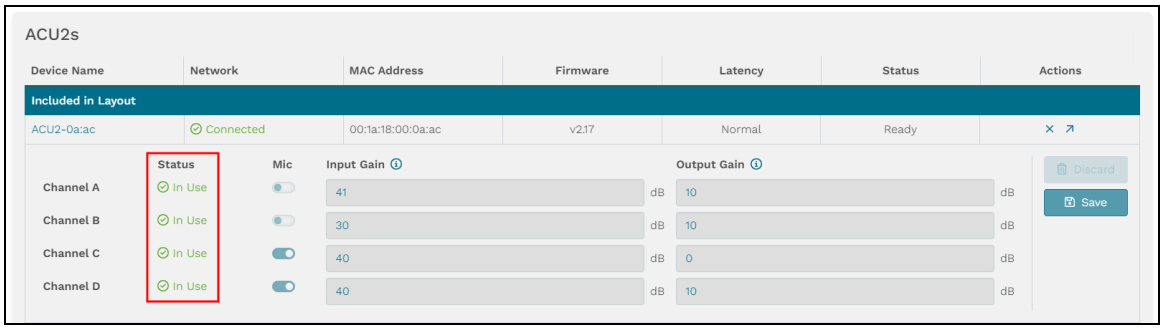

Figure 109: Quick-access view of channel status and settings

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"⊙ In Use" means a Studio layout is referencing (i.e., "using") the device's channels, while "⊗ Not In Use" means the channels are available. For example, if a layout is only using Channels A and B, then Channels C and D are not in use.

***Note**: The quick-access view may vary across devices, as not all devices contain configurable microphone and gain settings.*

3. *(Optional)* Expand more rows to simultaneously view channel statuses across multiple devices:

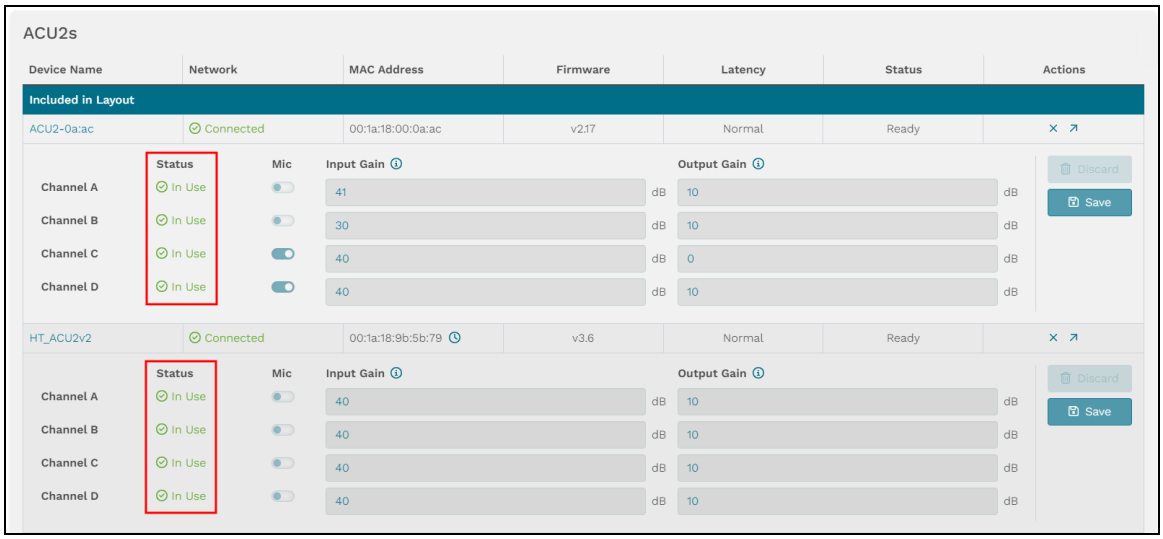

Figure 110: View multiple device's channel statuses simultaneously

4. To collapse quick-access view, select the close icon (✕).

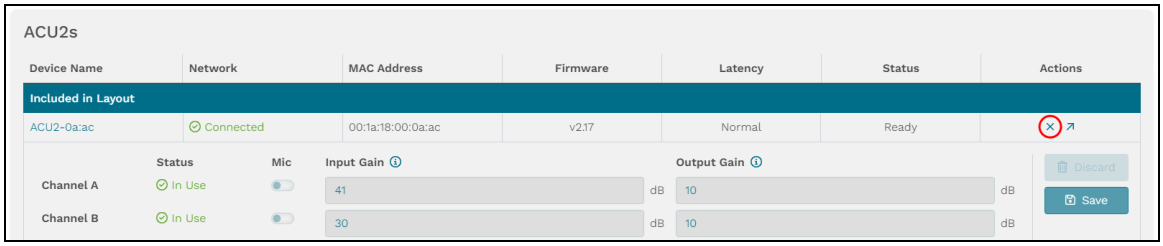

Figure 111: Collapse quick-access view

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To view a device's channel statuses on the **Details** page, follow these steps:

1. On **Hardware**, choose a hardware device.
2. To go to the device's details page, under **Actions**, select the arrow (↗). Alternatively, select the device's name.

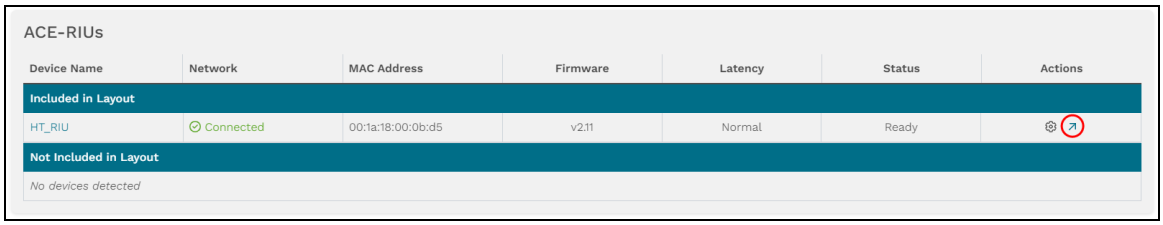

Figure 112: Device details navigation

The channel statuses appear in **Channel Settings** or **Channel Statuses**, depending on device type:

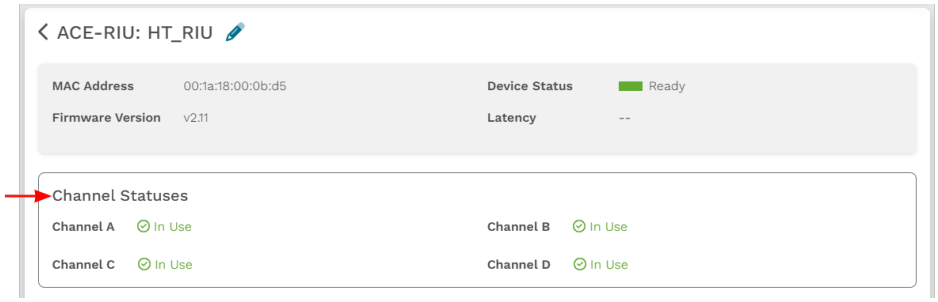

Figure 113: Channel statuses on the device details page

10.1.3 Edit an ACU2 or ACU's microphone power and gains

To edit an ACU2 or ACU's microphone power and gains from the quick-access view, follow these steps:

1. On **Hardware**, choose an ACU2 or ACU.
2. Under **Actions**, select the gear icon (⚙).

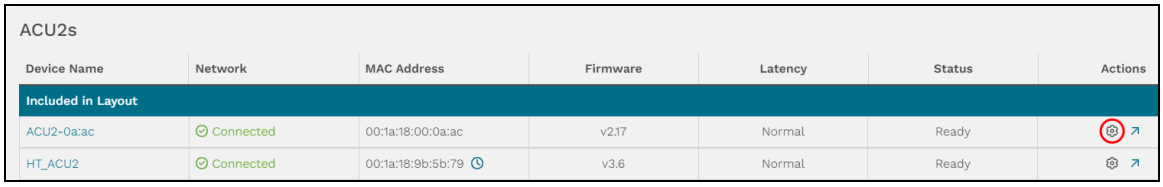

Figure 114: Open quick-access view

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3. On the right, hover over the orange tab ( ), and select **Log in to edit**.

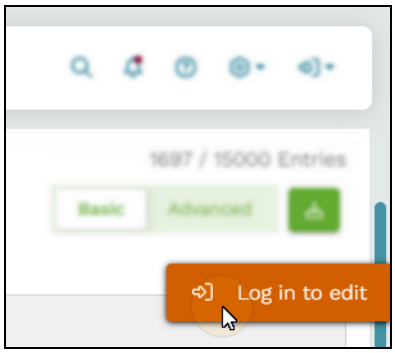

Figure 115: Log in to edit

4. Log in with the following default credentials:

Username	Password
admin	astirules

5. *(Optional)* To view the hidden password, select **Show Password** ( ).

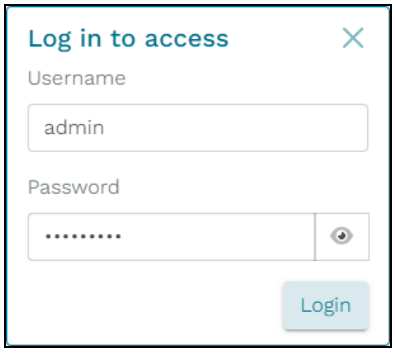

Figure 116: Login pop-up window

6. Select Login.
7. To enable a channel's microphone power, turn on its corresponding **Mic** toggle switch.
8. To modify a channel's **Input Gain**, specify a value in one of the following ranges, depending on your device type:
   - *ACU2:* -8, +2 to +57 decibels (dB)
   - *ACU:* -20 to +50 dB

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9. To modify a channel's **Output Gain**, specify a value in one of the following ranges, depending on your device type:

   - *ACU2:* -25 to +10 dB
   - *ACU:* -23 to +20 dB

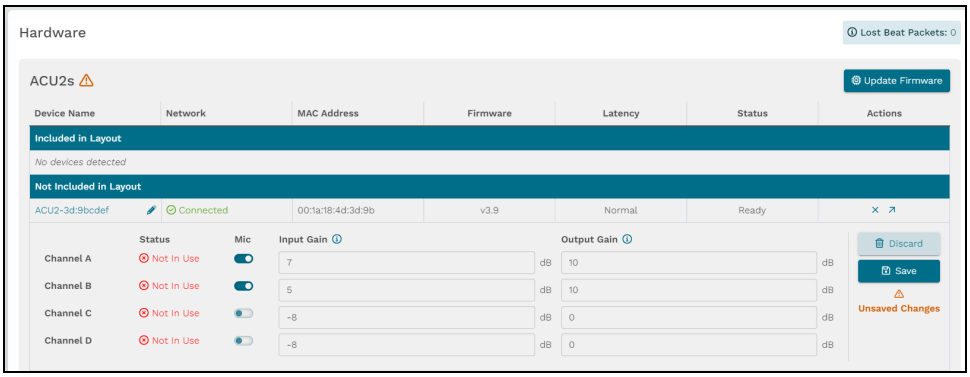

Figure 117: Microphone and gain settings in quick-access view

10. Select Save.

To edit the microphone power and gains on the device's details page, follow these steps:

1. To go to the device's details page, under **Actions**, select the arrow (↗). Alternatively, select the device's name.

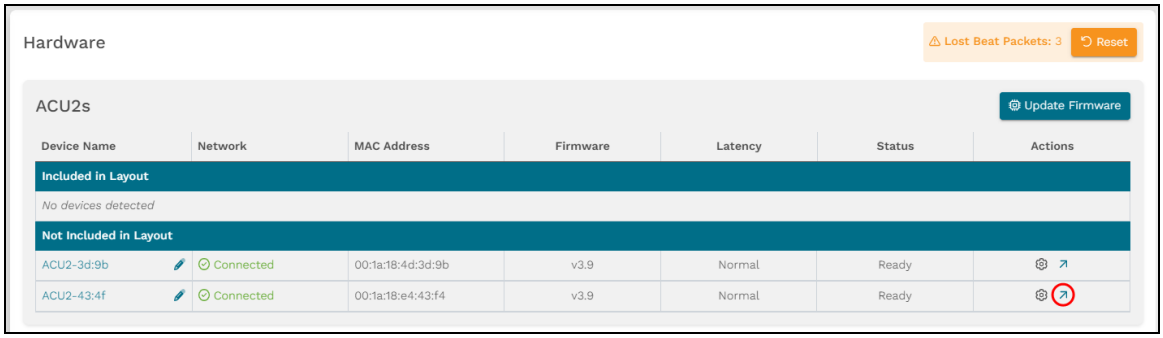

Figure 118: Device details navigation

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2. Under **Channel Settings**, edit the **Mic Power**, **Input Gain**, and **Output Gain**:

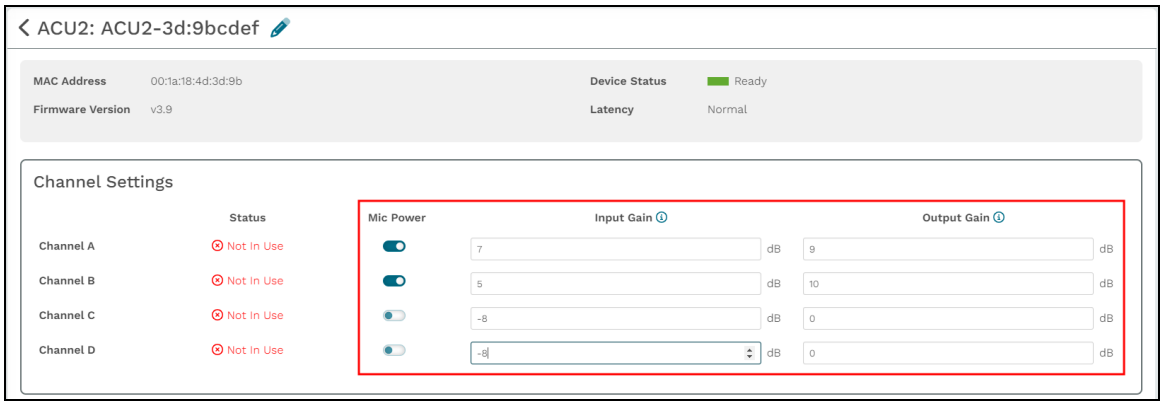

Figure 119: Microphone power and gain settings on details page

3. Select Save.

10.1.4 Edit an ACU2 or ACU's alternate gains

The ACU2 and ACU support the ability to use alternate gain settings instead of the device's standard gain settings. Alternate gain settings enable a hardware device input (e.g., a control selector) to easily switch between preset gains outside of the Telestra web interface. The ACU2 uses **ControlIn2** input pins, while the ACU uses **ControlIn3** input pins. This functionality works similarly to the way that a four-channel press-to-talk (PTT) device works with the **ControlIn2** pins.

***Note**: To toggle between two of the four settings, use the control knob of an ASTi PTT device or a series of specific resistor values. For specifics about how to set a hardware gain selector, contact ASTi at support@asti-usa.com.*

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To configure an ACU2 or ACU's alternate gains, follow these steps:

1. On **Hardware**, choose an ACU2 or ACU.
2. To go to the device's details page, under **Actions**, select the arrow (↗). Alternatively, select the device's name.

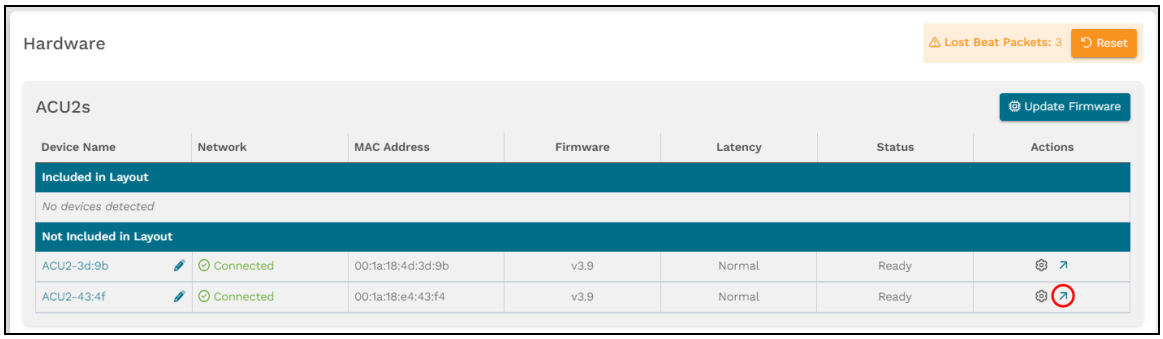

Figure 120: Device details navigation

3. On the right, hover over the orange tab ( ), and select **Log in to edit**.

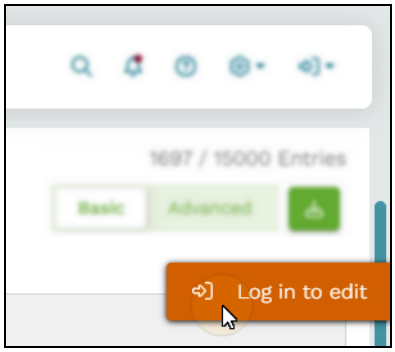

Figure 121: Log in to edit

4. Log in with the following default credentials:

Username	Password
admin	astirules

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5. *(Optional)* To view the hidden password, select **Show Password** (👁).

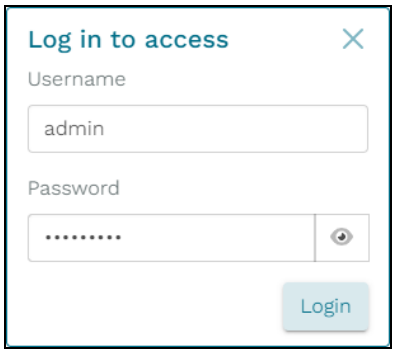

Figure 122: Login pop-up window

6. Select Login.

7. **Alternate Gain** settings display under **Channel Settings**. To override the device's standard channel settings with these alternate settings, on **Channel A**, turn on **Hardware Selector**, which is controlled by an ASTi four-channel press-to-talk (PTT) device.

8. Each channel contains three positions. To configure an alternate gain channel position, do the following:

   a. To enable a channel's microphone power, turn on its corresponding **Mic** toggle switch.

   b. To modify a channel's **Input Gain**, specify a value in one of the following ranges, depending on your device type:

      - *ACU2:* -8, +2 to +57 decibels (dB)
      - *ACU:* -20 to +50 dB

   c. To modify a channel's **Output Gain**, specify a value in one of the following ranges, depending on your device type:

      - *ACU2:* -25 to +10 dB
      - *ACU:* -23 to +20 dB

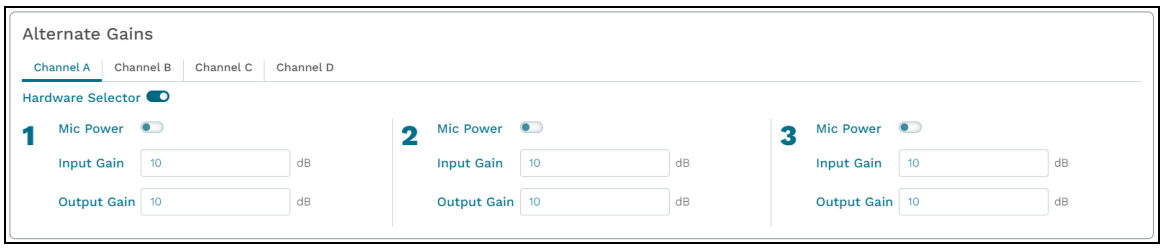

Figure 123: ACU2 Alternate Gains

9. Repeat Steps 7 and 8 for Channels B–D.

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10.1.5 Edit an Ashly Power Amplifier's filters and gains

To edit an Ashly Power Amplifier's filters and gains, follow these steps:

1. On **Hardware**, under **Ashly Amps**, choose a device.
2. Under **Actions**, select the gear icon (⚙).

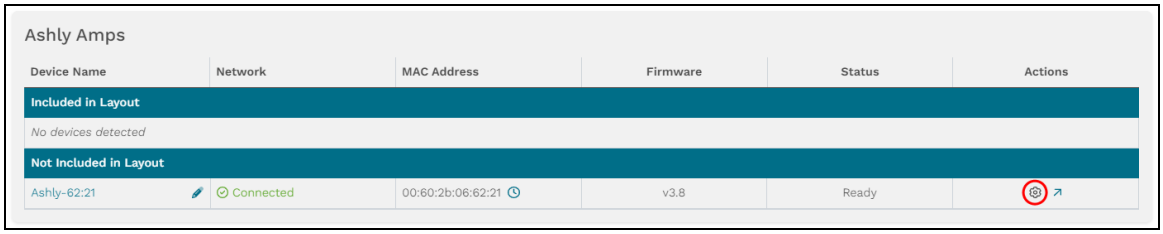

Figure 124: Open quick-access view

Alternatively, access filter and gain settings from the Ashly Power Amplifier's details page. Under **Actions**, select the arrow (↗), or select the device's name.

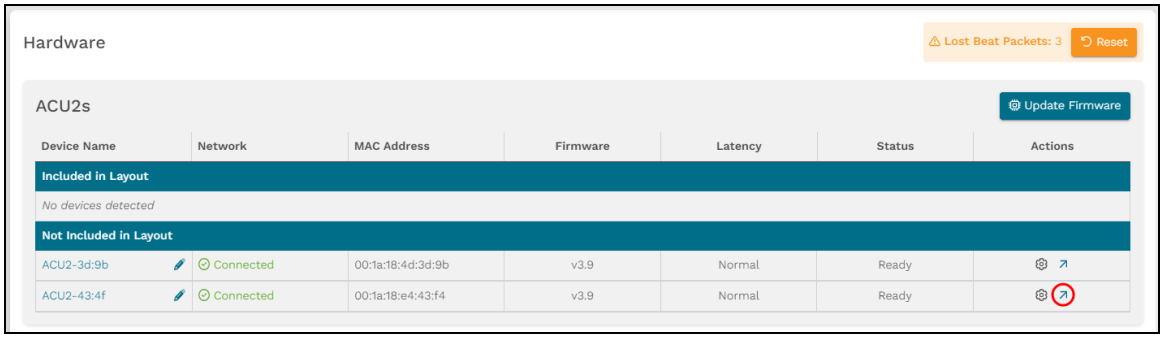

Figure 125: Device details navigation

3. On the right, hover over the orange tab (), and select **Log in to edit**.

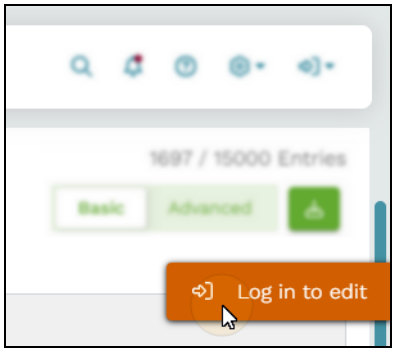

Figure 126: Log in to edit

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4. Log in with the following default credentials:

Username	Password
admin	astirules

5. *(Optional)* To view the hidden password, select **Show Password** (👁).

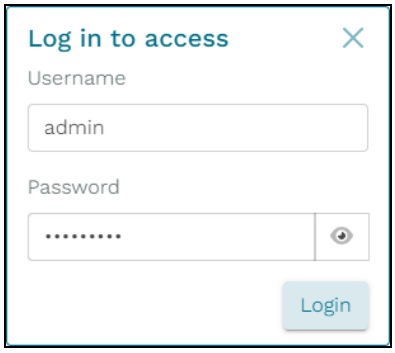

Figure 127: Login pop-up window

6. Select Login.

7. **Filter** removes low frequencies and enhances the overall sound quality, preventing distortion or overload in certain frequency ranges. To apply a filter to each channel, choose one of the following:

   - ***80Hz high pass****:* permits frequencies above 80 Hz to pass through while attenuating frequencies below it; eliminates low-frequency rumble or unwanted bass from the channel's audio output.
   - ***Bypass****:* disables any filters on the channel; choose this option for a transparent audio signal without any alterations or if you're applying external processing or filtering downstream.
   - ***400Hz high pass****:* allows frequencies above 400 Hz to pass through while attenuating frequencies below it; eliminates mid-range or low-mid frequencies that might cause muddiness or interference.

8. To adjust each channel's overall **Software Gain**, specify a value ranging from -50 decibels (dB) to +12 dB.

9. To apply the knob's gain on the amplifier's front panel, turn on **Front Gain**.

10. To apply the gain that users can remotely control via Protea software, turn on **Remote Gain**.

Note*: For more information about the Ashly Power Amplifier's remote control capabilities, go to the original manufacturer's documentation.*

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Total Gain is the resulting combination of **Software Gain**, **Front Gain**, and **Remote Gain**:

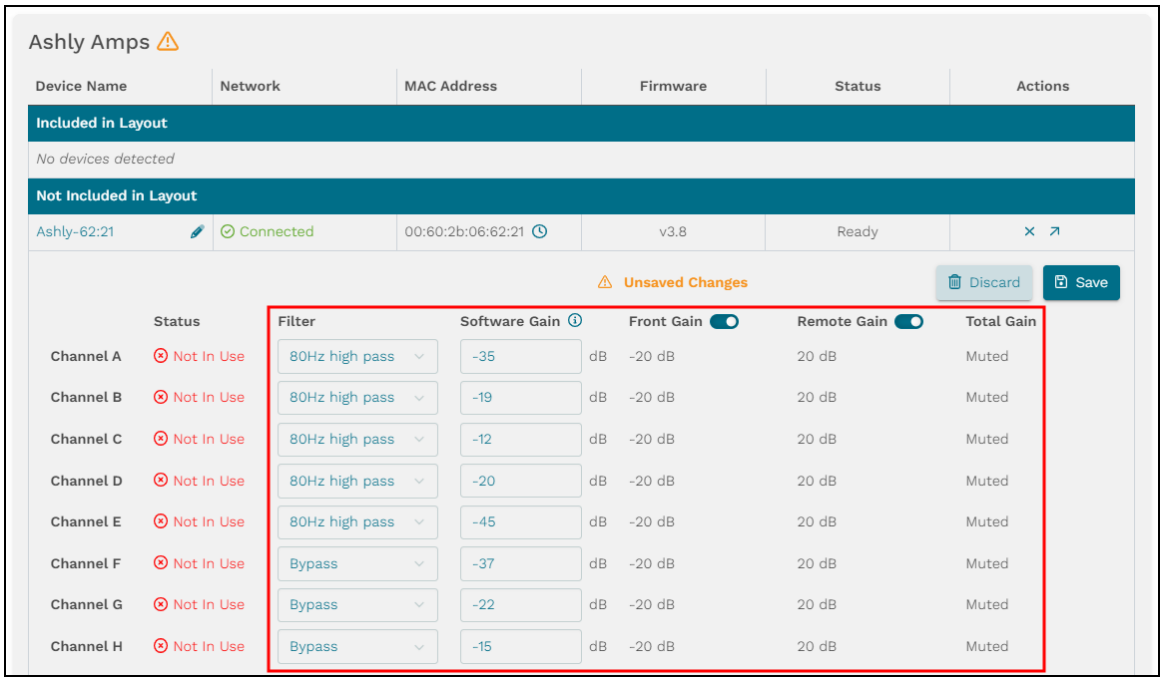

Figure 128: Ashly Power Amplifier gain settings

11. Select Save.

10.1.6 View an AI-Tango's network status

To view an AI-Tango's network status, follow these steps:

1. On **Hardware**, choose an AI-Tango.
2. To go to the device's details page, under **Actions**, select the arrow (↗). Alternatively, select the device's name.

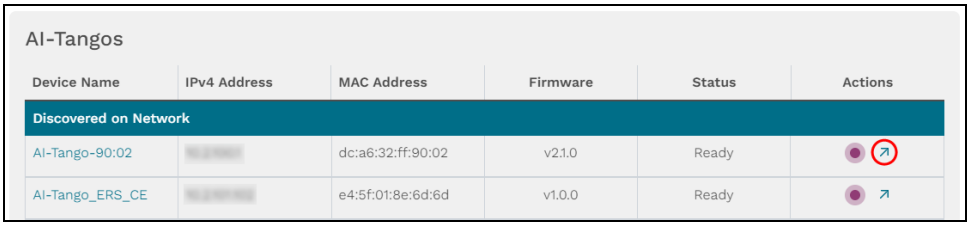

Figure 129: Device details navigation

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3. Near the top of the page, **Network Status** includes the following settings:

   - ***Packets Sent**:* the number of packets the AI-Tango transmitted.
   - ***Packets Received**:* the number of packets the AI-Tango has received over the network.
   - ***Transmit Errors**:* the number of transmit errors the AI-Tango has experienced. Most transmit errors occur due to networking issues. Contact ASTi Support at support@asti-usa.com for troubleshooting help.
   - ***Version Conflicts**:* the number of packets with mismatched versions that the AI-Tango has received or sent. In many cases, the transmitting server or device contains the incorrect version rather than the AI-Tango itself. If you encounter this error, ensure the Telestra server or host device's software is compatible with the AI-Tango. If the problem persists, check your network configuration, or contact ASTi Support at support@asti-usa.com for assistance.
   - ***Undersized Packets**:* the number of packets below the acceptable length that the AI-Tango has received but not processed. This metric could indicate misconfigurations in the programs sending packets to the AI-Tango.
   - ***Oversized Packets**:* the number of packets above the acceptable length received by the AI-Tango, which are not processed. This metric could indicate misconfigurations in the programs sending packets to the AI-Tango or that the AI-Tango is sending pin data to itself.
   - ***Receive Errors**:* the number of receive errors the AI-Tango has experienced. Receive errors typically occur due to malformed packets or networking issues. Contact ASTi Support at support@asti-usa.com for troubleshooting help.
   - ***Receive Timeouts**:* indicates that the AI-Tango stopped receiving expected packets. Receive timeouts might occur if the transmitting program (e.g., a Telestra server) encounters an error, the AI-Tango experiences networking issues, or the Telestra server's model stops running. This number identifies the number of receive timeouts the AI-Tango has experienced.
   - ***Receive Address/Packets**:* lists the addresses that a server or device transmitted to the AI-Tango during its current uptime. It also displays the number of packets the AI-Tango received from each address. You might use this data point to identify any unexpected devices communicating with the AI-Tango.

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Figure 130, "AI-Tango Network Status" below shows the AI-Tango **Network Status** fields on the details page:

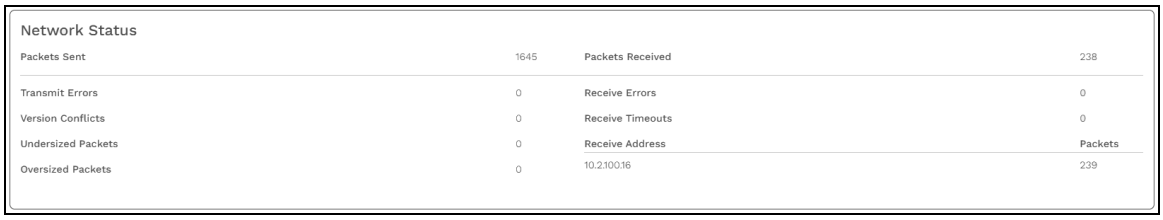

Figure 130: AI-Tango Network Status

10.1.7 Edit AI-Tango network, transmit, and receive settings

To edit the AI-Tango's network, transmit, and receive settings, follow these steps:

1. On **Hardware**, choose an AI-Tango.
2. To go to the device's details page, under **Actions**, select the arrow (↗). Alternatively, select the device's name.

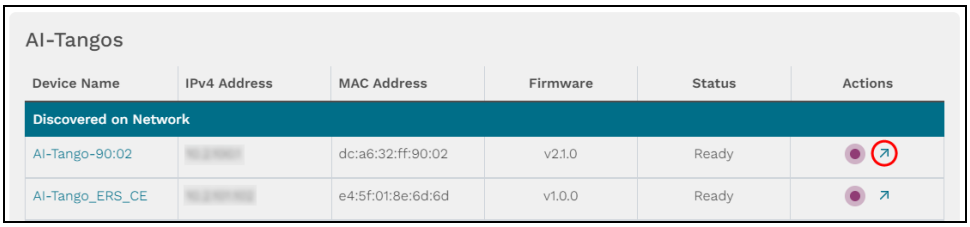

Figure 131: Device details navigation

3. On the right, hover over the orange tab ( ), and select **Log in to edit**.

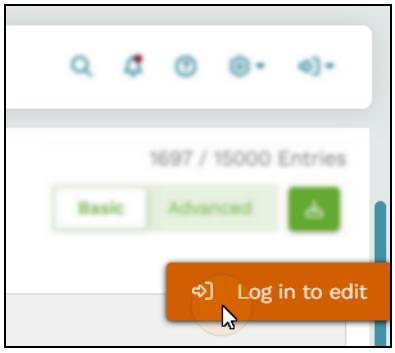

Figure 132: Log in to edit

4. Log in with the following default credentials:

Username	Password
admin	astirules

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5. *(Optional)* To view the hidden password, select **Show Password** (👁).

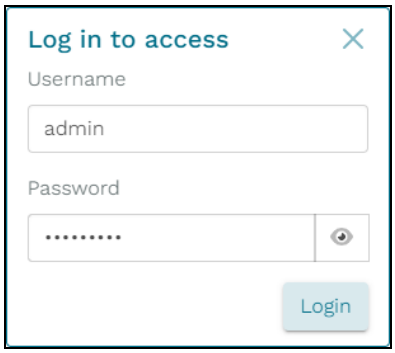

Figure 133: Login pop-up window

6. Select Login.
7. Under **Network Configuration**, select **Mode**, and choose the AI-Tango's mode of operation:
   - ***DHCP****:* requests IPv4 and subnet mask information from another server on your network.
   - ***Static****:* requires an IP address and subnet mask.
8. To change the AI-Tango's **IPv4 Address**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the IPv4 address.
9. To change the AI-Tango's **IPv4 Netmask**, enter *yyy.yyy.yyy.yyy*, where *yyy.yyy.yyy.yyy* is the device's netmask. The default netmask is 255.255.255.0.
10. In **Gateway IP**, enter the IP address of the AI-Tango's gateway device, which serves as an entry and exit point for data traffic between different networks. This setting is blank by default.
11. *(Optional)* In **Name Servers**, select the plus sign (+), and enter the IP address of the Domain Name System (DNS) server, which translates human-readable domain names into IP addresses that hardware devices use. To delete a name server, select the trash icon (🗑) next to an IP address.

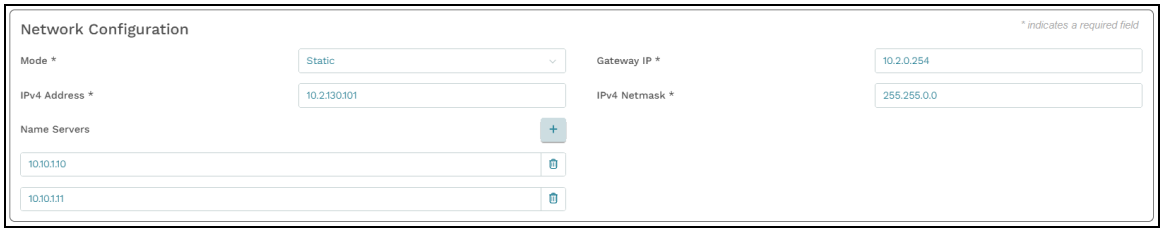

Figure 134: AI-Tango Network Configuration

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12. Under **Transmit & Receive Settings**, in **Transmit Address**, enter the IP address to which the AI-Tango transmits data over the network. This setting is blank by default.

13. In **Transmit Port**, enter the port number (e.g., *NNNNN*) to which the AI-Tango directs traffic. The default port is 54565.

14. In **Transmit Period**, define how long in milliseconds (msec) the AI-Tango waits to send data between transmissions. The default value is 1,000 msec.

15. *(Optional)* For the Telestra server to send an additional packet every time it detects a change in its analog input, leave **Transmit on Change** enabled. As a result, the Telestra server's model is more responsive to changes in the connected hardware. You might disable this feature if the analog input is overactive, causing the AI-Tango to spam packets over the network.

16. *(Optional)* In **Receive Multicast Group**, enter a common IP address that allows multiple AI-Tangos to simultaneously receive a single packet from the Telestra server. As a result, the server does not need to send a copy of the same packet to each device, reducing network traffic. Valid multicast addresses range from 224.0.0.0–239.255.255.255. This setting is blank by default.

17. In **Receive Port**, enter a port number (e.g., *NNNNN*) on which the AI-Tango listens for network traffic. The default port number is 54564.

18. The Telestra server or another device can send packets to the AI-Tango to enable its digital outputs.To enable the digital outputs by default, go to Section 10.1.10, "Turn on the AI-Tango's digital output defaults" on page 83. The digital outputs are disabled by default, although you can enable them per your requirements.

    In **Digital Output Timeout**, enter the time in ms the AI-Tango waits before resetting the digital outputs to their default values. This setting helps prevent hardware damage that may occur if a server or device continuously drives the digital outputs while the AI-Tango isn't receiving any packets. The default value is 5,000 msec.

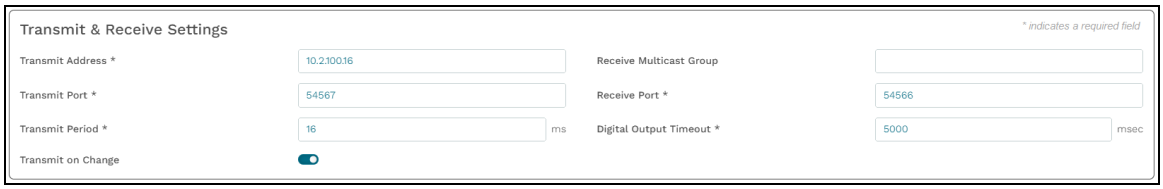

Figure 135: Transmit & Receive Settings

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10.1.8 View the AI-Tango's live pin data

This section explains how to view the AI-Tango's pin data on the details page, which displays a table and diagram depicting the device's six input/output (I/O) ports and their corresponding analog input/digital output (AI/DO) pins. The table provides real-time pin data sourced directly from the physical device, accurately representing the pins' current states. You might use this capability to monitor I/O activity, diagnose issues or anomalies, or ensure the device's ports are properly configured for optimal performance.

To view the AI-Tango's live pin data, follow these steps:

1. On **Hardware**, choose an AI-Tango.
2. To go to the device's details page, under **Actions**, select the arrow (↗). Alternatively, select the device's name.

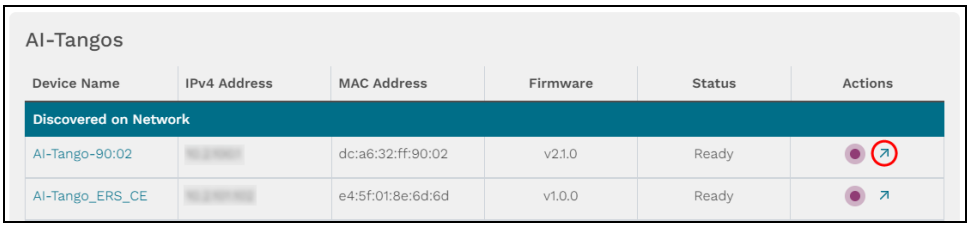

Figure 136: Device details navigation

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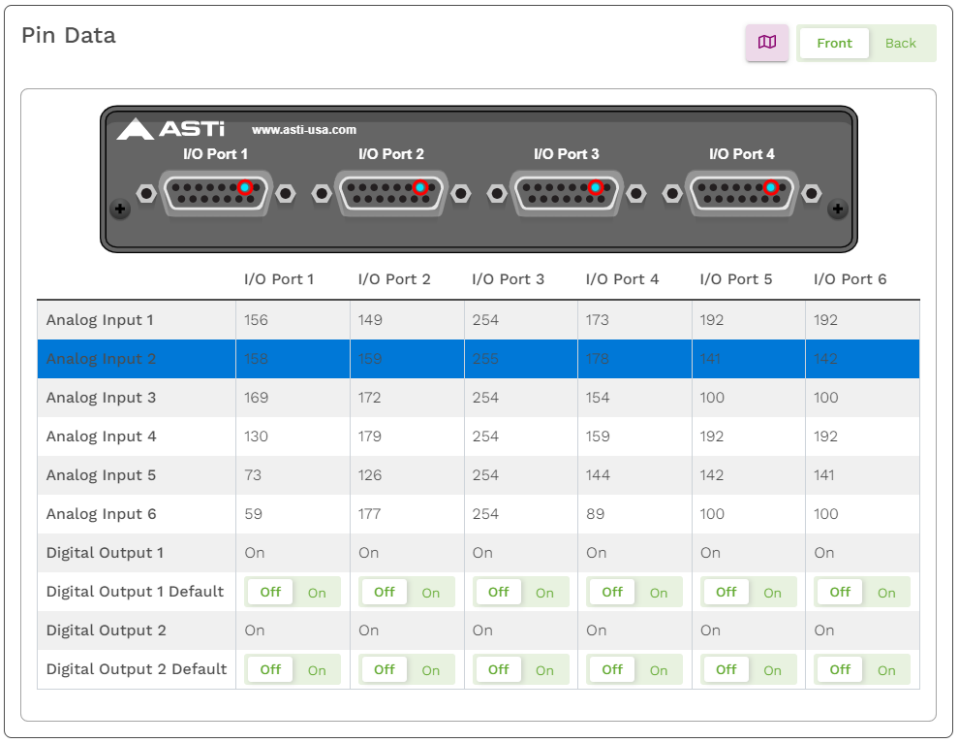
3. Under **Pin Data**, hover over an analog input or digital output row to highlight its corresponding pin in the diagram.



	I/O Port 1	I/O Port 2	I/O Port 3	I/O Port 4	I/O Port 5	I/O Port 6
Analog Input 1	156	149	254	173	192	192
Analog Input 2	158	159	255	178	141	142
Analog Input 3	169	172	254	154	100	100
Analog Input 4	130	179	254	159	192	192
Analog Input 5	73	126	254	144	142	141
Analog Input 6	59	177	254	89	100	100
Digital Output 1	On	On	On	On	On	On
Digital Output 1 Default	Off On	Off On	Off On	Off On	Off On	Off On
Digital Output 2	On	On	On	On	On	On
Digital Output 2 Default	Off On	Off On	Off On	Off On	Off On	Off On

Figure 137: AI-Tango live pin data

4. Select **Pin Legend** ( ) to view the pins' color-coding scheme. AI/DO pins are blue, ground pins are green, and 5 volt (5V) pins are purple.

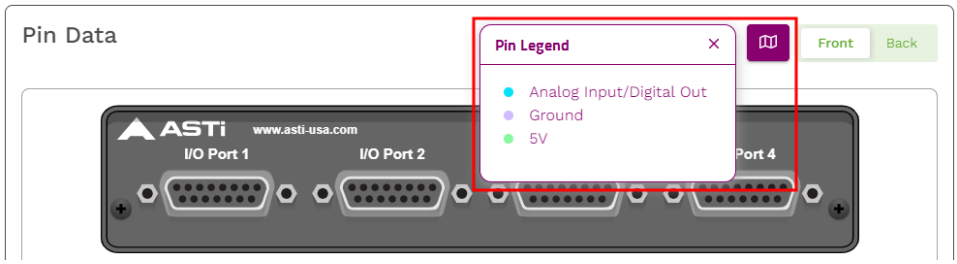


Figure 138: AI-Tango pin legend

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5. To toggle between the AI-Tango's front and rear panels, select **Front** or **Back** (Front Back).

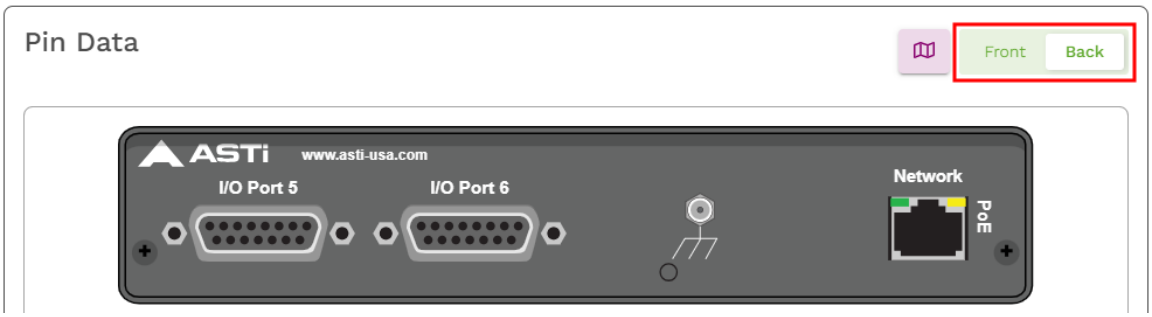

Figure 139: AI-Tango rear panel

10.1.9 Identify an AI-Tango via Find Me

This section describes how to identify a physical AI-Tango device via the **Find Me** feature. When active, **Find Me** causes the AI-Tango's LED to blink purple, allowing you to easily locate it on a rack containing multiple hardware devices. **Find Me** is located in two places: in the **AI-Tangos Hardware** table and on the device's details page.

To turn on **Find Me** in the **AI-Tangos Hardware** table, follow these steps:

1. On **Hardware**, choose an AI-Tango.
2. Under **Actions**, select **Find Me** (). The button radiates, and the **Status** column displays “Find me.”

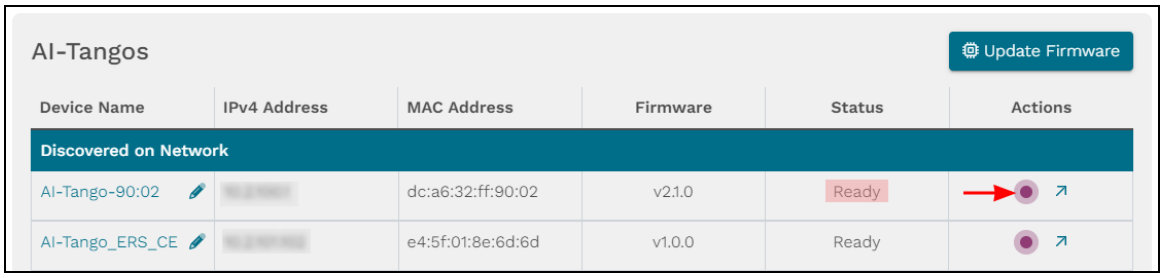

Figure 140: Find Me in an AI-Tango Hardware table

3. Go to the physical rack of hardware devices, and find the AI-Tango with a purple, blinking LED.
4. Select **Find Me** () again to turn it off.

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Alternatively, to turn on **Find Me** on the AI-Tango's details page, follow these steps:

1. On **Hardware**, choose an AI-Tango.
2. To go to the device's details page, under **Actions**, select the arrow (↗). Alternatively, select the device's name.

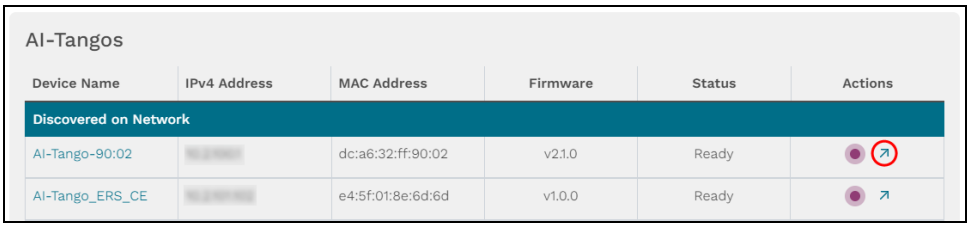

Figure 141: Device details navigation

3. On the right, select **Find Me** (●). The button radiates, and **Status** blinks purple, displaying "Find me."

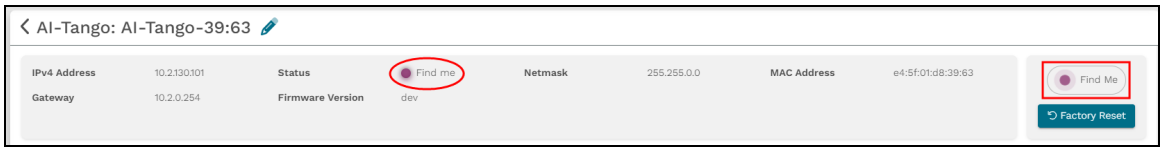

Figure 142: Find Me on an AI-Tango details page

4. Go to the physical rack of hardware devices, and find the AI-Tango with a purple, blinking LED.
5. Select **Find Me** (●) again to turn it off.

10.1.10 Turn on the AI-Tango's digital output defaults

The AI-Tango contains six ports, each with a set of **Digital Output 1** and **Digital Output 2** pins. The digital outputs function like switches that connect to various types of hardware. For example, you might use these pins to turn an LED or buzzer on or off.

Digital Output *N* **Default**, where *N* is the digital output number, determines how the pins behave when the AI-Tango isn't receiving any packets. Initially, this setting is **Off**, which means the AI-Tango is not driving the port's digital outputs.

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In a typical configuration, a Telestra server or host computer sends User Datagram Protocol (UDP) packets to an AI-Tango. These packets instruct the AI-Tango to enable or disable its digital outputs, overriding **Digital Output** *N* **Default**. When an AI-Tango stops receiving packets, it waits for the **Digital Output Timeout** period to pass and reverts to the port's **Digital Output** *N* **Default** value. If it's **Off**, the AI-Tango stops driving the outputs; if it's **On**, the AI-Tango keeps driving the outputs.

***Caution**: Continuously driving the AI-Tango's digital outputs when it isn't receiving any packets may damage your device. ASTi recommends leaving **Digital Output** N **Default** off.*

To turn on the AI-Tango's digital output defaults, follow these steps:

1. On **Hardware**, choose an AI-Tango.
2. To go to the device's details page, under **Actions**, select the arrow (↗). Alternatively, select the device's name.

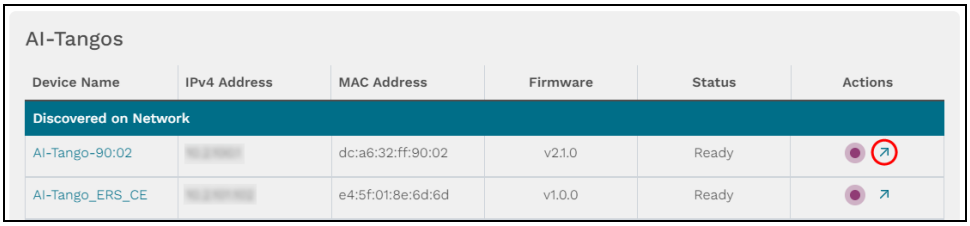

Figure 143: Device details navigation

3. On the right, hover over the orange tab (), and select **Log in to edit**.

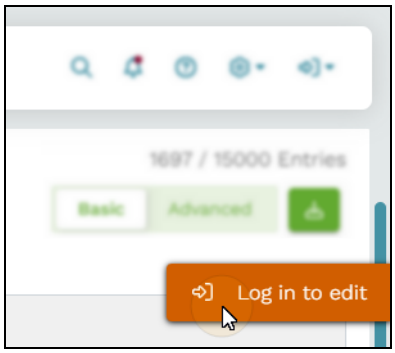

Figure 144: Log in to edit

4. Log in with the following default credentials:

Username	Password
admin	astirules

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5. *(Optional)* To view the hidden password, select **Show Password** (👁).

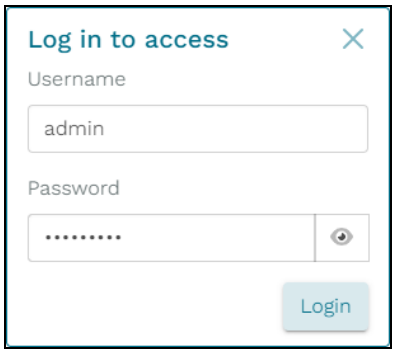
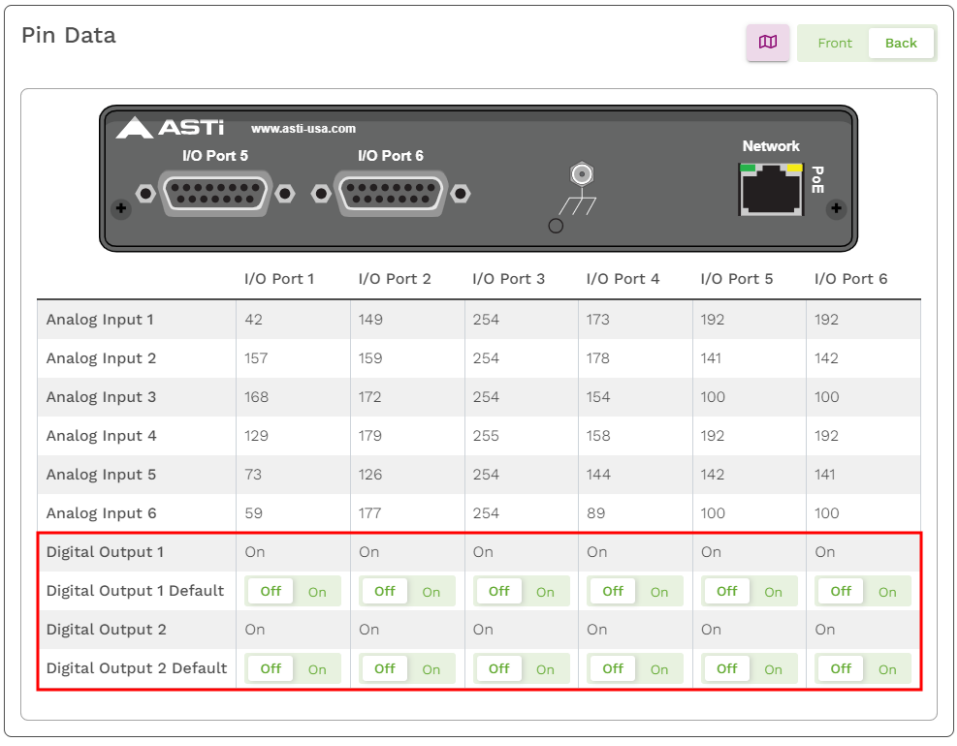


Figure 145: Login pop-up window

6. Select Login.

7. **Digital Output 1** and **Digital Output 2** statuses and settings display at the bottom of the **Pin Data** table:



	I/O Port 1	I/O Port 2	I/O Port 3	I/O Port 4	I/O Port 5	I/O Port 6
Analog Input 1	42	149	254	173	192	192
Analog Input 2	157	159	254	178	141	142
Analog Input 3	168	172	254	154	100	100
Analog Input 4	129	179	255	158	192	192
Analog Input 5	73	126	254	144	142	141
Analog Input 6	59	177	254	89	100	100
Digital Output 1	On	On	On	On	On	On
Digital Output 1 Default	Off On	Off On	Off On	Off On	Off On	Off On
Digital Output 2	On	On	On	On	On	On
Digital Output 2 Default	Off On	Off On	Off On	Off On	Off On	Off On

Figure 146: AI-Tango digital outputs

The **Digital Output 1** and **Digital Output 2** rows show the outputs' current state as either **On** or **Off**. If a digital output is **On** while its corresponding default is **Off**, it may be receiving packets overriding the default behavior.

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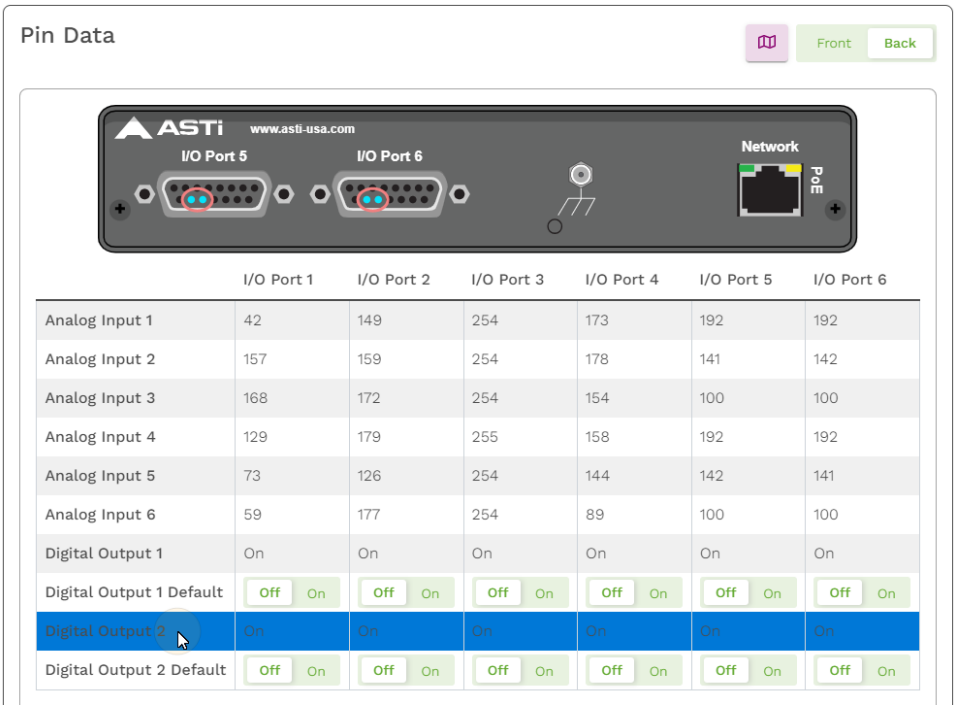
(Optional) Hover over the row to view the digital outputs' corresponding pins in the diagram:



	I/O Port 1	I/O Port 2	I/O Port 3	I/O Port 4	I/O Port 5	I/O Port 6
Analog Input 1	42	149	254	173	192	192
Analog Input 2	157	159	254	178	141	142
Analog Input 3	168	172	254	154	100	100
Analog Input 4	129	179	255	158	192	192
Analog Input 5	73	126	254	144	142	141
Analog Input 6	59	177	254	89	100	100
Digital Output 1	On	On	On	On	On	On
Digital Output 1 Default	Off On	Off On	Off On	Off On	Off On	Off On
Digital Output 2	On	On	On	On	On	On
Digital Output 2 Default	Off On	Off On	Off On	Off On	Off On	Off On

Figure 147: Highlight digital output pins

8. To enable a port's digital output by default, choose an I/O port and **Digital Output 1 Default** or **Digital Output 2 Default**. Select **On** (Off On).

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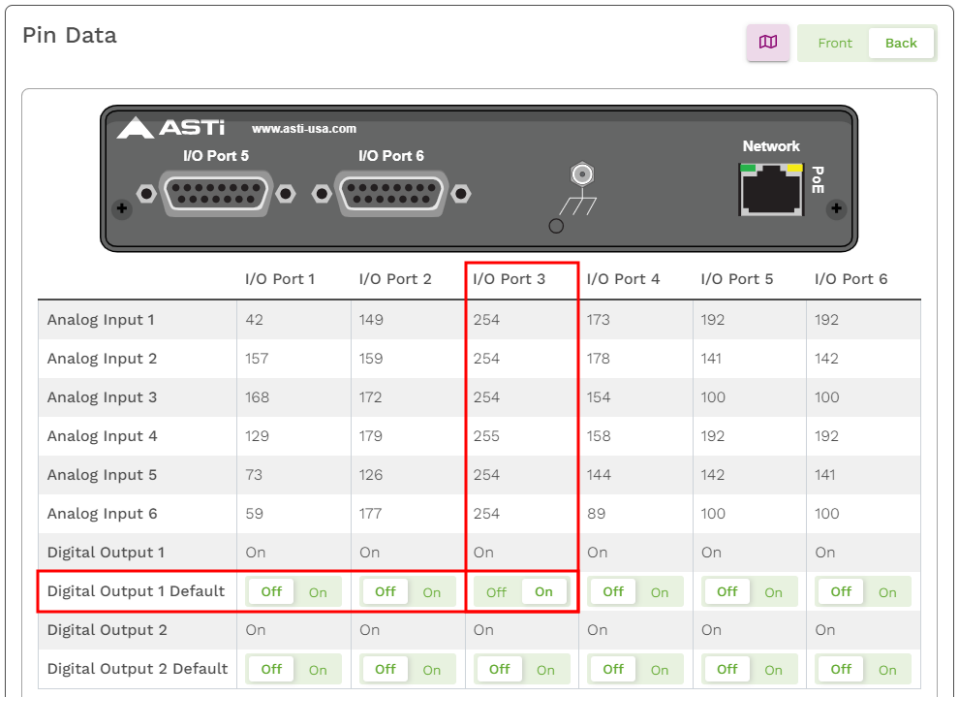
In the example below, the **Digital Output 1 Default** of **I/O Port 3** is **On.**



	I/O Port 1	I/O Port 2	I/O Port 3	I/O Port 4	I/O Port 5	I/O Port 6
Analog Input 1	42	149	254	173	192	192
Analog Input 2	157	159	254	178	141	142
Analog Input 3	168	172	254	154	100	100
Analog Input 4	129	179	255	158	192	192
Analog Input 5	73	126	254	144	142	141
Analog Input 6	59	177	254	89	100	100
Digital Output 1	On	On	On	On	On	On
Digital Output 1 Default	Off On	Off On	Off **On**	Off On	Off On	Off On
Digital Output 2	On	On	On	On	On	On
Digital Output 2 Default	Off On	Off On	Off On	Off On	Off On	Off On

Figure 148: Enable the Digital Output 1 Default for I/O Port 3

10.1.11 Reset an AI-Tango or Ashly Power Amplifier

This section explains how to reset an AI-Tango or an Ashly Power Amplifier back to its default settings, creating a clean slate for reconfiguration or troubleshooting purposes. Resetting an Ashly Power Amplifier restores the device to ASTi's default configuration, not the original manufacturer's settings.

To reset an AI-Tango or Ashly Power Amplifier to factory defaults, follow these steps:

1. On **Hardware**, choose an AI-Tango or Ashly Power Amplifier.
2. To go to the device's details page, under **Actions**, select the arrow (↗). Alternatively, select the device's name.

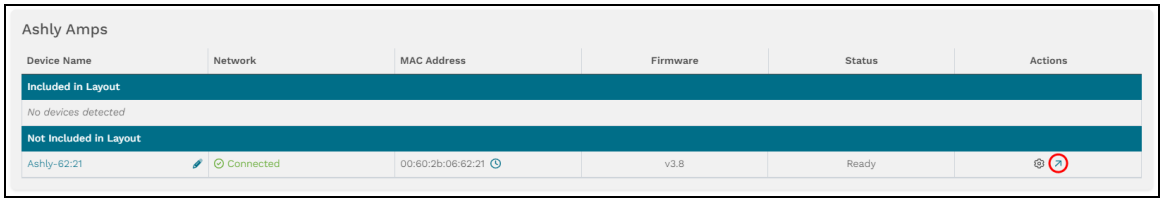


Figure 149: Device details navigation

3. In the top right, select Reset.

4. In the confirmation modal, review the impacted settings, and select Reset.

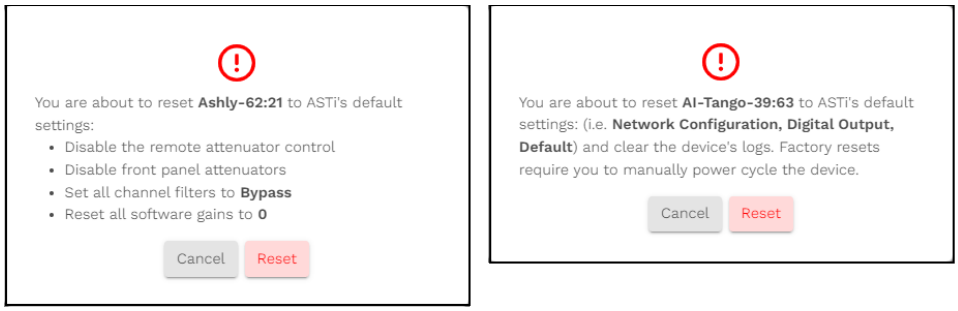


Figure 150: Factory reset confirmation modals

5. Power-cycle the device. When the page refreshes, a "Success" message appears in the top right.

10.1.12 Update a hardware device's firmware

Completing firmware updates on your ASTi hardware devices is essential for optimal performance. Firmware updates not only introduce bug fixes and stability enhancements, but they also maintain compatibility with the Telestra server. If a firmware update is available for an audio distribution or I/O device, an alert (⚠) displays next to the device's **Firmware** version:

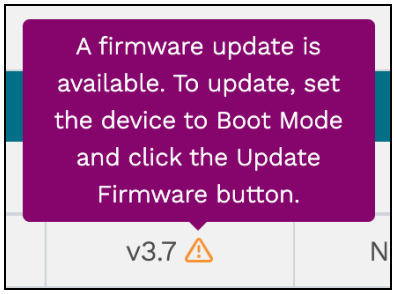


Figure 151: Firmware update alert

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To update a hardware device's firmware, follow these steps:

1. Find the physical devices you want to update, and put them in Boot Mode:
   a. Unplug the device.
   b. Toggle DIP Switch #1 down.

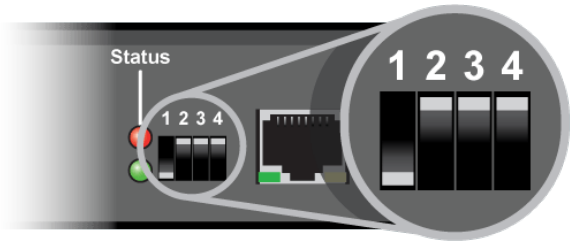

Figure 152: Put a device in Boot Mode

   c. Plug the device back in. The red and green LED lights will alternate rapidly.
2. Open a web browser on a computer sharing a network with the Telestra server.
3. In the address bar, enter the Telestra server's IP address.
4. On the left, go to **Network Devices** > **Hardware**.

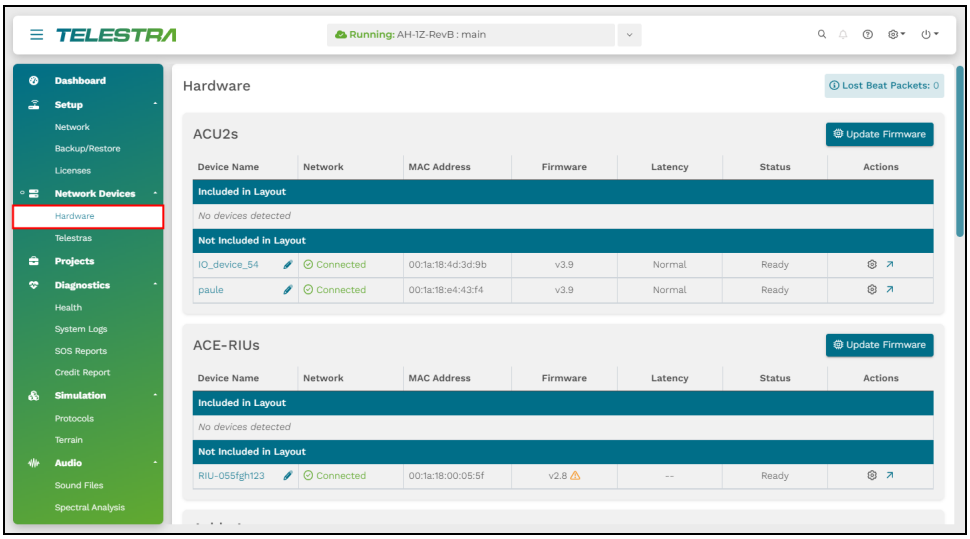

Figure 153: Hardware navigation

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5. On the right, hover over the orange tab ( ), and select **Log in to edit**.

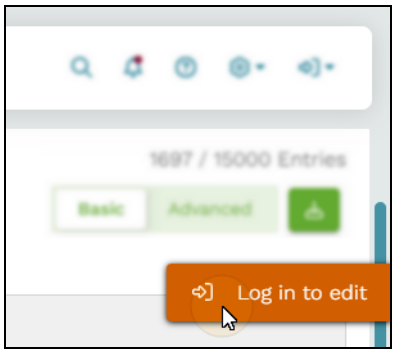

Figure 154: Log in to edit

6. Log in with the following default credentials:

Username	Password
admin	astirules

7. *(Optional)* To view the hidden password, select **Show Password** ( ).

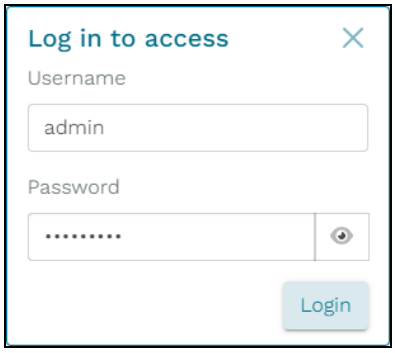

Figure 155: Login pop-up window

8. Select Login.
9. On **Hardware**, find the device type (e.g., ACE-RIUs) you want to update, and select Update Firmware.

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10. In **Firmware Update**, under **Update Method**, choose **Update to the latest firmware version(s)** or **Upload a custom firmware update (.tgz) file**. You might need a custom firmware update file if you are troubleshooting an issue and an ASTi engineer sends you a patch.

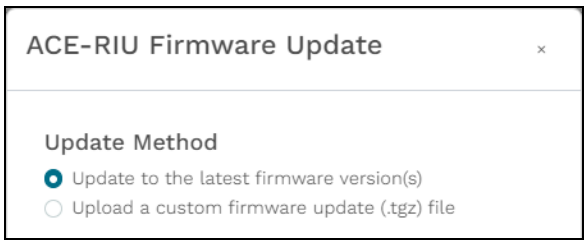

Figure 156: Update to the latest firmware version(s)

If you selected the latter option, select Browse Files, and find the .tgz file on your local system. Alternatively, move the file to the modal's drag-and-drop area.

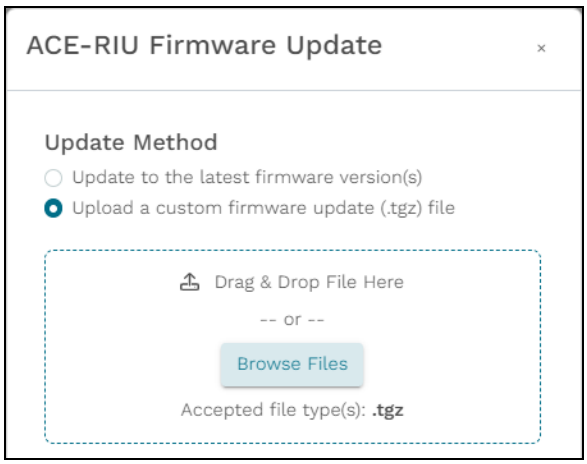

Figure 157: Upload a custom firmware update (.tgz) file

11. Under **Devices to Update**, confirm that the devices you configured in Step 1 are in Boot Mode.

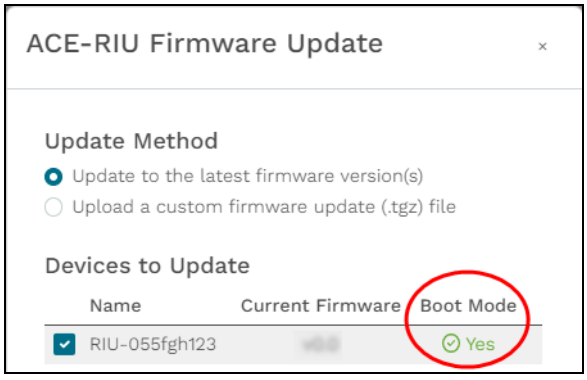

Figure 158: Choose devices to update

12. *(Optional)* Review the listed devices, and clear any you don't want to update.

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13. Select Update, and wait for the update to finish.

***Caution**: To avoid data loss/corruption, do not disconnect the devices from power until the firmware update is complete.*

14. If the firmware update succeeded, each device's **Status** displays "Passed." Take the devices out of Boot Mode to complete the firmware update.

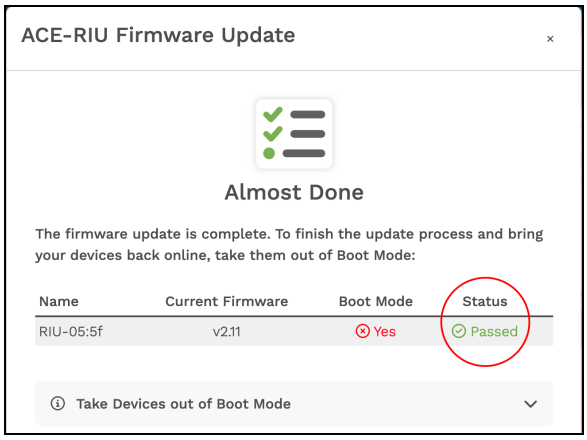

Figure 159: Successful firmware update

To take the devices out of Boot Mode, follow these steps:

a. Unplug the devices.

b. Toggle each Dip Switch #1 up.

c. Plug the devices back in. The red and green LED lights alternate rapidly.

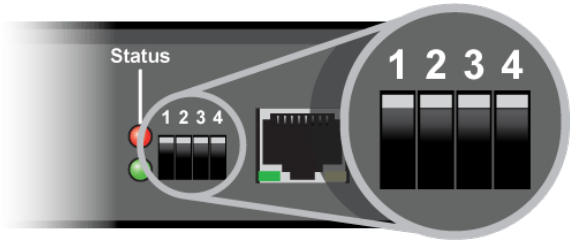

Figure 160: Take the devices out of Boot Mode

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If one or more device's **Status** displays "⊗ Failed," close the modal, power-cycle the devices, toggle Boot Mode, and try the firmware update again. If the problem persists, contact ASTi Support at support@asti-usa.com.

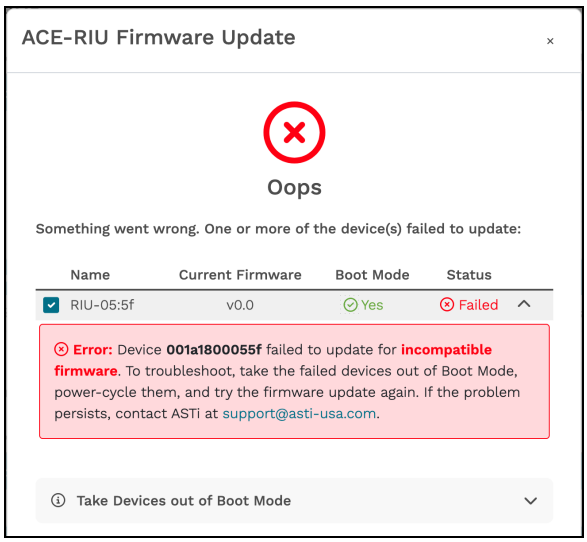

Figure 161: Unsuccessful firmware update

15. Once you take the devices out of Boot Mode, the **Update Complete** screen appears, and **Boot Mode** displays "⊙ No." Select Finish to close the window.

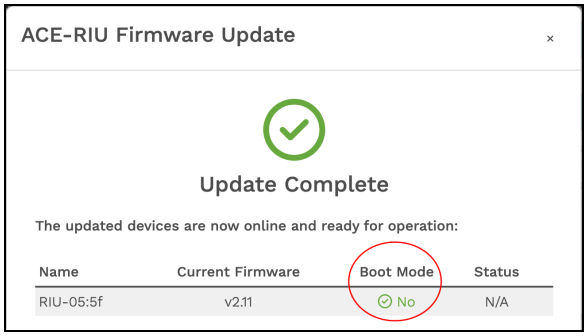

Figure 162: Update Complete

10.1.13 View an audio device or amplifier's network statistics

This section describes network statistics for ACU2s, ACE-RIUs, ACUs, Ashly Power Amplifiers, and Crown Power Amplifiers. The AI-Tango's network information is formatted differently. To learn more about the AI-Tango's network, go to Section 10.1.6, "View an AI-Tango's network status" on page 75.

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Depending on device type, statistics include underruns, overruns, dropouts, serial in/out, analog in/digital out, and a message describing errors or additional information. These data points help you gauge your device's overall health. You might use this information to monitor performance, troubleshoot networking issues, optimize resource allocation, and maintain optimal system performance and reliability.

To view an audio device or amplifier's network statistics, follow these steps:

1. On **Hardware**, choose an audio device (i.e., ACU2, ACU, ACE-RIU) or an amplifier.
2. To view an audio device's statistics, ensure the device is connected to the network. To view an amplifier's statistics, ensure the device is both connected to the network and included in a Studio layout.

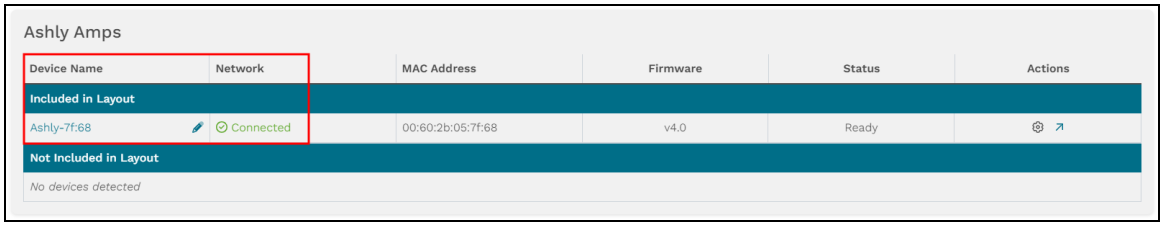

Figure 163: Amplifier connected to network and in a Studio layout

To learn more about Studio layouts and adding hardware devices to Studio layouts, go to "Layout" and "Audio distribution devices" in the *Studio User Guide* (support.asti-usa.com/media/pdf/t4/ace_studio_ug.pdf).

3. To go to the device's details page, under **Actions**, select the arrow (↗). Alternatively, select the device's name.

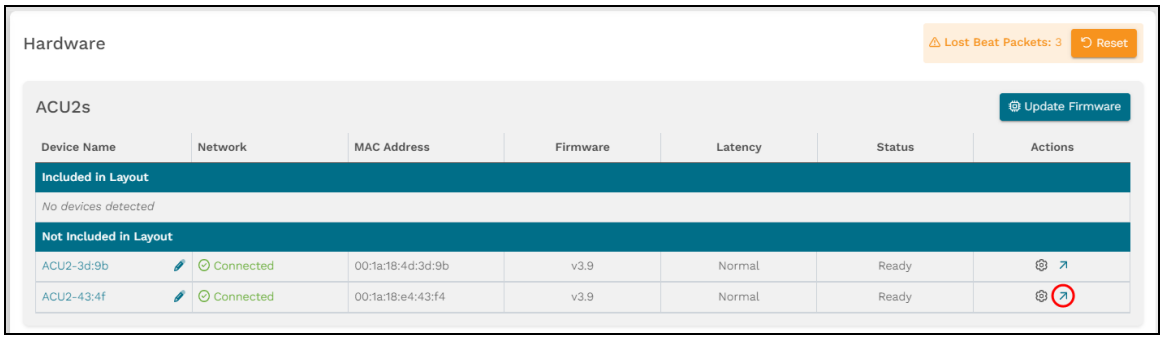

Figure 164: Device details navigation

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4. At the bottom, open **Statistics**.

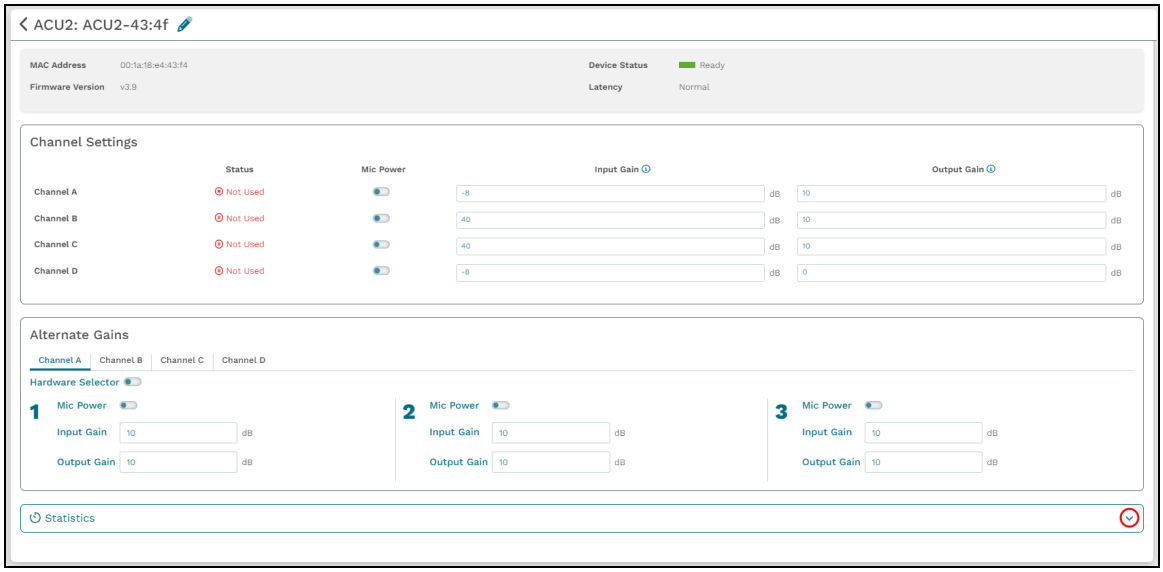

Figure 165: Open Statistics

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The **Statistics** section displays a table with the following columns:

- ***Channel**:* identifies the channel name to which the statistics pertain.
- ***Underruns**:* occur when a device stops processing packets, delaying or disrupting channel audio.
- ***Overruns**:* occur when a device's buffer receives packets faster than it can process them (i.e., the device is in the layout and receiving or transmitting audio, but it's not connected to the network). This behavior may cause the buffer to overflow, resulting in lost or dropped packets.
- ***Dropouts**:* occur when communicating devices are out of sync, causing poor network performance or dropped connections.

  ***Important**: Contact ASTi Support at support@asti-usa.com if your device is experiencing underruns, overruns, or dropouts.*

- ***Serial In/Out**:* displays the packet counters that a device has transmitted or received over a serial connection. These statistics can be useful for monitoring the performance of a device's serial communication and diagnosing problems that may occur.
- ***Analog In/Digital Out**:* displays the number of analog input packets that a Telestra has received from the device and the digital output packets that Telestra has transmitted to the device. These statistics can be useful for monitoring the device's analog in/digital out communication performance and diagnosing problems that may occur.
- ***Message**:* displays error messages or additional information about the device or channel statuses. Examples of messages include the device's MAC address and a "Channel Reservation Error," which occurs when multiple Telestra servers or components in a layout try to use the channel.

Figure 166, "ACU2 Statistics" below shows an ACU2's **Statistics**:

Statistics

Channel	Underruns RX / TX (L/R)	Overruns RX / TX (L/R)	Dropouts RX / TX (L/R)	Serial In/Out	Analog In/ Digital Out	Message
Channel A	0 / (0/0)	0 / (0/0)	0 / (0/0)	0/0	0/0	--
Channel B	0 / (0/0)	0 / (0/0)	0 / (0/0)	0/0	0/0	--
Channel C	0 / (0/0)	0 / (0/0)	0 / (0/0)	0/0	0/0	--
Channel D	0 / (0/0)	0 / (0/0)	0 / (0/0)	0/0	0/0	--

Figure 166: ACU2 Statistics

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Ashly Power Amplifier and Crown Power Amplifier **Statistics** display many of the same elements but don't include **Serial In/Out** and **Analog In/Digital Out**. Figure 167, "Ashly Power Amplifier Statistics" below shows an Ashly Power Amplifier's statistics:

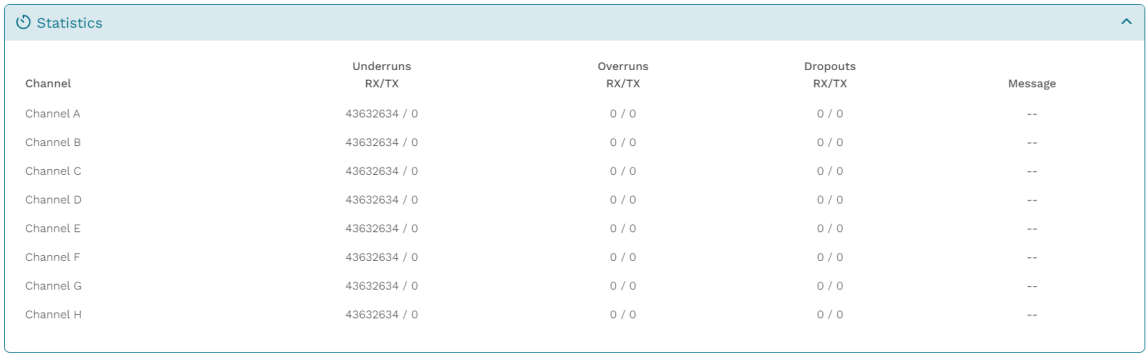

Figure 167: Ashly Power Amplifier Statistics

10.1.14 Reset Lost Beat Packets

The **Lost Beat Packets** indicator displays the number of beat packets the Telestra server has not received from the Audio Communications Environment Network (ACENet). The real-time software uses these beat packets to properly synchronize ACENet devices.

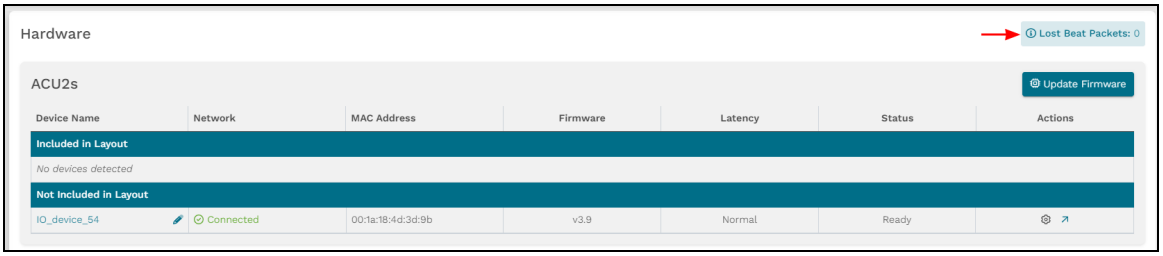

Figure 168: Lost Beat Packets

A Telestra server should have zero lost beat packets during normal operation. A number greater than zero triggers an alert. To reset the number of packets, select Reset.

Figure 169: Lost Beat Packet alert

The presence of lost beat packets could indicate that the ACENet devices are not properly communicating with Telestra, and a problem exists with your configuration (e.g., ACENet cannot detect any hardware devices). Contact ASTi at support@asti-usa.com for troubleshooting support.

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10.2 Telestras

Network Telestras displays all the Telestra servers connected to the network. To open a new Telestra web interface browser for a specific Telestra server, choose a link under **Telestra Hostname**. Figure 170, "Telestra servers on the network" below shows a list of Telestra servers on the network:

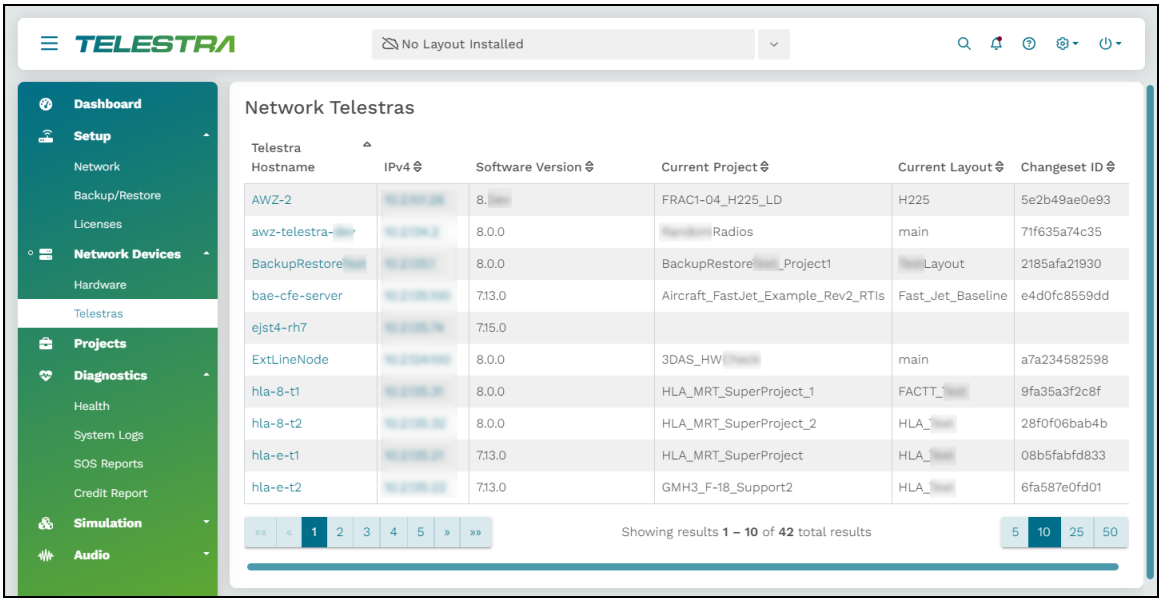

Figure 170: Telestra servers on the network

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11.0 Projects

On **Projects**, the **Local** tab displays all the projects on your Studio development workstation. To filter local projects, enter the name of a project in the search bar.

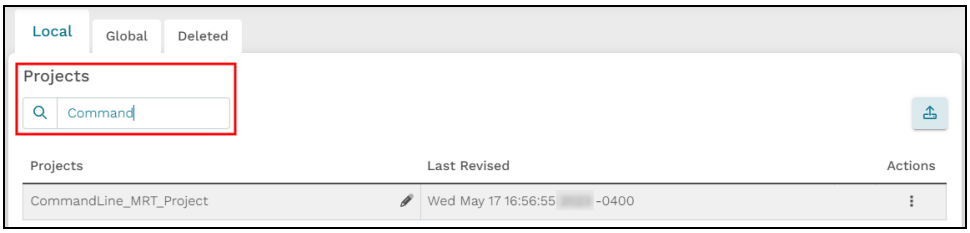

Figure 171: Search for a project

In the table, the **Projects** column identifies the name of each project, while **Last Revised** shows the date and time that a user last modified it.

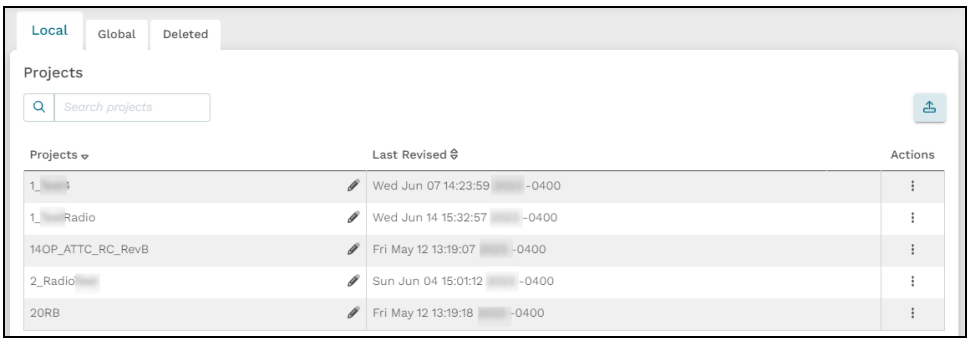

Figure 172: Local projects

To view a list of all projects sharing a network, go to the **Global** tab. This page displays the name of each global project and the hostname of its associated Telestra server:

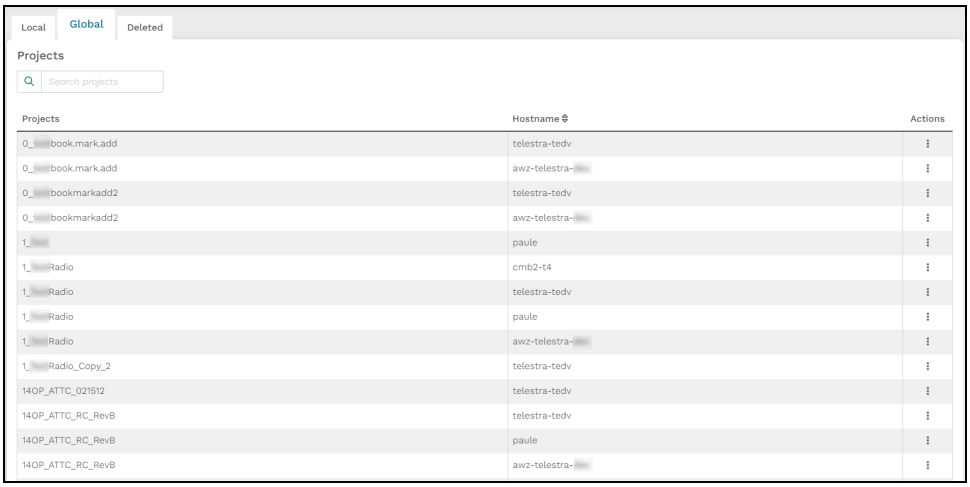

Figure 173: Global projects

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This chapter discusses how to:

- Edit a local project's name
- View a local project's history
- Copy a project
- Export a local project
- Delete a local project

11.1 Edit a local project's name

To edit a local project's name, follow these steps:

1. On the right, hover over the orange tab ( ), and select **Log in to edit**.

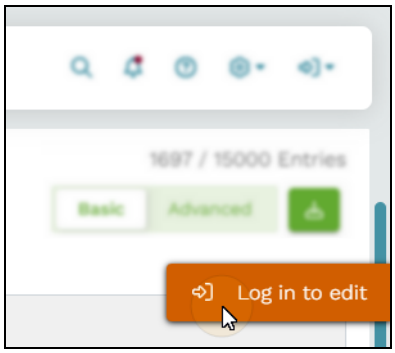

Figure 174: Log in to edit

2. Log in with the following default credentials:

Username	Password
admin	astirules

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3. *(Optional)* To view the hidden password, select **Show Password** (👁).

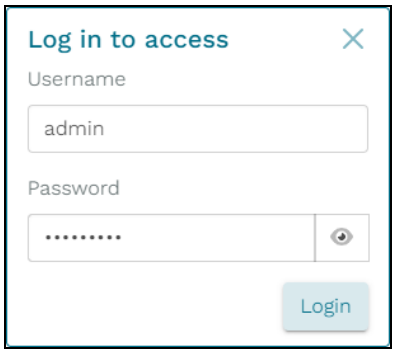

Figure 175: Login pop-up window

4. Select Login.
5. On the **Local** tab, find the project you want to rename in the table.
6. Under **Projects**, select **Edit project name** (✎).

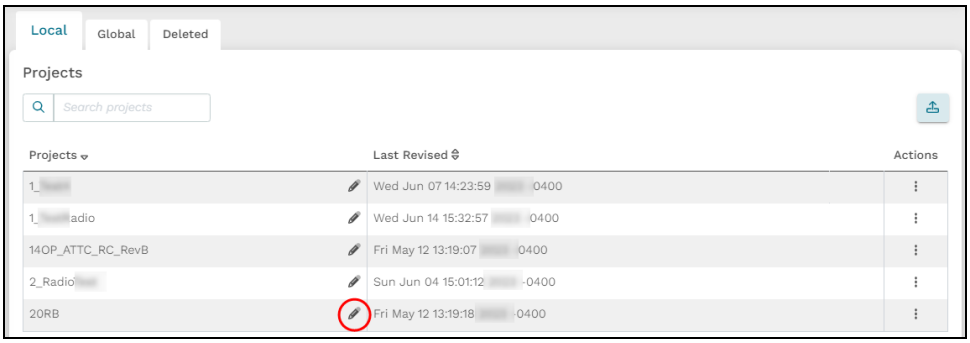

Figure 176: Edit a project's name

7. Enter a unique name, and select ✓ or ✗ to discard.

Figure 177: Enter a unique project name

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The new project name appears in the table:

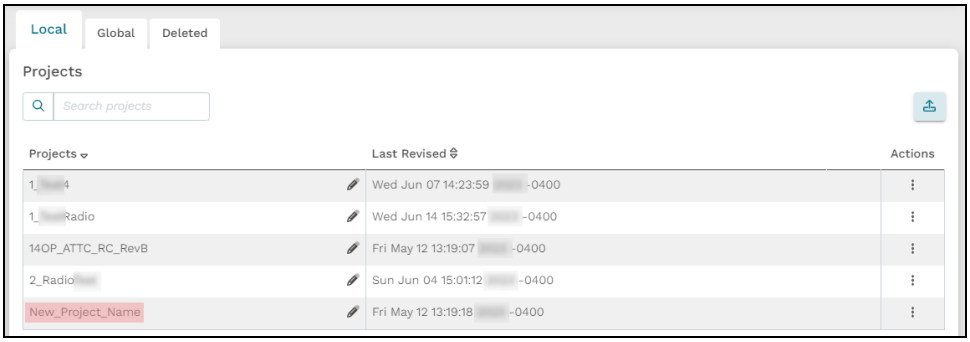

Figure 178: Edited project name

11.2 View a local project's history

Telestra uses Mercurial, a distributed version control system, to record project histories. This built-in feature enables you to view histories directly from your browser without a command-line interface or separate Mercurial client. You can also explore a project's timeline, track changes, and understand its long-term evolution.

To view a local project's history in Mercurial, follow these steps:

1. On **Projects** > **Local**, choose a project in the table.
2. Under **Actions**, select the vertical ellipsis (⋮), and then select **View History**.

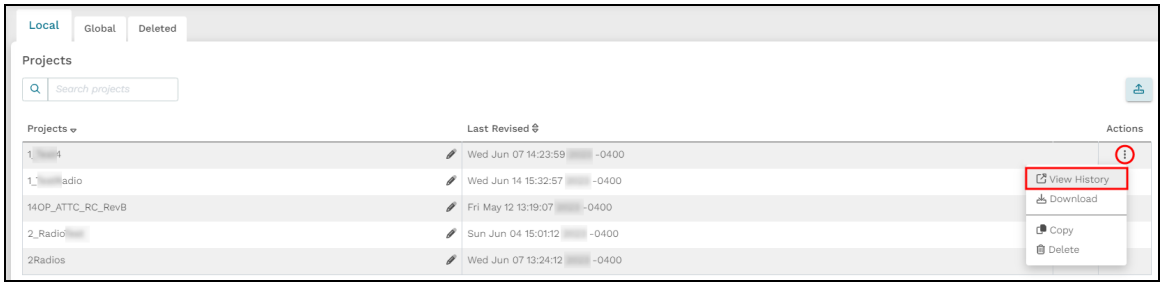

Figure 179: View a project's history

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This option opens a project summary in Mercurial, which includes a list of affiliated changes, tags, bookmarks, and branches.

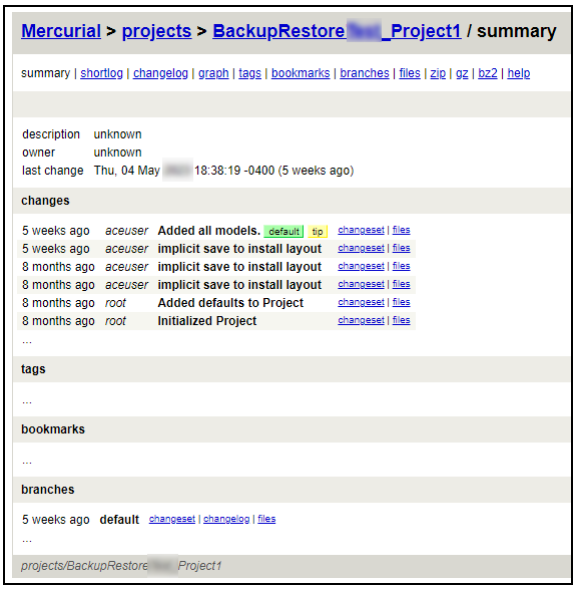

Figure 180: Mercurial project history

11.3 Copy a project

Copying a project duplicates its contents without maintaining a link to the original project. This approach does not retain the original project's version history, making it a standalone project. To copy a project, follow these steps:

1. From **Projects**, go to **Local** or **Global**.
2. On the right, hover over the orange tab ( ), and select **Log in to edit**.

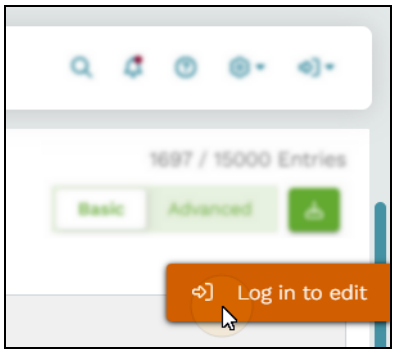

Figure 181: Log in to edit

3. Log in with the following default credentials:

Username	Password
admin	astirules

4. *(Optional)* To view the hidden password, select **Show Password** ( ).

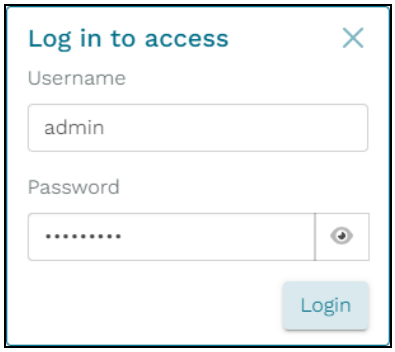

Figure 182: Login pop-up window

5. Select Login.

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6. Under **Actions**, select the vertical ellipsis (⋮) corresponding with the primary server's default project, and then select **Copy**.

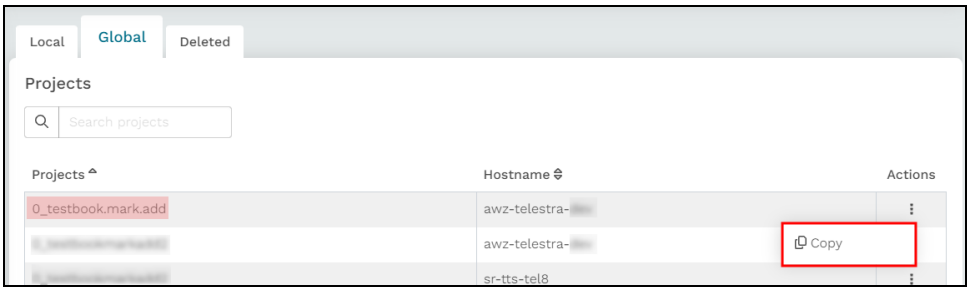

Figure 183: Copy a project

7. On **Local**, find the copied project in the table. "_Copy_1" is appended to the end of the project's name:

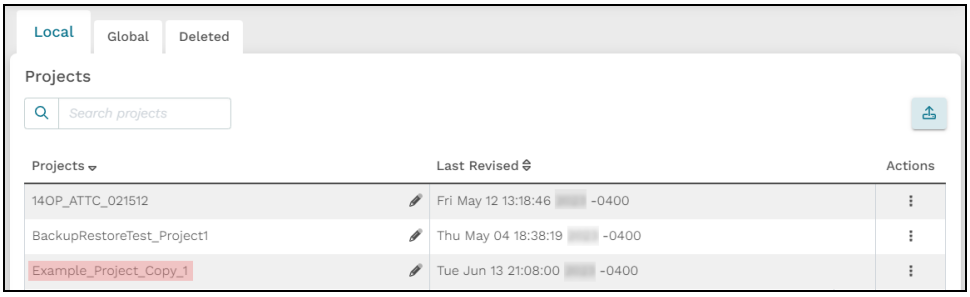

Figure 184: Copied project on Local

11.4 Export a local project

The Telestra web interface includes the ability to quickly and conveniently export a local project to another Telestra server. Simply download the project you want to export, save it to external media, and upload it on the desired server. If you'd like to simultaneously export multiple projects, create a backup of the projects on **Backup/Restore**. To learn more about backup up and restoring projects and other Telestra resources, go to Section 9.2, "Backup/Restore" on page 39.

To export a local project to another Telestra server, follow these steps:

1. On **Projects** > **Local**, choose a project to export.
2. Under **Actions**, select the vertical ellipsis (⋮), and then select **Download**.
3. Open a web browser. In the address bar, enter the IP address of the Telestra server where you intend to export the project.

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4. On the left, go to **Projects**.

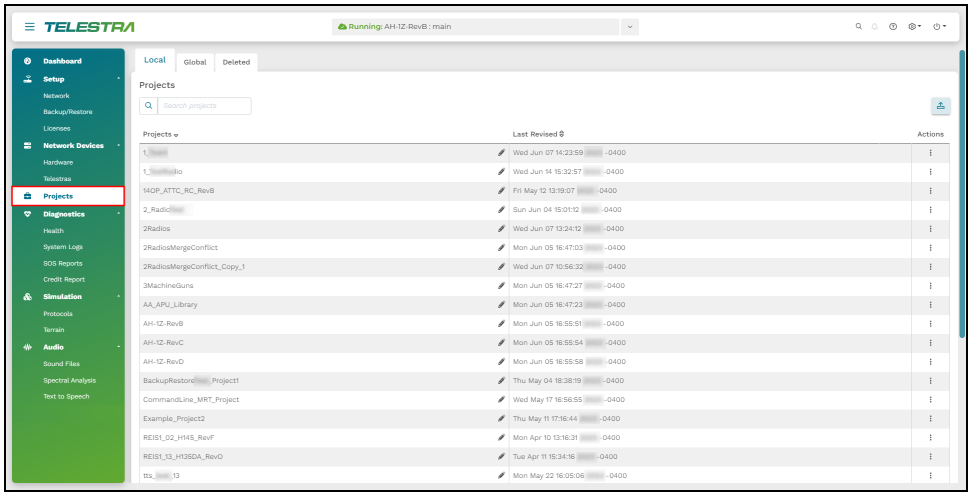

Figure 185: Projects navigation

5. On the right, hover over the orange tab ( ), and select **Log in to edit**.

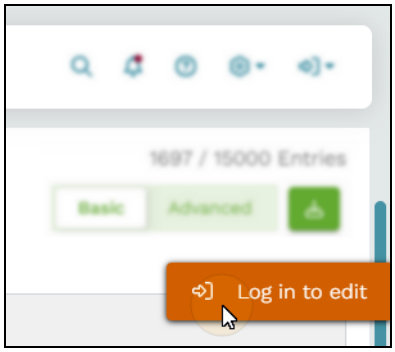

Figure 186: Log in to edit

6. Log in with the following default credentials:

Username	Password
admin	astirules

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7. *(Optional)* To view the hidden password, select **Show Password** (👁).

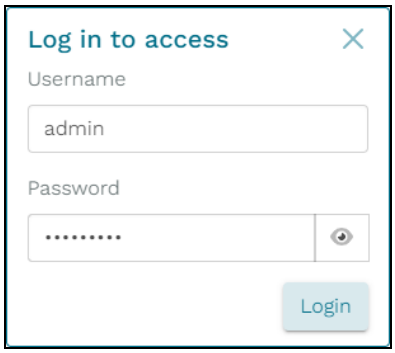

Figure 187: Login pop-up window

8. Select Login.

9. Select the upload button (⬆) in the top right:

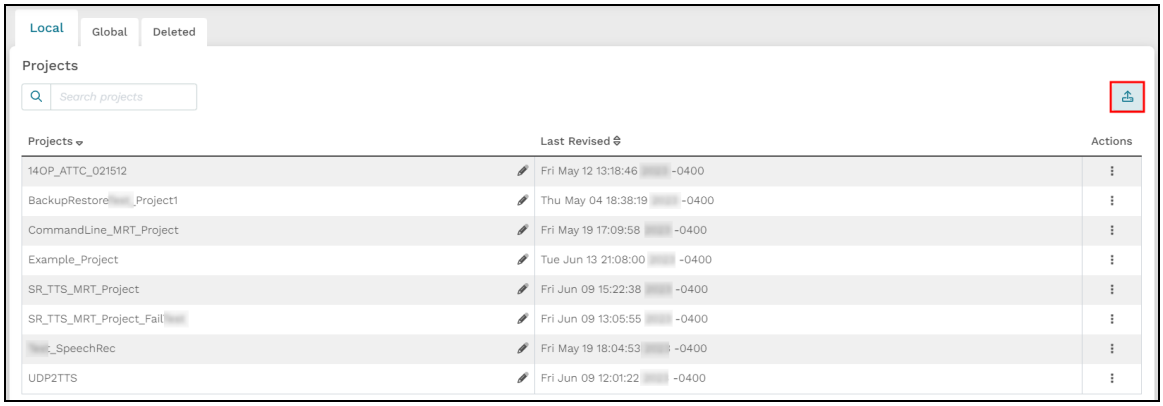

Figure 188: Upload project button

10. In **Upload Project**, select Browse Files, and find the .tgz file on your local system. Alternatively, drag and drop the tape archive gzip (.tgz) file into the **Upload Project** window.

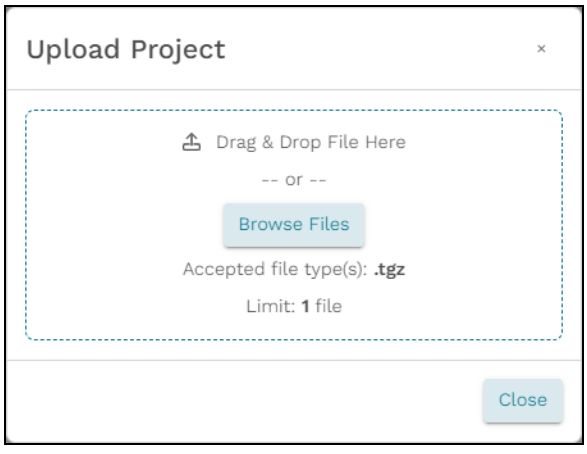

Figure 189: Upload Project window

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11. Select Upload 1 file.

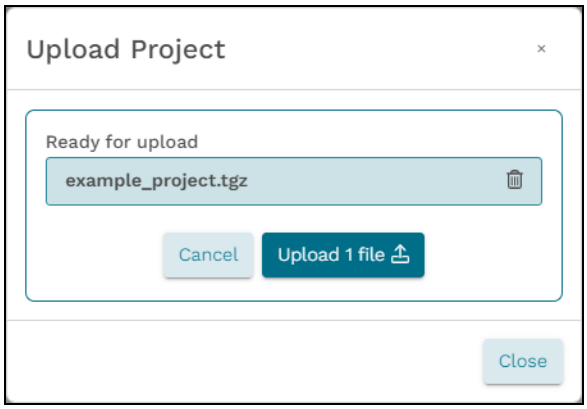

Figure 190: Project ready for upload

12. When the upload is complete, close the window. The new project appears in the table:

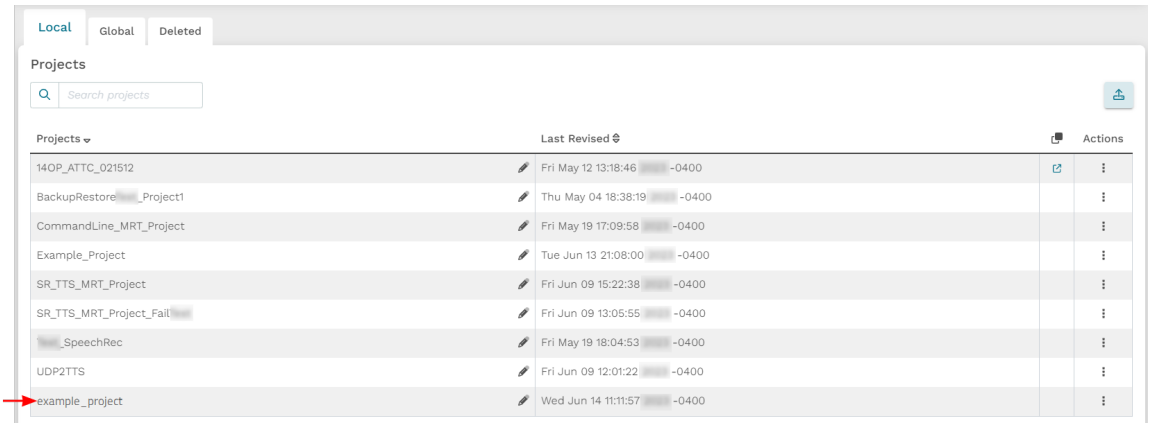

Figure 191: Uploaded project

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11.5 Delete a local project

To delete one or more local projects from the Telestra web interface, follow these steps:

1. On **Projects** > **Local**, choose a project from the table.
2. On the right, hover over the orange tab ( ), and select **Log in to edit**.

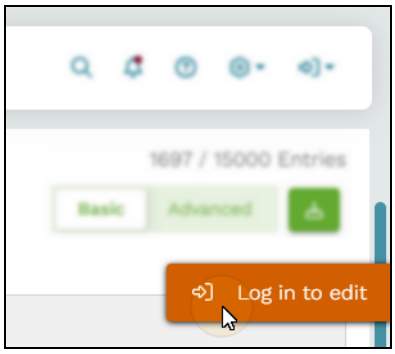

Figure 192: Log in to edit

3. Log in with the following default credentials:

Username	Password
admin	astirules

4. *(Optional)* To view the hidden password, select **Show Password** ( ).

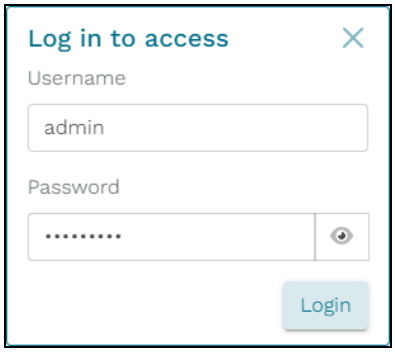

Figure 193: Login pop-up window

5. Select Login.

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6. Under **Actions**, select the vertical ellipsis (⋮), and then select 🗑 **Delete**.

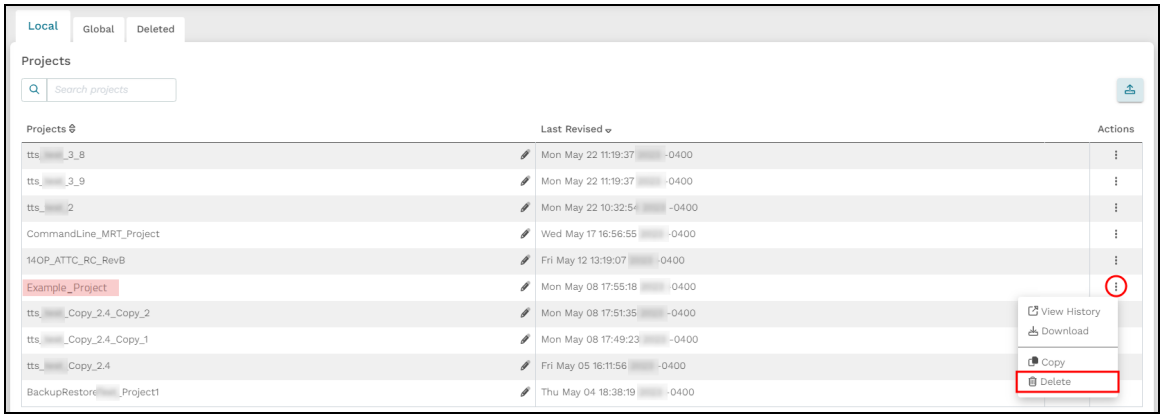

Figure 194: Delete a local project

7. To view the deleted project, go to **Deleted**, and find the project in the table. Telestra temporarily archives deleted projects on this tab, permanently removing them after one week.

8. *(Optional)* To restore a deleted project, under **Actions**, select the vertical ellipsis (⋮), and then select **Restore**.

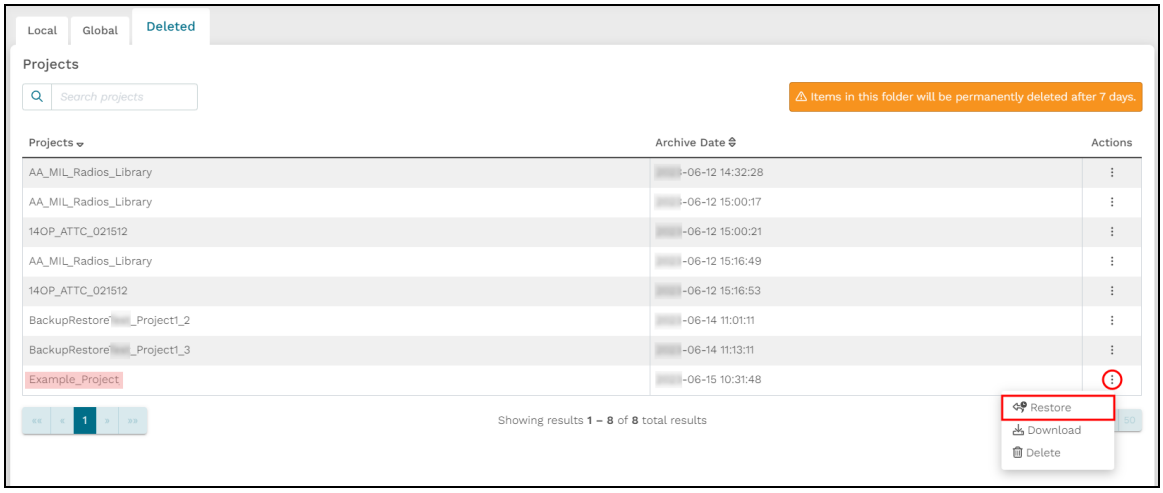

Figure 195: Restore a deleted project

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12.0 Diagnostics

Located in the left sidebar, **Diagnostics** provides access to essential tools such as **Health**, **System Logs**, **SOS Reports**, and **Credit Report**. In this chapter, learn how to effectively monitor Telestra's health, troubleshoot errors, send a system snapshot to ASTi engineers, and view a credit breakdown or component summary. Whether you're performing maintenance, diagnosing technical issues, or allocating resources, **Diagnostics** provides robust support tools optimizing your server's performance.

This chapter discusses the following topics:

- Health
- System Logs
- SOS Report
- Credit Report

12.1 Health

Diagnostics > **Health** verifies Telestra software is running properly and displays low-level, raw information for troubleshooting. 12.1, "Health" above shows **Health**:

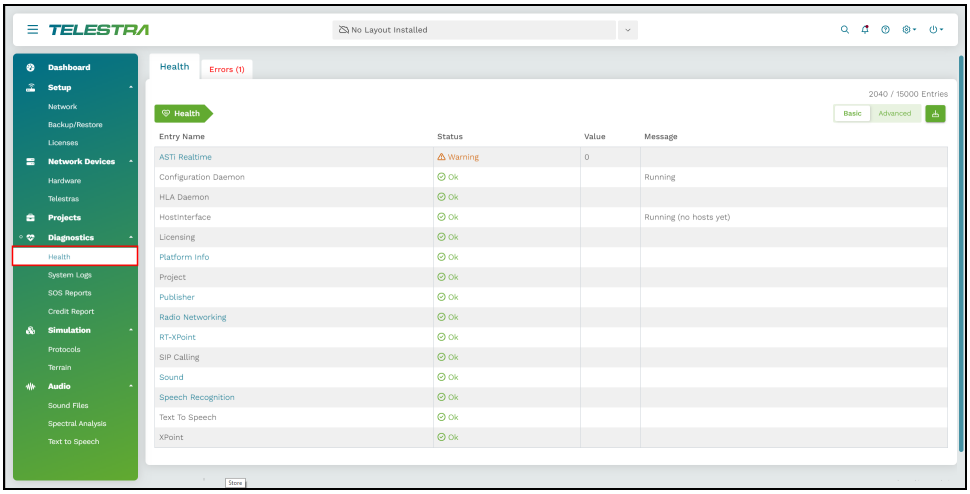

Figure 196: Health navigation

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The **Health** page consists of a tree-like structure of subsections. **Entry Name** lists the name of each health entry and its corresponding subsections. Select an entry name to open it. From there, select the chevron to expand and preview a subsection's contents.

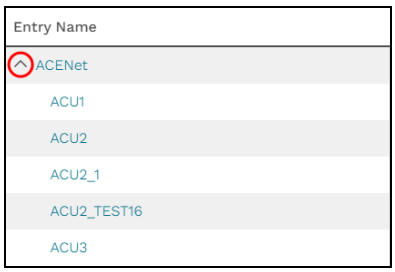

Figure 197: Preview contents of a Health entry

Quickly navigate to a previous section via the breadcrumbs at the top of the page:

Figure 198: Health breadcrumbs

Status displays one of the following states:

- ***Ok**:* the entry is operating normally.
- ***Warning**:* the entry's descendant has an error.
- ***Error**:* the entry is producing an incorrect or unexpected result or behaving in unintended ways (e.g., sound files are missing from the expected directory paths in **Sounds** > **Total_Sounds**).
- ***info**:* available in **Advanced** view, this entry displays a neutral data point that may be useful during troubleshooting (e.g., **Health** > **ASTi Realtime** > **Model** > **Model Credits** displays the system's current credit count).

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Figure 199, "Health > ASTi Realtime > ACENet Statuses" below shows a variety of statuses on **Health** > **ASTi Realtime** > **ACENet**:

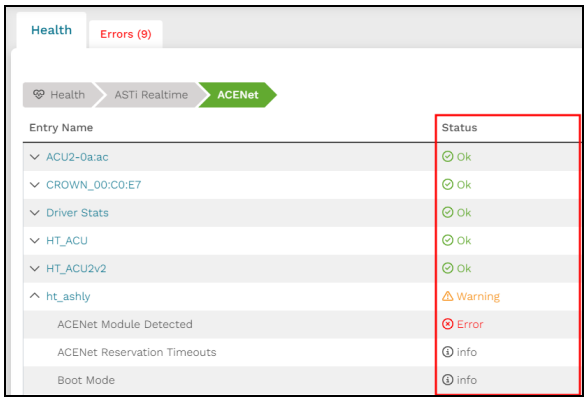

Figure 199: Health > ASTi Realtime > ACENet Statuses

Value displays data affiliated with an entry that may be useful for troubleshooting. For example, the **Health** > **ASTi Realtime** > **ACENet** > **Driver Stats** > **Lost Beat Packets Count** entry might show an "Error" **Status** with a **Value** of **498686975**, which represents the packet count.

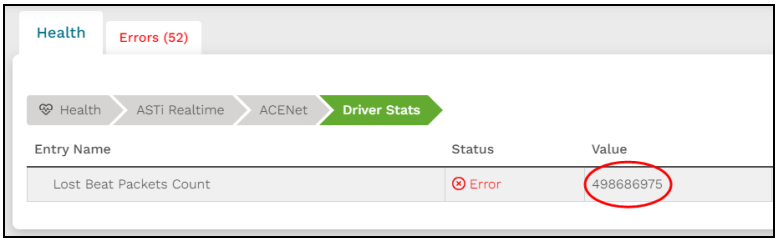

Figure 200: Health Value

Message provides additional context information about the entry. For example, the **Model** entry may display "Running" under **Message**. Alternatively, **Message** might display error details, such as the expected file path if a **Health** > **Sound** > **Total Sounds** descendant throws an error.

In the top right, the **Entries** count (e.g., *NNNN*/15,000) displays the number of entries Telestra is using versus the maximum number of entries (i.e., 15,000). Most systems don't use that many entries (e.g., 2,000); however, systems with overly complex models or a large number of hardware devices (e.g., ACU2s) may grow closer to the maximum. If your system uses the maximum number of entries, contact ASTi at support@asti-usa.com to discuss how you might simplify your model.

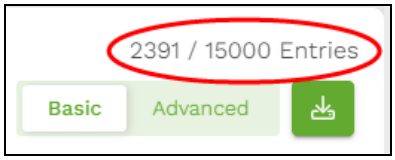

Figure 201: Health Entries count

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Select **Advanced** (Basic Advanced) to view "ⓘ info" entries providing additional data points that may be useful during troubleshooting (e.g., entries for **Sound** > **Parameters**).

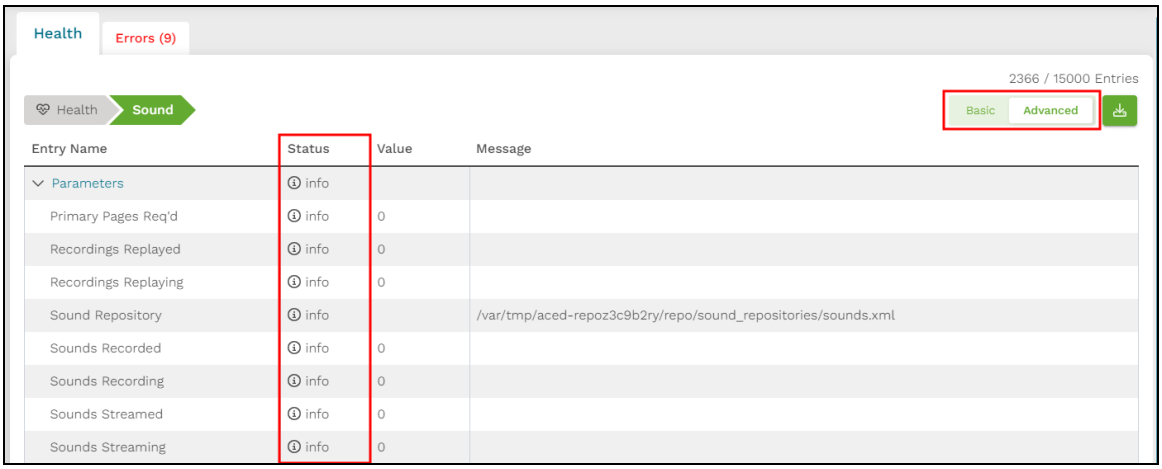

Figure 202: Sound > Parameters "info" Statuses in Advanced view

To download raw health data to your local system in Yet Another Markup Language (.yaml) file format, select **Download** ( ).

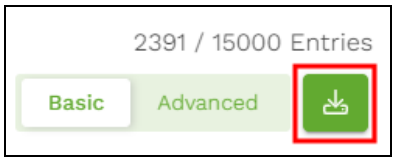

Figure 203: Download Health data

12.1.1 View Health errors

The **Errors** tab identifies the total number of errors occurring on the Telestra server. It also identifies the type of issue and the number of errors in a grouping.

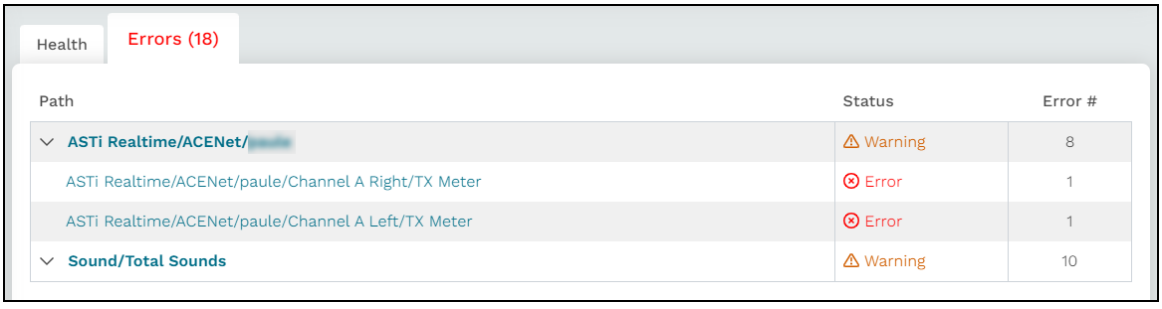

Figure 204: Health Errors tab

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Expand a directory to view any descendants with errors:

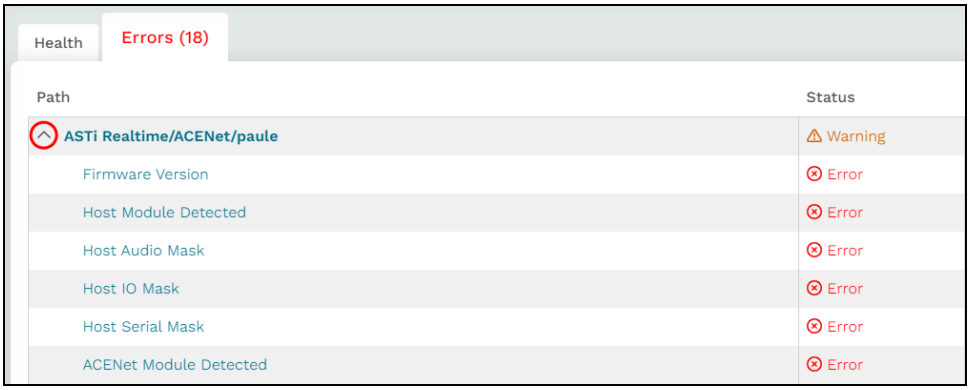

Figure 205: Expand Health entries

Status flags entries as "⊗ Errors" or "⚠ Warnings." "⚠ Warning" entries contain one or more descendants with errors, whereas "⊗ Error" entries have experienced some sort of system failure (e.g., disconnected from the host, missing sound files).

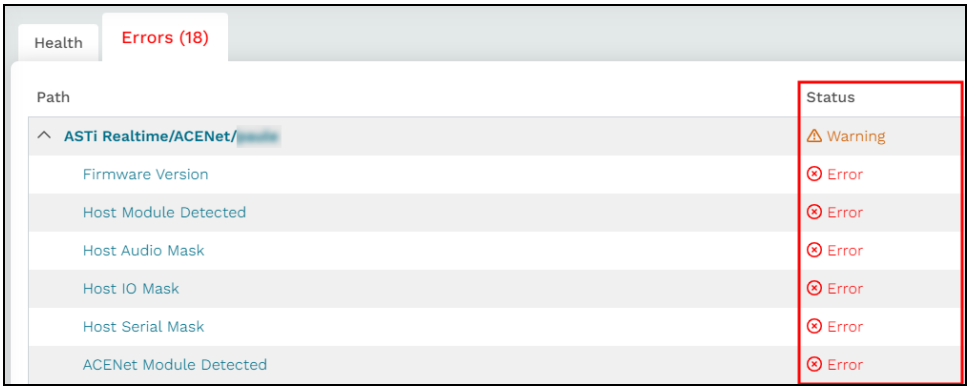

Figure 206: Types of Health statuses

The **Error** tab itself displays the total number of errors. **Error #** displays the error count of each entry; a parent entry's error count is unrelated to the number of children with errors. For example, the **ASTiRealtime/ACENet/SR_TTS_ACU2** parent entry displays **8** under **Error #**, which means eight descendent entries contain errors. However, the **Host Audio Mask**, **Host IO Mask**, and **Host Serial Mask** descendent entries display the error value (e.g., **965**).

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Figure 207, "Health error count" below shows the **Health** error counts in both the tab and **Error #** column:

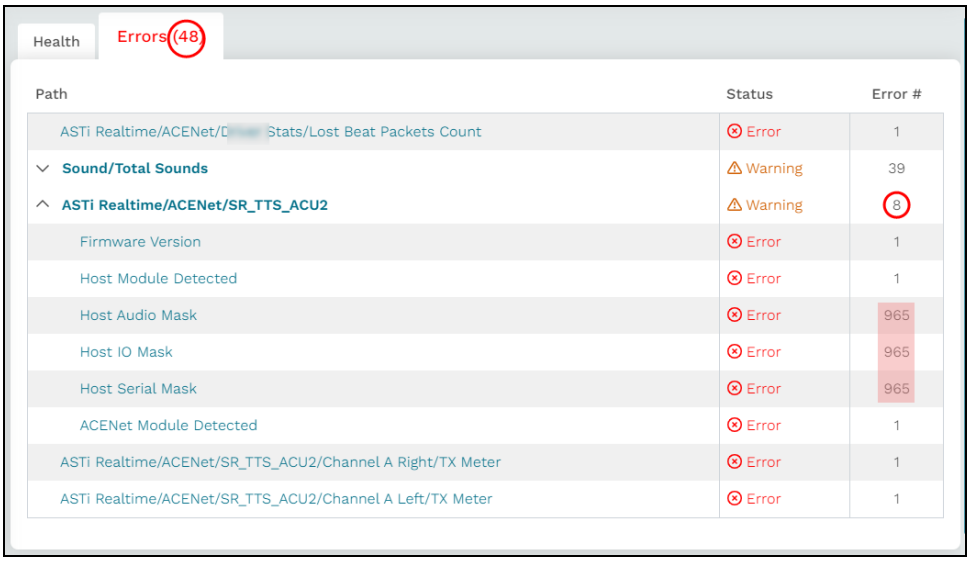

Figure 207: Health error count

Selecting a link under **Path** takes you to a specific error on the **Health** tab, temporarily highlighting the row:

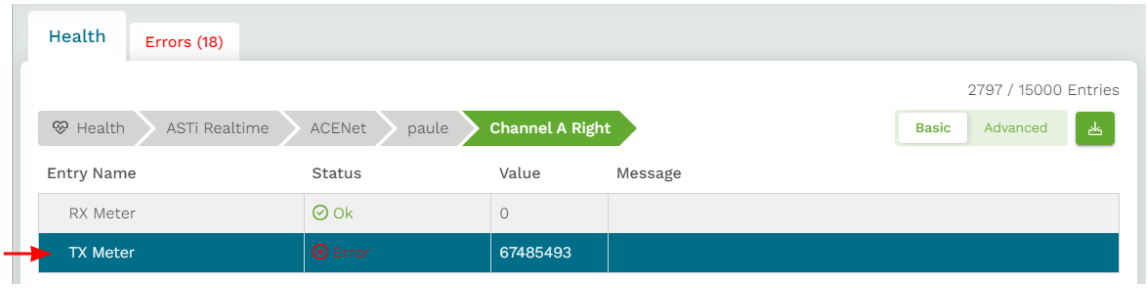

Figure 208: Navigate to a specific error

12.2 System Logs

Diagnostics > **System Logs** serves as a record of important events, errors, and activities occurring on the Telestra server. You might use this page to monitor the server's overall health, troubleshoot issues by gathering relevant information, identify patterns and trends in system behavior, or analyze historical data for insights.

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System Logs displays 100 of the most recent log entries, including a **Timestamp**, the applicable **Service**, and a descriptive **Message** for each incident:

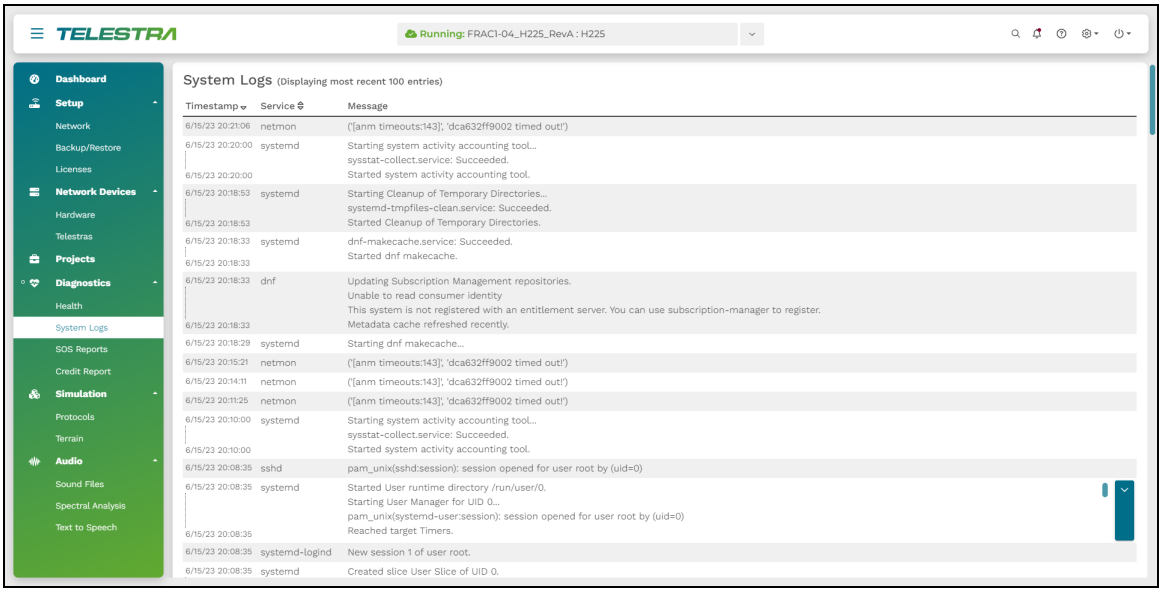

Figure 209: System Logs

By default, Telestra sorts the logs by **Timestamp**, with the newest logs at the top of the page. To view the oldest logs first or group logs by **Service**, select the sort arrows (▾, ⇳) in the table header:

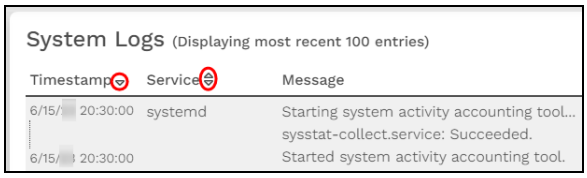

Figure 210: Sort logs by Timestamp or Service

Within each log, scroll down to view more details, or select the chevron arrow to expand the log:

Figure 211: Expand a log

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12.3 SOS Report

Diagnostics > **SOS Reports** provides a central place to analyze, diagnose, and resolve issues with the Telestra server. These reports document the Telestra server's configuration and performance at a specific point in time, which maybe be useful for troubleshooting or auditing. If you're experience a problem with Telestra, simply generate a report, download the report as a compressed tape archive (tar.xz.tgz) file, and email it to ASTi Support.

To generate and send an SOS report, follow these steps:

1. In the top left, select **Create a report** (+), and wait several minutes for the report to generate. A message with a time stamp indicates when the report began generating:

Figure 212: SOS report generation message

2. Once the report generates, find it in the table, which lists each report's name, date and time of creation, and size in megabytes (MB).

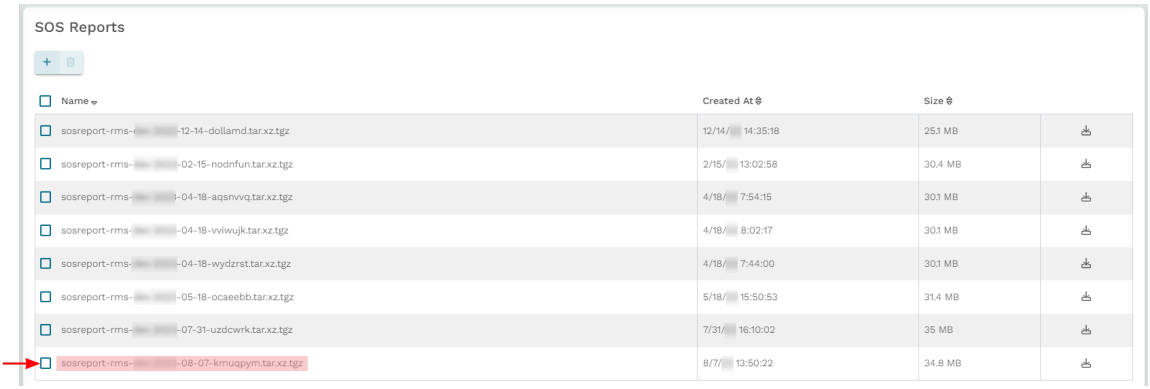

Figure 213: New SOS report

3. To download the tar.xz.tgz file to your local system, select the report's download (⬇) icon.
4. Email the SOS report to ASTi Support at support@asti-usa.com.
5. *(Optional)* To permanently delete SOS reports from the Telestra server, select one or more reports, and then select **Delete selected reports** (🗑).

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12.4 Credit Report

Diagnostics > **Credit Report** lists and describes all of the components available on the Telestra server, breaking down component usage and cost by model. It includes two tabs called **Credit Report** and **Component Summary**.

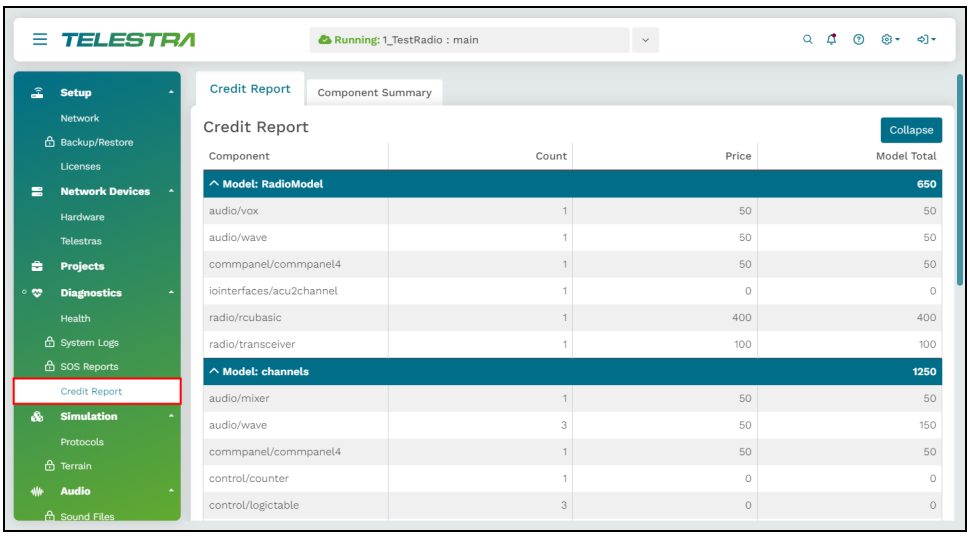

Figure 214: Credit Report navigation

This section discusses how to:

- View a credit breakdown
- View a component summary

12.4.1 View a credit breakdown

The **Credit Report** tab displays a table with the following columns:

- ***Component**:* lists the names of the components available on the Telestra server.
- ***Count**:* identifies how many components of each type are available on the Telestra server.
- ***Price**:* lists the price per component.
- ***Model Total**:* breaks down the amount of dollars spent per model and component.

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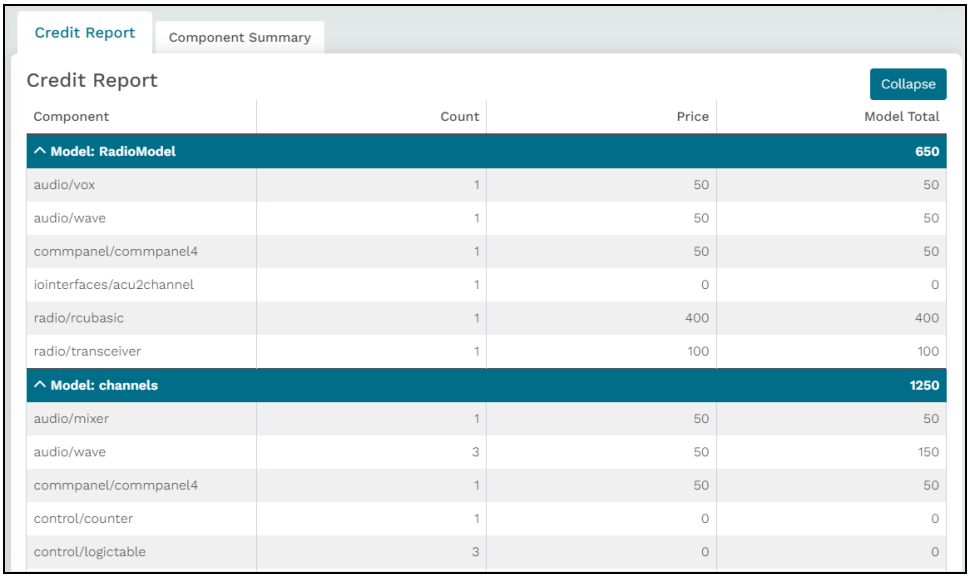
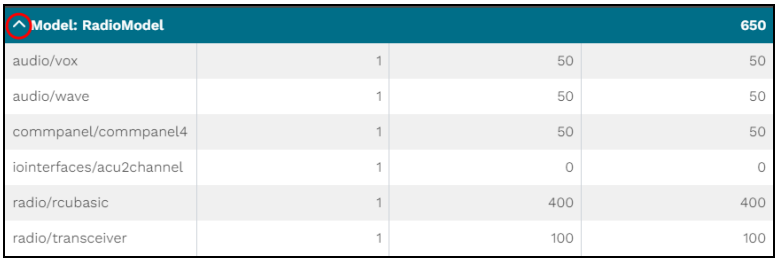
Figure 215, "Credit Report table" below shows the **Credit Report** tab:



Component	Count	Price	Model Total
Model: RadioModel			**650**
audio/vox	1	50	50
audio/wave	1	50	50
commpanel/commpanel4	1	50	50
iointerfaces/acu2channel	1	0	0
radio/rcubasic	1	400	400
radio/transceiver	1	100	100
Model: channels			**1250**
audio/mixer	1	50	50
audio/wave	3	50	150
commpanel/commpanel4	1	50	50
control/counter	1	0	0
control/logictable	3	0	0

Figure 215: Credit Report table

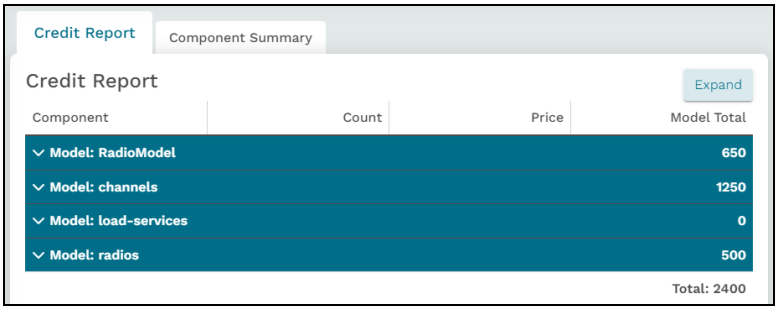
To collapse a specific model, select the arrow next to the model name.



Model: RadioModel			**650**
audio/vox	1	50	50
audio/wave	1	50	50
commpanel/commpanel4	1	50	50
iointerfaces/acu2channel	1	0	0
radio/rcubasic	1	400	400
radio/transceiver	1	100	100

Figure 216: Collapse a specific model

To collapse all the models for a top-level view of credits, select Collapse in the top right.



Component	Count	Price	Model Total
Model: RadioModel			**650**
Model: channels			**1250**
Model: load-services			**0**
Model: radios			**500**
			Total: 2400

Figure 217: Collapsed models

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12.4.2 View a component summary

On **Credit Report**, **Component Summary** lists all of the components in the currently running model. This page displays a table with the following columns:

- ***Component**:* the name of each component.
- ***Count**:* the number of components in the model.
- ***Price**:* the price per component.
- ***Subtotal**:* the total amount spent on each component type.
- ***Subtotal**:* the amount of dollars spent on each component.

At the bottom of the **Subtotal** column, **Total** shows the cumulative amount of credits used across all components:

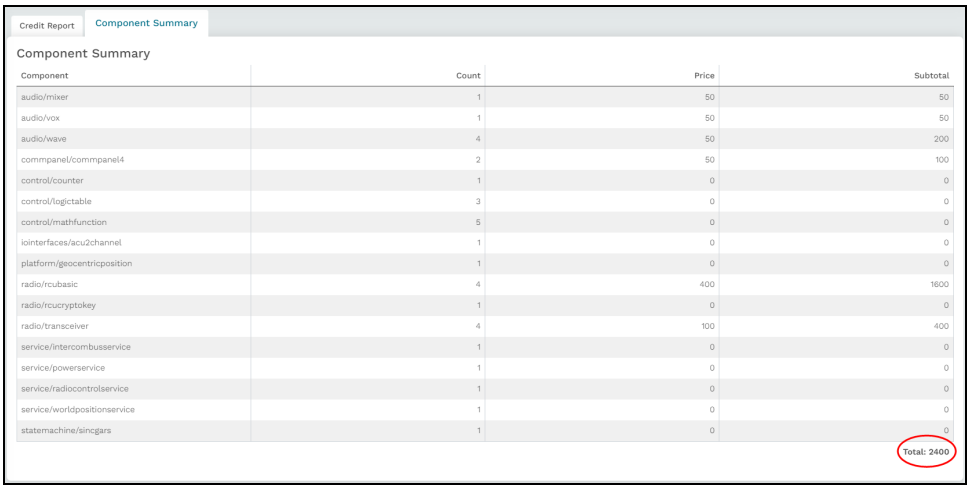

Figure 218: Component Summary total

13.0 Simulation

Located in the left sidebar, **Simulation** provides access to Telestra's **Protocols** and **Terrain** pages:

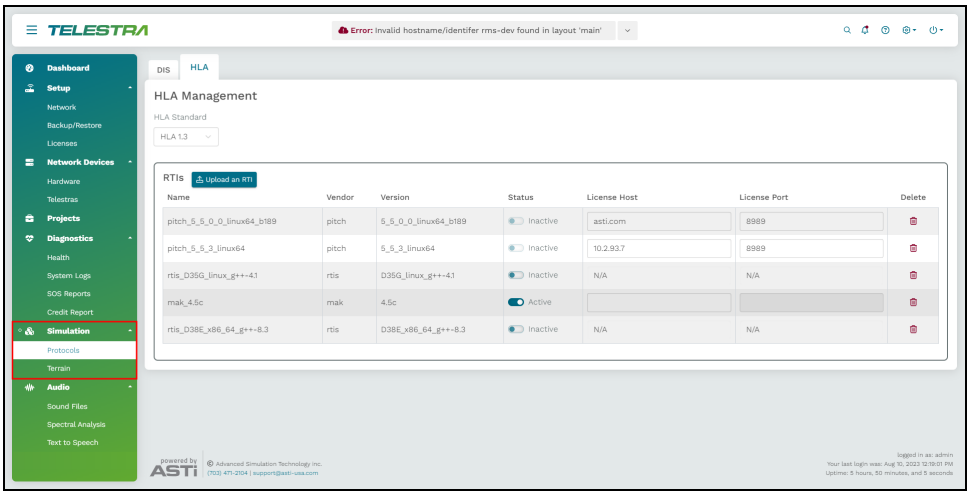

Figure 219: Simulation navigation

In this chapter, learn how to view and configure high-level architecture (HLA) and Distributed Interactive Simulation (DIS) settings in Telestra, enabling seamless interoperability. These instructions also explain how to access the Telestra server's terrain data, ensuring your application's simulation is both accurate and immersive. Whether you're enhancing training scenarios, replicating real-world conditions, or maximizing your environment's fidelity, **Simulation** provides the tools you need to bring your world to life.

This chapter discusses the following topics:

- Protocols
- Terrain

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13.1 Protocols

Simulation > **Protocols** includes two sections: the **DIS** tab contains Distributed Interactive Simulation (DIS) Protocol Data Unit (PDU) counter and interface settings useful for troubleshooting networking issues, while the **HLA** tab contains run-time infrastructure (RTI) management settings.

To view the **Protocols** page, on the left, go to **Simulation** > **Protocols**.

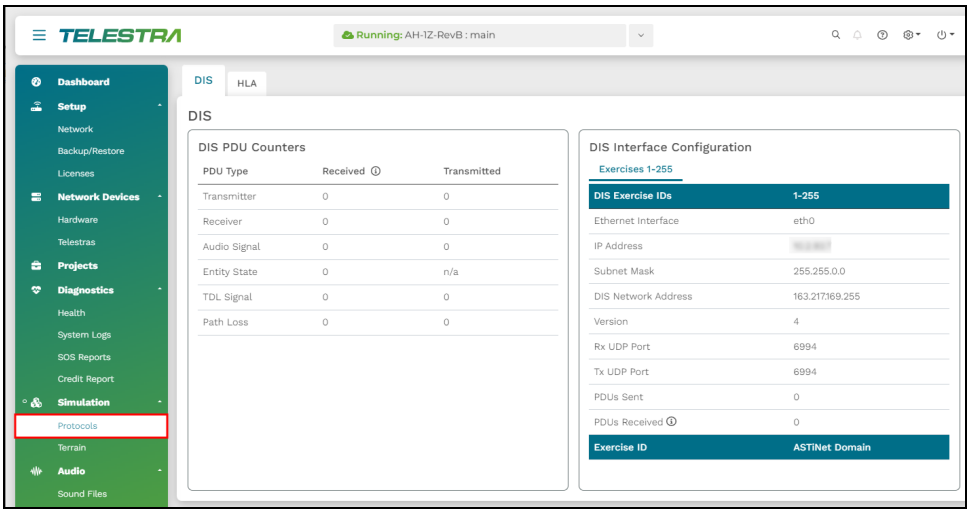

Figure 220: Protocols navigation

This chapter discusses how to:

- Troubleshoot DIS PDU Counters
- View DIS interface settings
- Set the HLA standard
- Install an RTI file
- Activate an RTI file

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13.1.1 Troubleshoot DIS PDU Counters

On **Protocols**, **DIS PDU Counters** tracks the number of Protocol Data Units (PDUs) that Telestra sends and receives on the Distributed Interactive Simulation (DIS) network. Use these counters to monitor the DIS network's performance and health.

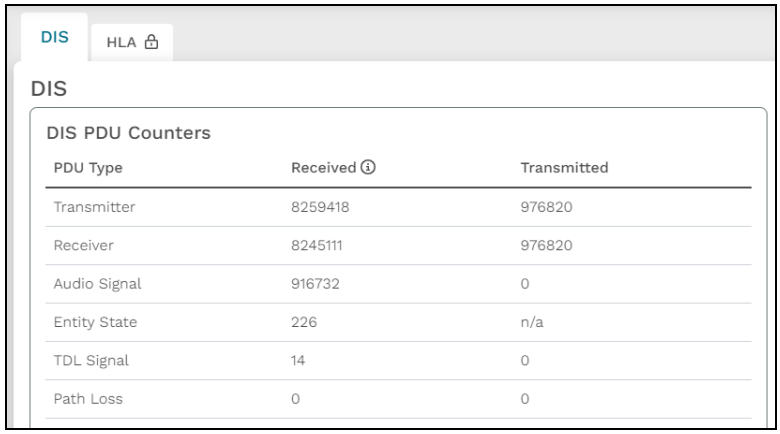

Figure 221: DIS PDU Counters

DIS PDU Counters includes the following statistics:

- ***Received**:* the number of PDUs that Telestra received on the network. This number may include PDUs that Telestra itself transmitted. For example, if Telestra sends 5 PDUs and receives 10 PDUs from the network (e.g., another Telestra server), the total **Received** value is 15, and the total **Transmitted** value is 5.
- ***Transmitted**:* the total number of PDUs Telestra transmitted to the network.
- ***Transmitter**:* the total number of **Transmitter** PDUs Telestra received and sent.
- ***Receiver**:* the total number of **Receiver** PDUs Telestra received and sent.
- ***Audio Signal**:* the total number of **Audio Signal** PDUs Telestra received and sent.
- ***Entity State**:* the total number of **Entity State** PDUs Telestra received and sent.
- ***TDL Signal**:* the total number of **Tactical Data Link (TDL) Signal** PDUs Telestra received and sent.
- ***Path Loss**:* the total number of **Path Loss** PDUs Telestra received and sent.

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13.1.2 View DIS interface settings

On **Protocols** > **DIS**, **DIS Interface Configuration** includes the following information:

- ***Ethernet Interface****:* the current Ethernet interface (e.g., eth0) assigned to the exercise.
- ***IP Address****:* the Ethernet interface's IP address.
- ***Subnet Mask****:* the Ethernet interface's subnet mask, which defines the range of IP addresses that belong to a particular subnet on the Transmission Control Protocol/Internet Protocol (TCP/IP) network.
- ***DIS Network Address****:* the "all systems" IP address (e.g., 255.255.255.255) that the Telestra server uses to transmit messages to all participants on the network. Telestra supports broadcast, unicast, and multicast.
- ***Version****:* the current DIS version.
- ***DIS Rx UDP Port****:* the User Datagram Protocol (UDP) port on which the Telestra server receives packets.
- ***DIS Tx UDP Port****:* the UDP port on which the Telestra server is transmitting packets.
- ***PDUs Sent****:* the total number of Protocol Data Units (PDUs) the Telestra server sent (i.e., the sum of transmitted **Transmitter PDUs**, **Receiver PDUs**, and **Signal PDUs**).
- ***PDUs Received****:* the number of PDUs the Telestra server has received, which may also include PDUs that this Telestra sent.
- ***Exercise ID****:* the exercise IDs assigned to this Telestra server. DIS exercise IDs are unique identification numbers that identify a particular training exercise within a distributed simulation environment.
- ***ASTinet Domain****:* the domain name currently assigned in the Telestra server's actively running project. The default domain name is **domain**.

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Figure 222, "DIS Interface Configuration" below shows an example of the Telestra server's **DIS Interface Configuration** settings:

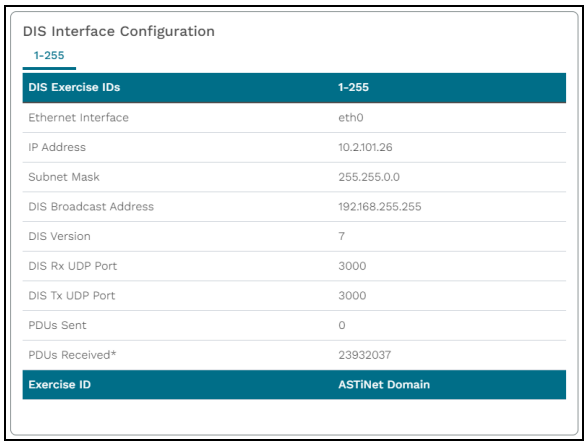

Figure 222: DIS Interface Configuration

13.1.3 Set the HLA standard

To set the high-level architecture (HLA) standard, follow these steps:

1. From **Simulation** > **Protocols**, go to the **HLA** tab.
2. Log in with the following default credentials:

Username	Password
admin	astirules

3. *(Optional)* To view the hidden password, select **Show Password** (👁).

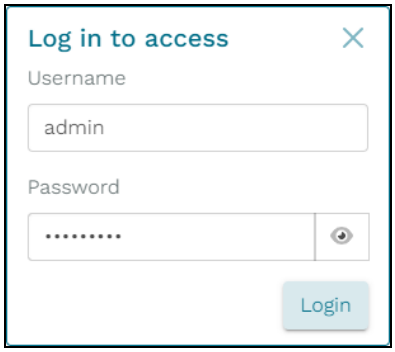

Figure 223: Login pop-up window

4. Select Login.

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5. On **HLA Management**, select **HLA Standard**, and choose **IEEE 1516e** for HLAe or **HLA 1.3** for HLA 1.3.

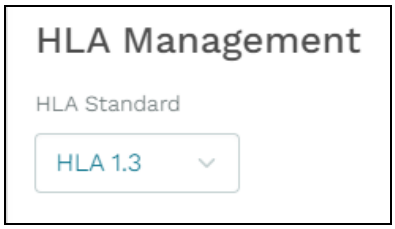

Figure 224: HLA Standard

13.1.4 Install an RTI file

ASTi's HLA communications environment supports RTIs from Marine Corps Special Orders (MSCO), MAK Technologies, and ViRTC. Download the RTI compatible with the corresponding Telestra release, as specified in "Choose a compatible HLA RTI file" in the *HLA Installation Guide* (support.asti-usa.com/media/pdf/t4/hla_ig.pdf). If you are running a hardened Telestra server, manually upload and install the RTI, as described below.

To install one or more run-time infrastructure (RTI) files in the Telestra web interface, follow these steps:

1. On the left, go to **Simulation** > **Protocols**.

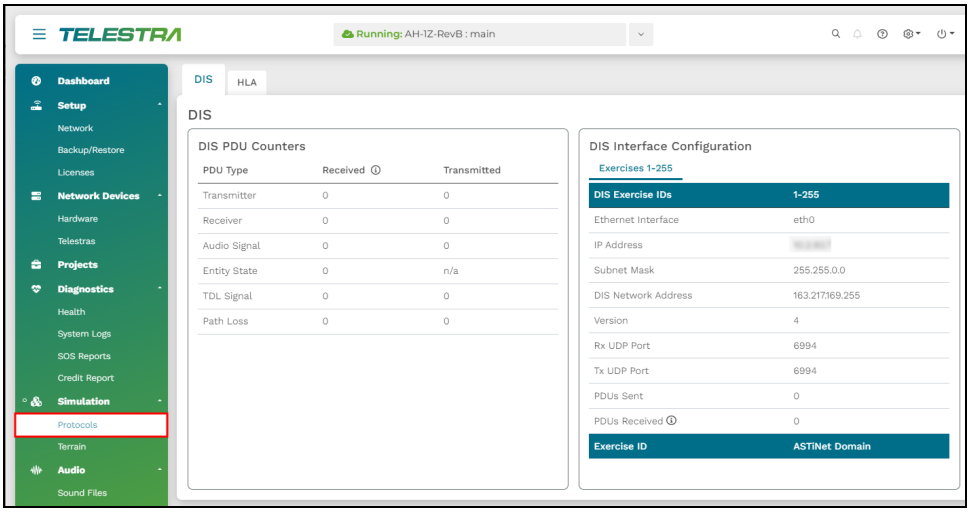

Figure 225: Protocols navigation

2. Go to the **HLA** tab.
3. Log in with the following default credentials:

Username	Password
admin	astirules

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4. On **HLA Management**, select Upload an RTI.

5. In **Upload RTIs**, select Browse Files, and find up to five RTI files on your local system. Accepted file types include Tape Archive GNU Zip (.tar.gz, .tgz, .gz), shell script (.sh), and Red Hat Packet Manager (.rpm).

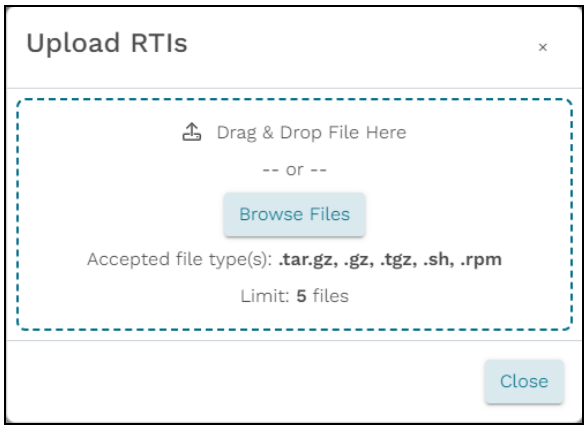

Figure 226: Browse RTI files

6. Review the RTI files to upload. To clear a file, select the trash can icon (🗑).

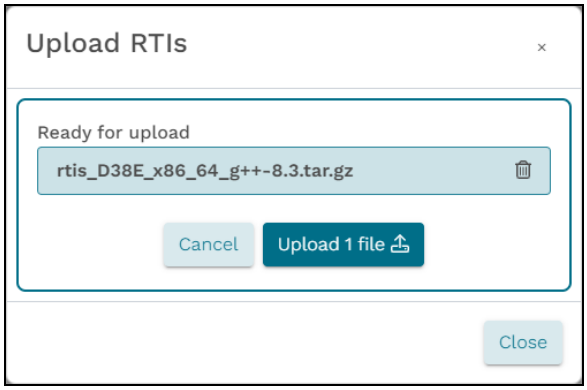

Figure 227: Upload RTI file(s)

Select Upload 1 file. The number of files on the button changes depending on your selection.

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7. When the files are finished uploading, an “Upload is complete!” message displays, and a check (⊙) appears next to each green status bar. Close the pop-up window, and confirm the new RTI files appear in the **RTIs** table:

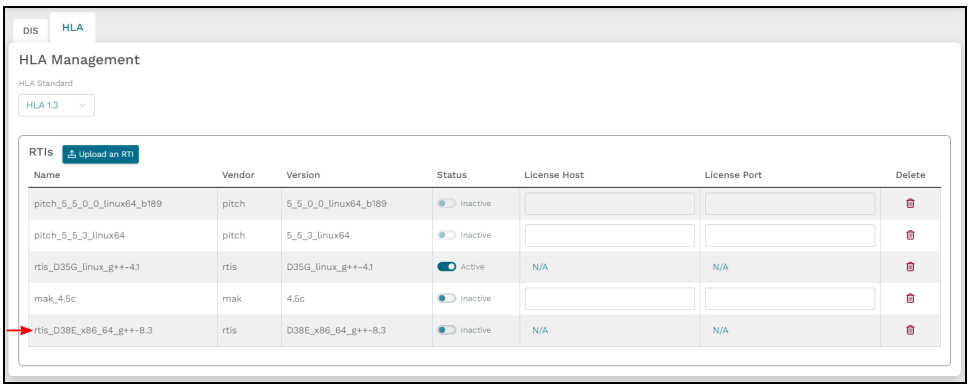

Figure 228: New RTI file in the RTIs table

***Note**: Telestra supports multiple RTI versions and vendors; however, only one may be active at a time.*

8. *(Optional)* To delete an RTI from the **RTIs** table, select the RTI's corresponding trash can icon (🗑).

13.1.5 Activate an RTI file

To activate a high-level architecture (HLA) run-time infrastructure (RTI) file, follow these steps:

1. On **HLA Management**, choose an RTI file from the **RTIs** table. In the **Status** column, turn on on the RTI's corresponding toggle switch, which now displays “Active:”

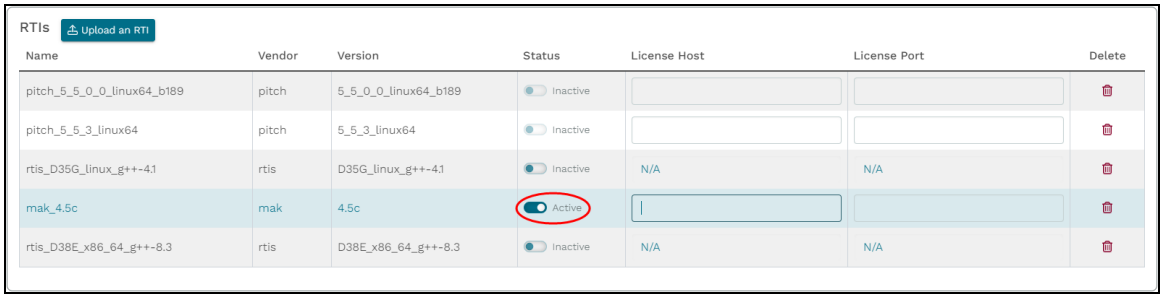

Figure 229: Active RTI file

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2. *(Optional)* If your RTI vendor requires the RTI to withdraw a license from an external license server, do the following:

   a. In **License Host**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the license server's IP address.

   b. In **License Port**, enter the license server's port number (e.g., 27001).

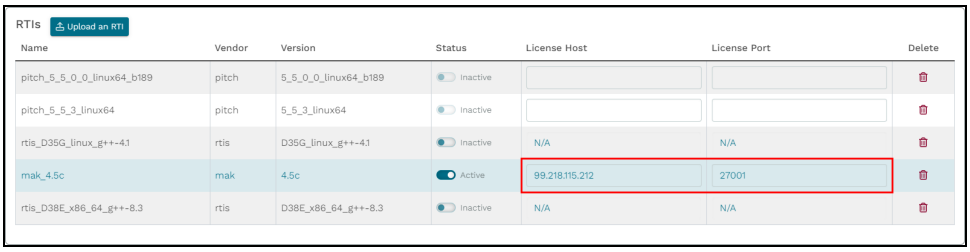

Figure 230: RTI License Host and License Port

***Note**: Alternatively, you may configure a Pitch RTI license in the Local RTI Component (LRC) .settings file. Go to Pitch documentation for more information.*

13.2 Terrain

To add third-party terrain data, follow the instructions on the page to mount the media containing your data. 13.2, "Terrain" above shows **Level 0 Data** and **Supplying Additional Terrain** on **Terrain**:

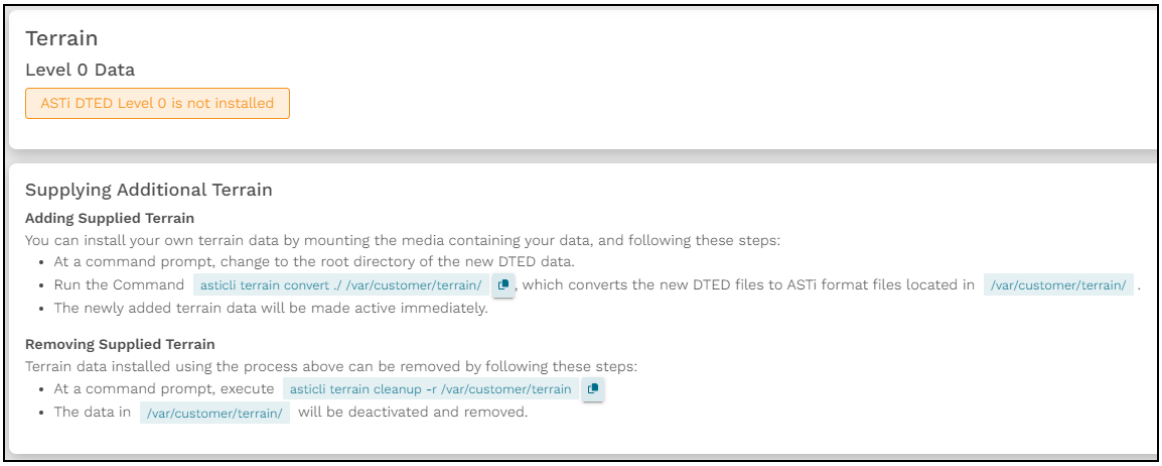

Figure 231: Terrain

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14.0 Audio

Located in the left sidebar, **Audio** provides access to the Telestra's **Sound Files**, **Spectral Analysis**, and **Text to Speech** pages.

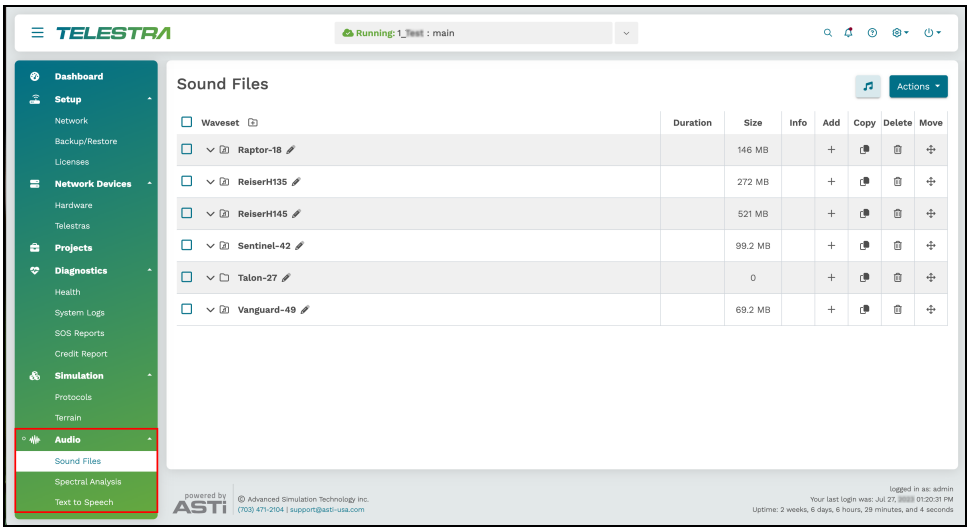

Figure 232: Audio navigation

In this chapter, discover how to upload and organize waveform audio file format (.wav) and Telestra Sound Recording (.tsr) files on **Sound Files**, producing waveset directories for spectral analysis and model creation. Next, generate Level D comparison plots on **Spectral Analysis**, which compares actual aircraft recordings with recordings of Telestra and your simulator. Last of all, go to **Text to Speech** to preview voices from Telestra's built-in text-to-speech (TTS) engine. Whether you're creating wavesets, seeking Level D certification, or evaluating TTS, **Audio** offers powerful capabilities tailored to your simulation sound scape.

This chapter discusses the following topics:

- Sound Files
- Spectral Analysis
- Text to Speech

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14.1 Sound Files

Upload, access, and manage sound files (i.e., .wav files) on the **Sound Files** page. **Sound Files** provides sound file information (e.g., format, length, and size), download links, and the ability to preview sound files via the audio player.

This section describes how to:

- Add a waveset
- Upload sound files
- Edit a waveset or sound file's name
- Move a waveset or sound file into another waveset
- Copy a waveset or sound file to another waveset
- Preview a sound file
- View a sound file's metadata
- Download a sound file or waveset
- Delete a waveset or sound file

14.1.1 Add a waveset

To add a waveset via **Quick Add**, follow these steps:

1. On the left, go to **Audio** > **Sound Files**.

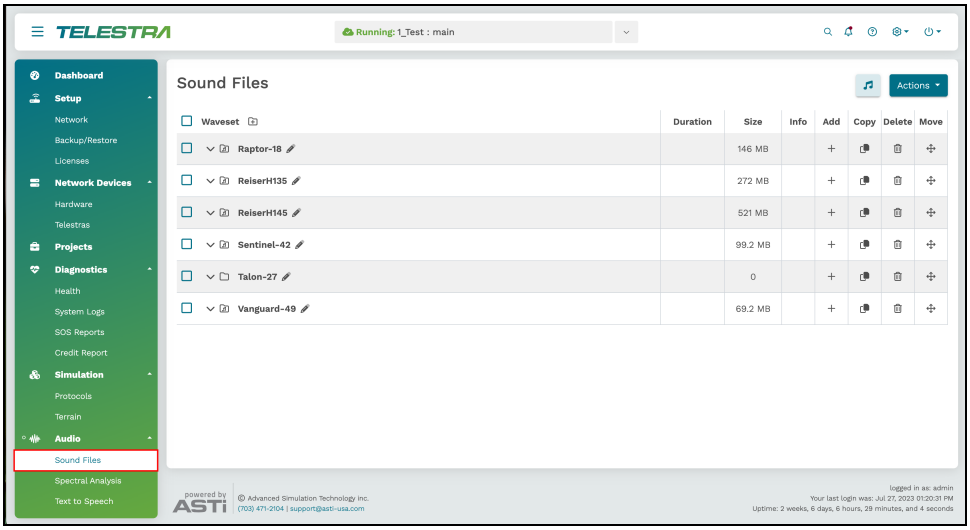

Figure 233: Sound Files navigation

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2. Log in with the following default credentials:

Username	Password
admin	astirules

3. *(Optional)* To view the hidden password, select **Show Password** (👁).

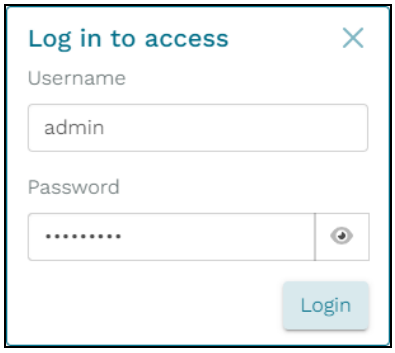

Figure 234: Login pop-up window

4. Select Login.
5. On **Sound Files**, next to the **Waveset** column header, select **Quick Add** (🗀+).
6. Enter a unique name for the waveset, and select the green check (✓), or press Enter.

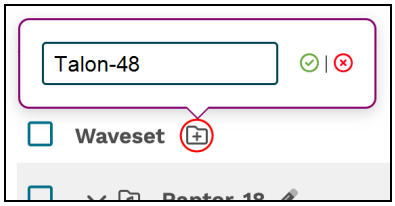

Figure 235: Quick-add a waveset directory

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The new waveset appears among the listed options:

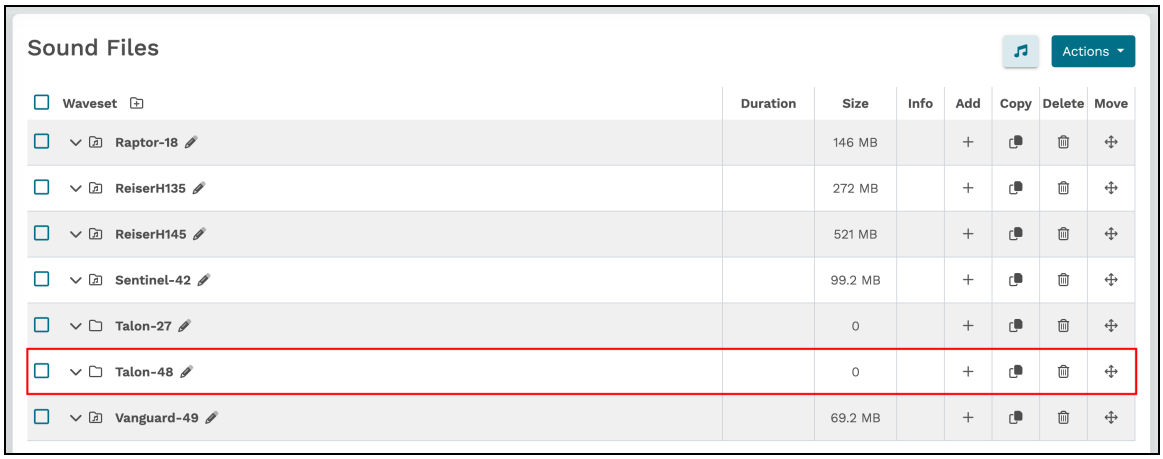

Figure 236: New waveset on Sound Files

To add a waveset via the **Actions** menu, do the following:

1. On **Sound Files**, go to **Actions** > **Create Directory**.

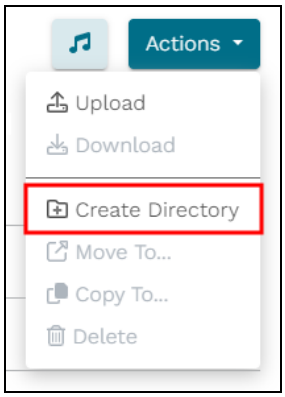

Figure 237: Create Directory in Actions

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2. In the bottom left, select the new waveset (🗀+) icon.

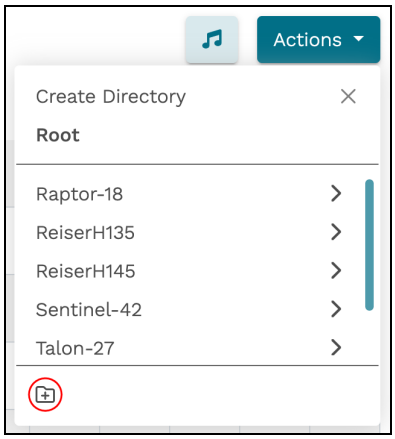

Figure 238: Create Directory icon in Actions

3. Enter a unique name for the waveset, and select the green check (✓), or pressEnter.

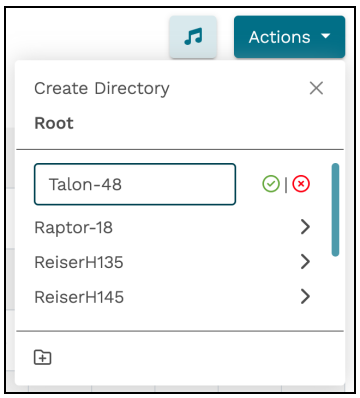

Figure 239: Name waveset in Actions

4. *(Optional)* Alternatively, under **Add**, select the waveset's plus icon (+) directly from the table. Add a new waveset, and/or upload the sound files from your local system, as described in Section 14.1.2, "Upload sound files" on the next page.

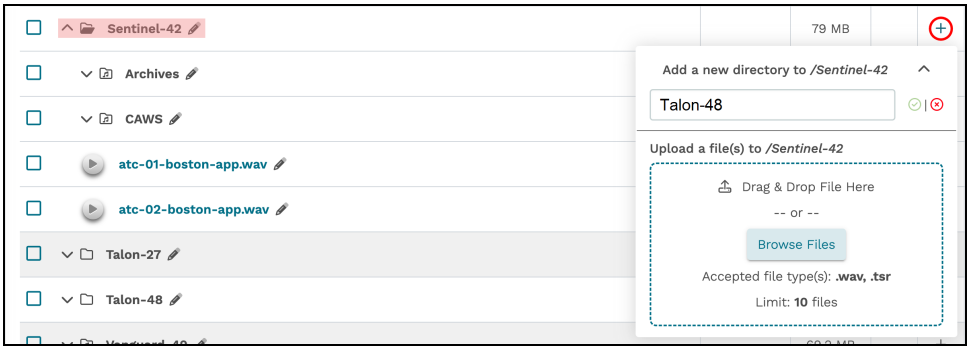

Figure 240: Add a waveset from the table

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The new waveset appears on **Sound Files**:

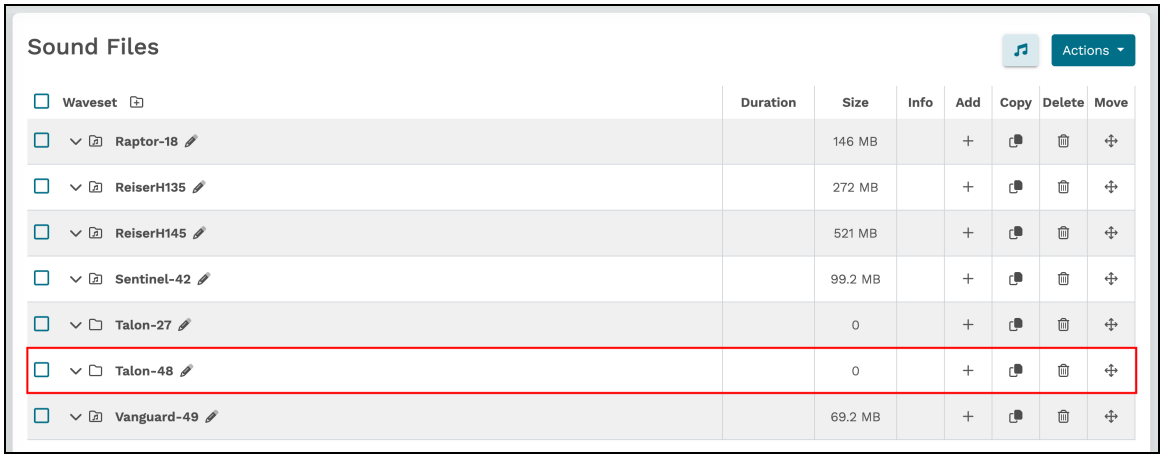

Figure 241: New waveset on Sound Files

14.1.2 Upload sound files

To upload one or more sound files to **Sound Files**, follow these steps:

1. On **Sound Files**, go to **Actions** > **Upload**.

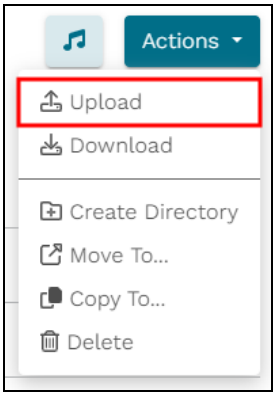

Figure 242: Upload sound file(s)

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2. Choose a destination waveset, or select the new waveset (🗀+) icon to create a new waveset.

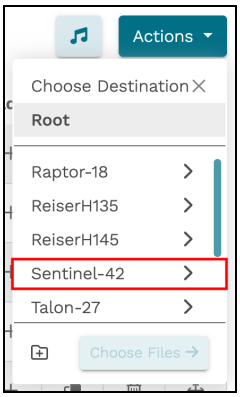

Figure 243: Choose an upload destination

3. Select Choose Files →.

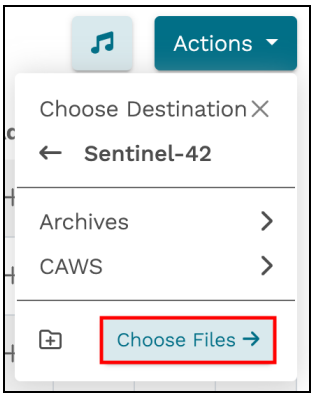

Figure 244: Choose Files

4. Select Browse Files, and find the Waveform Audio File Format (.wav) or Telestra Sound Recording (.tsr) files on your local system. Alternatively, drag and drop the files inside the dotted lines.

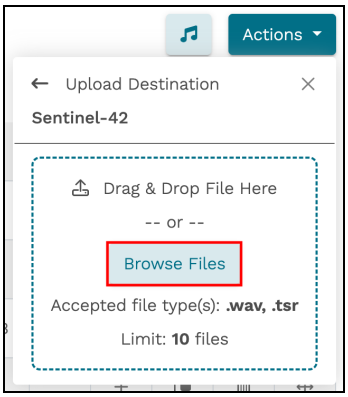

Figure 245: Browse to local sound files

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5. Select Upload 1 file.

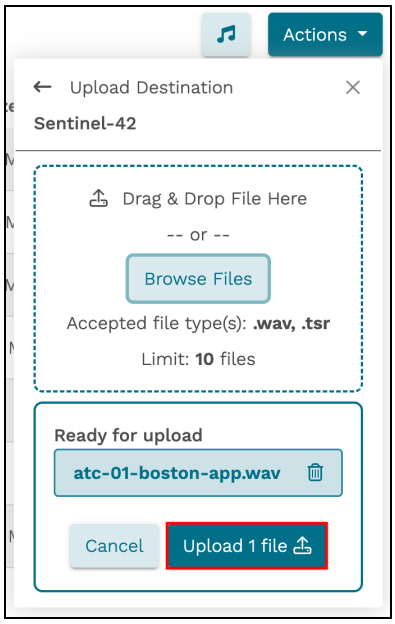

Figure 246: Upload a sound file

***Note**: The number on the button reflects the number of uploaded sound files.*

The uploaded sound file appears in the destination waveset that you selected in Step 2:

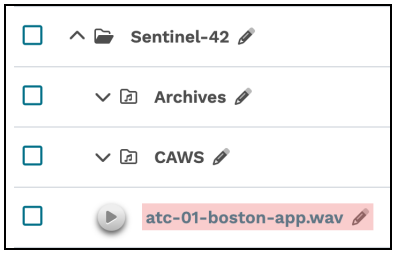

Figure 247: Uploaded sound file

14.1.3 Edit a waveset or sound file's name

To edit the name of a waveset or sound file, follow these steps:

1. On **Sound Files**, choose an item to edit.
2. Next to the item's name, select the pencil icon (✎).

Figure 248: Sound file pencil icon

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3. Enter a unique name for the waveset or sound file. This waveset name should match the name of a sound library in your Studio project.

Figure 249: New name for sound file

4. Select ⊘ to save changes ⊗ to cancel.

14.1.4 Move a waveset or sound file into another waveset

To move a waveset or sound file via drag and drop, follow these steps:

1. To move the waveset or sound file into to another waveset (i.e., make it a sub-directory), under **Move**, select and move the arrow cross (✣) icon to the desired location.

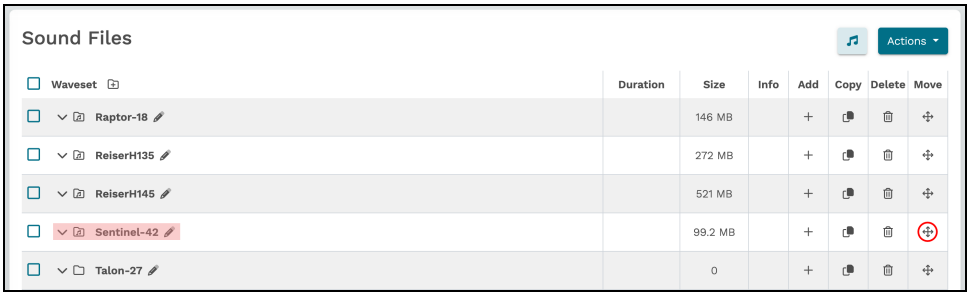

Figure 250: Move a waveset via drag and drop

2. To restore the waveset or sound file to the root level, select the arrow cross (✣) and move it to the header row:

Figure 251: Drag and drop a waveset to the root

***Note**: Invalid destinations (i.e., the current directory, sound files) are disabled, as shown above.*

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To move a waveset sound file into another waveset via the **Actions** menu, follow these steps:

1. Select a waveset or sound file.
2. In the top right, go to **Actions** > **Move To...**

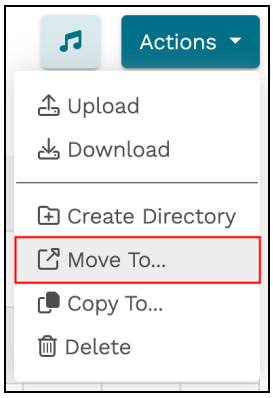

Figure 252: Actions > Move To...

3. Choose a destination waveset, or select the folder-plus (⊞) icon to create a new waveset.
4. Select Move.

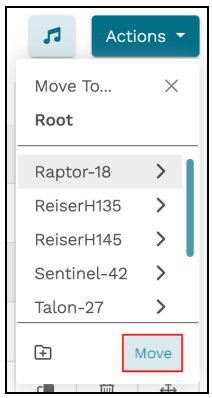

Figure 253: Destination waveset in Actions

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14.1.5 Copy a waveset or sound file to another waveset

To copy multiple wavesets or sound files to another waveset, follow these steps:

1. On **Sound Files**, select the items you want to copy.
2. In the top right, go to **Actions** > **Copy To...**

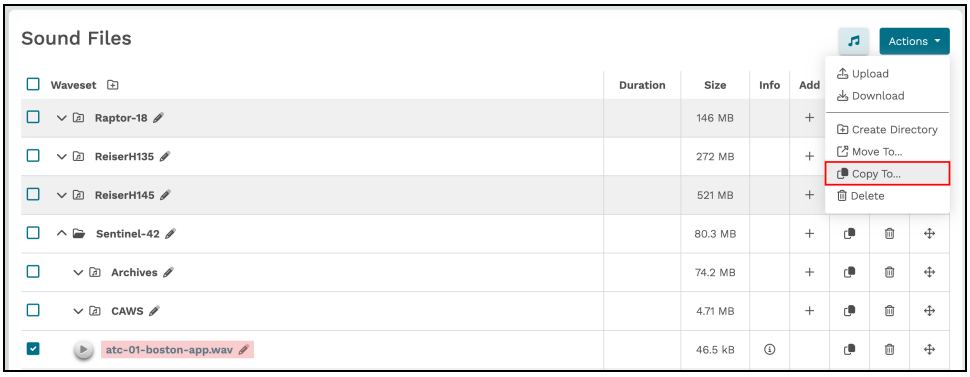

Figure 254: Choose items to copy

3. From the menu options, choose a destination waveset.

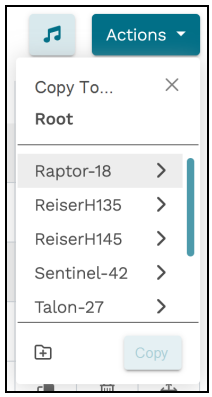

Figure 255: Choose a destination waveset

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4. Select Copy.

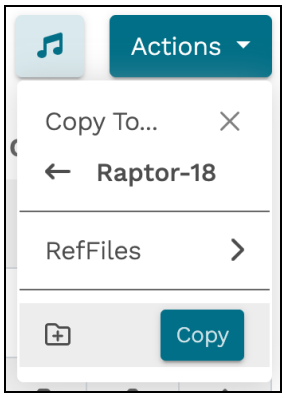

Figure 256: Copy selected items to another waveset

5. *(Optional)* Alternatively, select **Copy** (⧉) from the table to copy an individual waveset or sound file. Choose a destination waveset, and select Copy.

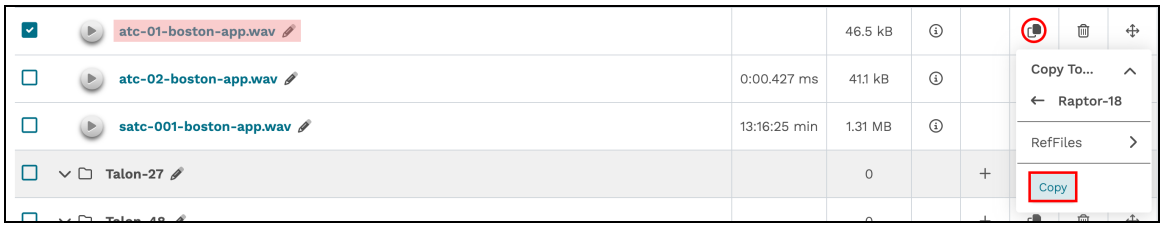

Figure 257: Copy To... another waveset via the table

6. In the confirmation message, select Confirm. The copied items now appear in the destination waveset:

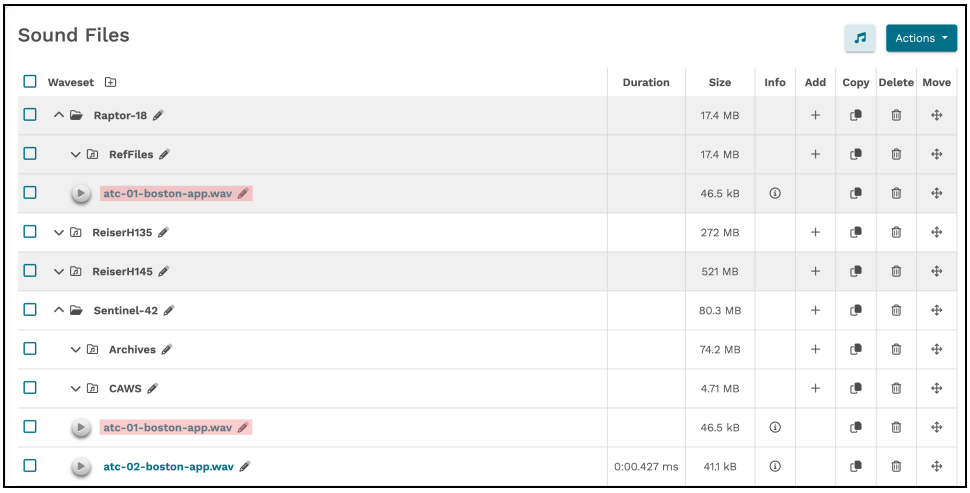

Figure 258: Copied sound files

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14.1.6 Preview a sound file

To preview a sound file, follow these steps:

1. On **Sound Files**, choose a sound file.
2. Select the sound file's play button (). At the top of the page, the audio player expands and plays the .wav file from your computer's speakers. The page highlights the currently playing sound file:

Figure 259: Audio player

3. To stop the audio and keep the playhead's position, select **Pause audio** ().
4. To stop the audio and reset the playhead to the start, select **Stop audio** ().

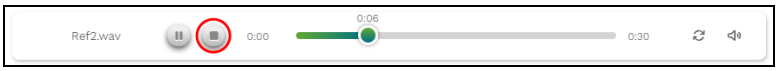

Figure 260: Stop playing audio

Alternatively, select the play, pause, or stop button next to the sound file in the table:

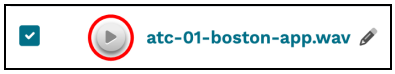

Figure 261: Play, pause, or stop the audio from the table

5. *(Optional)* To continually repeat the audio, select **Loop audio** ().
6. *(Optional)* Select **Volume control** () to adjust the volume up or down.

Figure 262: Volume control

7. *(Optional)* To toggle the audio player, select the double note ().

14.1.7 View a sound file's metadata

To view a sound file's metadata, follow these steps:

1. On **Sound Files**, choose a sound file.
2. Under **Info**, select the sound file's information icon (ⓘ), and a pop-up window displays the following:
   - Creation date and time
   - Date and time of last modification
   - Sample rate (e.g., 48 kHz)
   - Sample time (e.g., PCM16)
   - Number of channels, if any

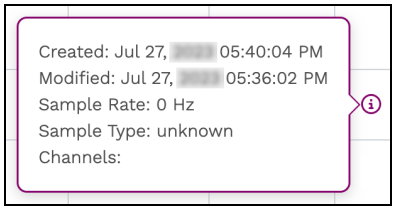

Figure 263: Sound file metadata

14.1.8 Download a sound file or waveset

To download one or more sound files or wavesets to your local system, follow these steps:

1. On **Sound Files**, select a sound file or waveset.
2. In the top right, go to **Actions** > **Download**.

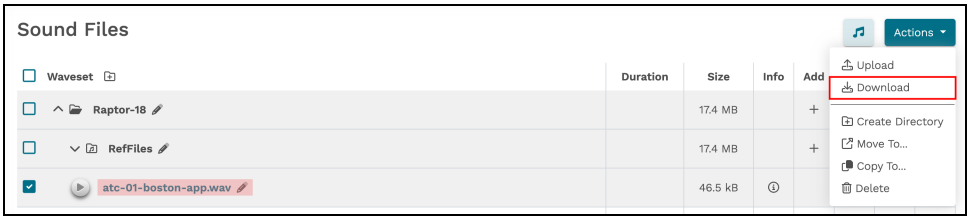

Figure 264: Download the selected waveset

3. In the confirmation window, select Confirm.
4. Save the sound files or wavesets to your local system, a USB device, or an external hard drive.

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14.1.9 Delete a waveset or sound file

To permanently remove one or more wavesets or sound files, follow these steps:

1. On **Sound Files**, select the items you want to delete.
2. In the top right, go to **Actions** > 🗑 **Delete**.

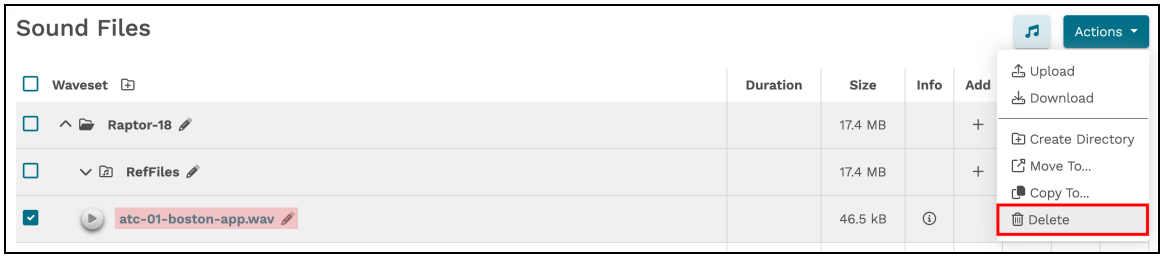

Figure 265: Delete a waveset via Actions

Alternatively, to delete a single item, under **Delete**, select the trash can (🗑).

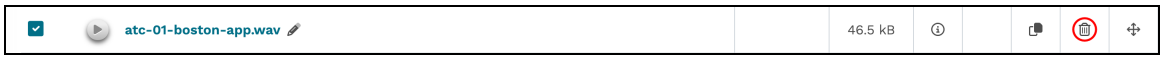

Figure 266: Delete a waveset via the trash can icon

3. In the confirmation message, select Confirm, and the deleted items disappear from **Sound Files**.

14.2 Spectral Analysis

Spectral analysis assesses the accuracy and fidelity of a simulator's auditory cues. During Level D certification, a regulatory agency (e.g., the FAA) compares a simulator's sound effects to the real aircraft. These effects include engine noises, ambient sounds, warning alarms, and other audio cues that pilots encounter during an actual flight. High-fidelity sounds help create an immersive training experience meeting the highest standards.

The **Spectral Analysis** page compares aircraft recordings to simulator recordings that engineers produced with Studio's **LevelDCapture** or **RecordReplay** components. It then generates performance plots that you can send to the FAA or another regulatory agency for Level D certification.

Conducting spectral analysis in the Telestra web interface requires multiple steps:

1. Upload one or more wavesets (i.e., actual aircraft recordings) on **Sound Files**, as described in Section 14.1, "Sound Files" on page 132.

   These wavesets appear on **Spectral Analysis** > **Wavesets**, where you can choose a waveset to configure and analyze. To learn more about wavesets, go to Section 14.2.1, "Choose a waveset to configure and analyze" on the next page.

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2. Define the **Test Cases** to include in your simulator's performance plots, as described in Section 14.2.2, "Define spectral analysis test cases" on the facing page.
3. Use **Reference Sets** to create, store, and review your simulator's initial baseline and past performance data. To learn more about reference sets, go to Section 14.2.3, "Map reference sets to test cases on Aircraft Baseline" on page 150.
4. Complete **Analysis** by mapping the test cases and reference sets to simulator (i.e., Telestra) recordings, as described in Section 14.2.4, "Map Telestra recordings to reference files and test cases" on page 151.
5. To view, download, and archive this performance data for future certifications, go to Section 14.2.5, "Compare spectral analysis absolute and difference results" on page 154, Section 14.2.9, "Download spectral analysis results" on page 163, and Section 14.2.8, "Save spectral analysis results" on page 161.

14.2.1 Choose a waveset to configure and analyze

To choose a waveset to configure and analyze, follow these steps:

1. On **Audio** > **Sound Files**, upload pertinent aircraft and simulator speaker reference files and Telestra recordings, and organize them into waveset directories. To add and manage sound files, go to Section 14.1, "Sound Files" on page 132.
2. Go to **Audio** > **Spectral Analysis**.

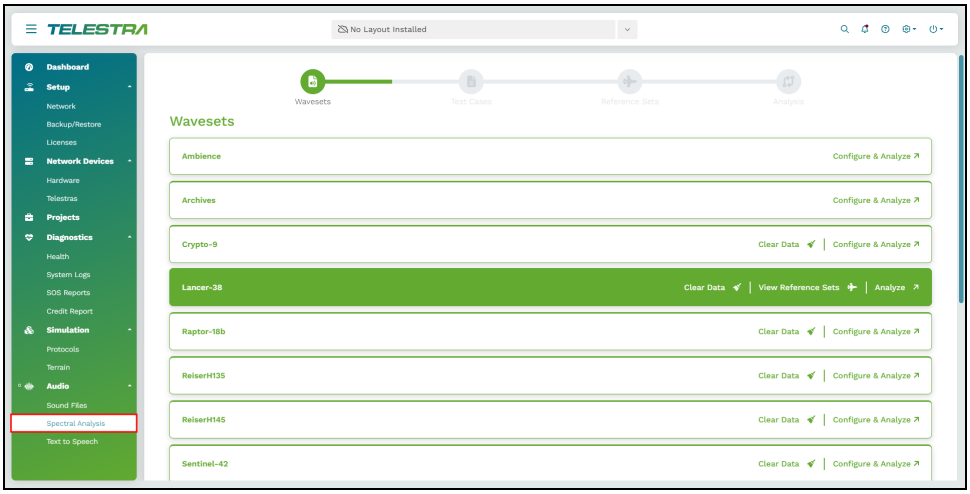

Figure 267: Spectral Analysis navigation

This page displays all the wavesets on **Sound Files**. Green wavesets contain saved spectral analysis results, whereas white wavesets are blank. To edit the recordings associated with a waveset, go to **Sound Files**.

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3. *(Optional)* Telestra automatically saves test cases, reference sets, and mapping configurations associated with a waveset, even if you don't save any results. To clear these configurations and start fresh, select **Clear Data**.

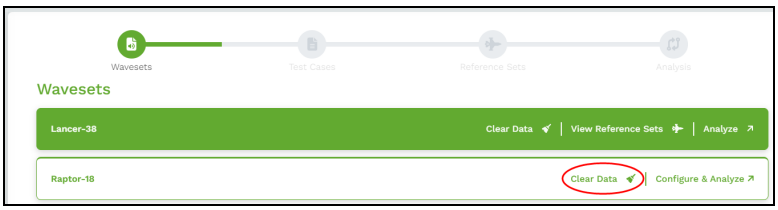

Figure 268: Clear existing waveset data

4. On **Wavesets**, choose a waveset, and select **Configure & Analyze**.

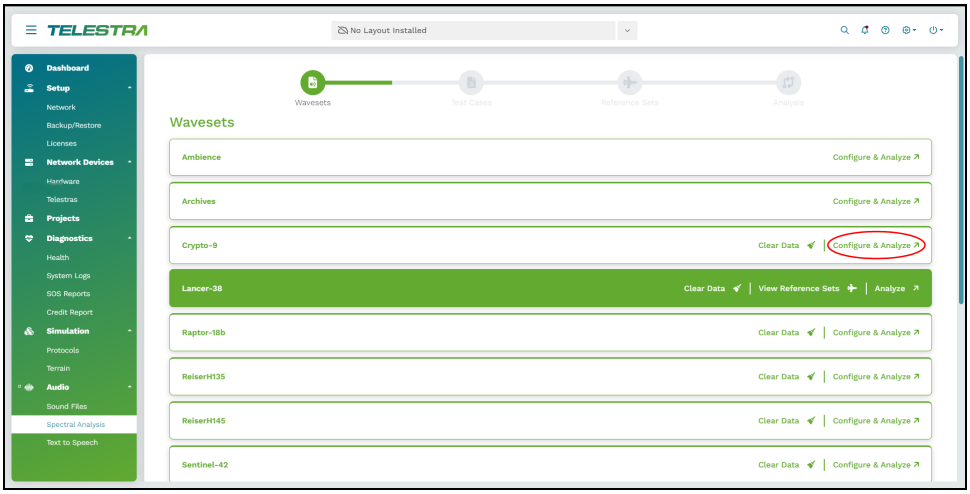

Figure 269: Spectral Analysis wavesets

14.2.2 Define spectral analysis test cases

In spectral analysis, a test case refers to a specific set of input data or conditions that the Federal Aviation Administration (FAA) or other regulatory agencies use to evaluate simulated audio's performance and accuracy. On the **Test Cases** page, you will need to define which **Aircraft** and **Simulator** speaker test cases to analyze. This page also includes a **Background Noise Profile**, a predefined FAA allowance curve that Telestra uses as a baseline. This curve complies with background noise levels that the FAA and other regulatory agencies mandate.

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To add a custom **Aircraft** or **Simulator** speaker test case to **Spectral Analysis**, follow these steps:

1. To add a generic test case template, under **Aircraft** or **Simulator**, select **Add Test Case** (+).

Figure 270: Generic Aircraft test case template

2. An **Aircraft ID** number references a predefined load condition or maneuver that occurs during testing, such as takeoff, landing, or turbulence. Likewise, a **Simulator ID** references a simulator speaker number. To edit the **ID**, select the pencil (✎) icon, and enter a unique number or character sequence.

***Important**: Make sure the test case ID matches the end of your sound file name (e.g., **5b1** in soundfile_**5b1.wav** or **11** in soundfile_**11.wav**). Telestra uses these unique identifiers to automatically match sound files in a waveset to corresponding test cases.*

3. For **Aircraft** test cases, **State** describes the aircraft configuration, operational mode, or environmental conditions that regulatory agencies use to evaluate the aircraft's safety and performance (e.g., "All propellers feathered, if applicable."). For **Simulator** test cases, **State** identifies the speaker position (e.g., **Left Forward**).

   To edit the **State**, select the pencil (✎) icon, and enter a unique phrase.

Figure 271: ID and State for custom test case

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4. To add a predefined, regulatory test case, follow these steps, select the dropdown arrow, and choose one or more test cases from the listed options (e.g., **5b1 - Ready for engine start.** for aircraft, **Left Forward** for speakers). Alternatively, select the category header (e.g., **Fixed Wing Propeller**, **Speakers**) to add a set.

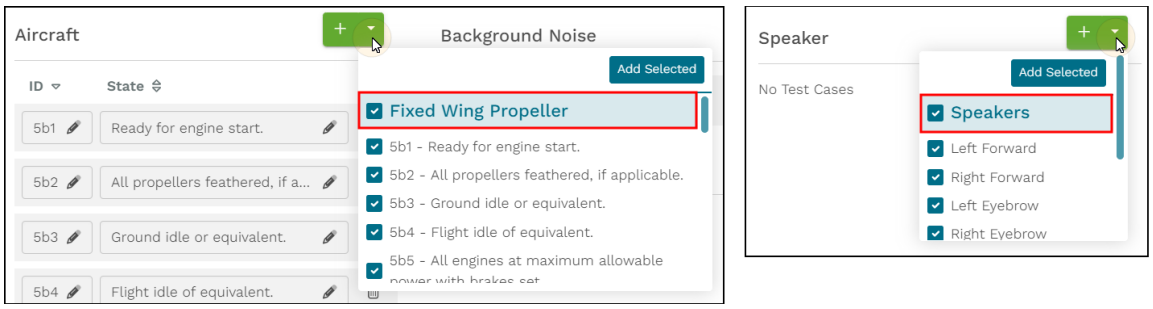

Figure 272: Add a set of test cases

5. Select Add Selected, and the test cases that you selected populate the page:

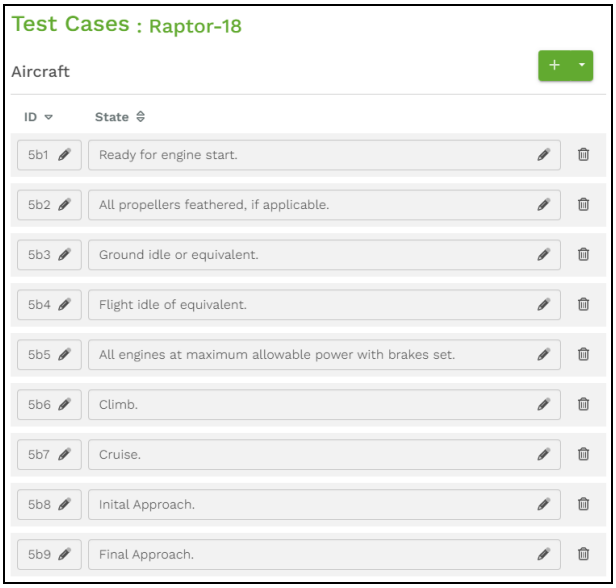

Figure 273: Populated test cases

6. To permanently delete a test case, select the trash can (🗑).

7. Select Reference Sets → to continue.

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14.2.3 Map reference sets to test cases on Aircraft Baseline

Next, Telestra brings you to **Reference Sets**, where you will map the test cases you previously defined to aircraft reference files. If this is the first time you're configuring a waveset and/or certifying a simulator, you will see the **Aircraft Baseline** tab, which stores original aircraft recordings that engineers use for tuning reference before certification. These recordings serve as the control sample for future certifications.

To map reference sets on **Aircraft Baseline**, follow these steps:

1. On **Aircraft Baseline**, click **Select a Subdirectory**, and choose the subdirectory that contains your original aircraft recordings. These recordings serve as a tuning reference before certification and the control sample for future certifications.

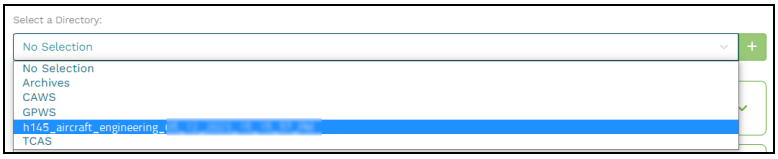

Figure 274: Aircraft Baseline subdirectory

2. Select the plus sign (+), and the subdirectory appears on the page.
3. Expand the subdirectory to view the test cases you defined in Section 14.2.2, "Define spectral analysis test cases" on page 147.

Figure 275: Expanded Aircraft Baseline reference set

4. Telestra automatically matches the last digit in the sound file name to the test case ID (e.g., **Test Case ID 5a1** matches **AW169_5a1.wav**). Verify each mapping is correct, and make adjustments if needed.

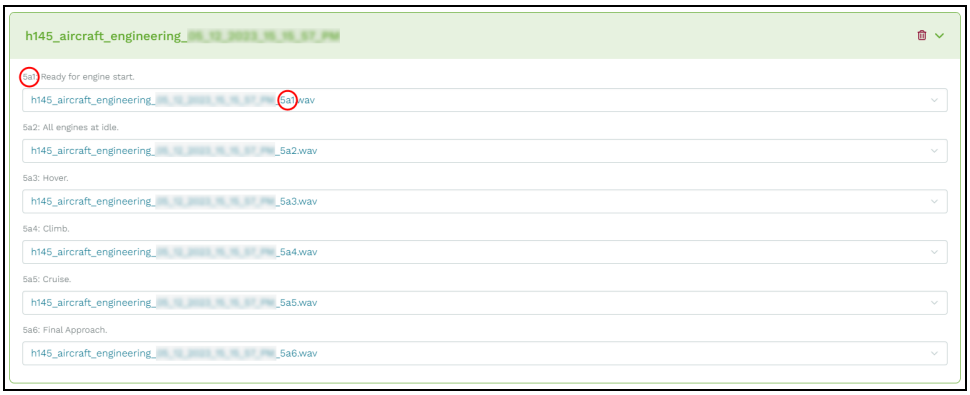

Figure 276: Matching IDs in reference set

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5. *(Optional)* To delete a subdirectory, select the trash can (🗑).

Figure 277: Delete a reference set subdirectory

6. Select Analysis → to proceed.

14.2.4 Map Telestra recordings to reference files and test cases

To map your Telestra recordings to the aircraft reference recordings and test cases, follow these steps:

1. On **Analysis**, confirm **Aircraft Reference Set** displays the correct directory. By default, this field displays the aircraft reference set you selected in Section 14.2.3, "Map reference sets to test cases on Aircraft Baseline" on the previous page. If needed, select the dropdown box to change directories.

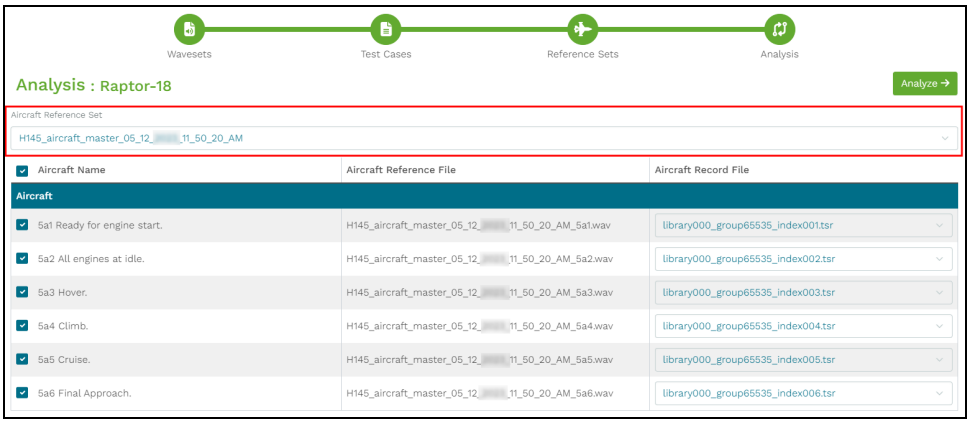

Figure 278: Verify Aircraft Reference Set

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2. Review the list of test cases, **Aircraft Reference Files** (i.e., original aircraft recordings), and **Aircraft Record Files** (i.e., synthetic Telestra recordings), and select the mappings you want to analyze.

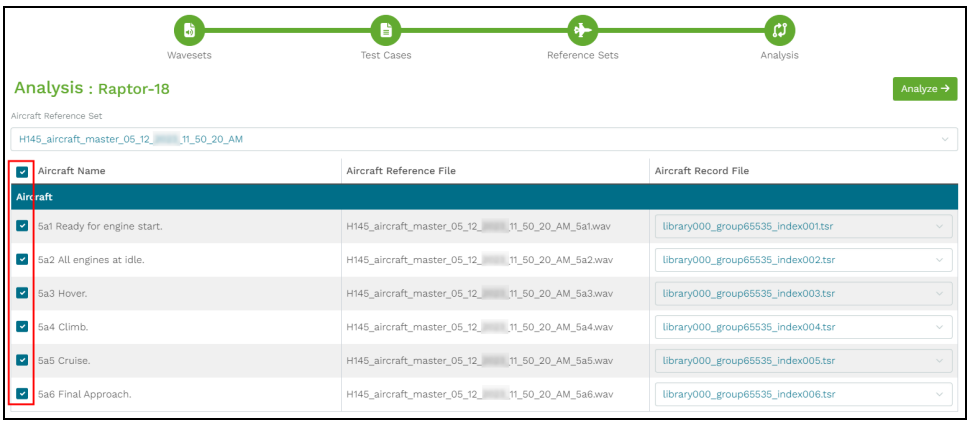

Figure 279: Choose aircraft mappings to analyze

3. Telestra automatically matches the last digit in the .tsr file name to the last digit of the **Aircraft Reference File** name (e.g., **H145_aircraft_master..._5a1.wav** matches **library000_group65535_index001.wav**).

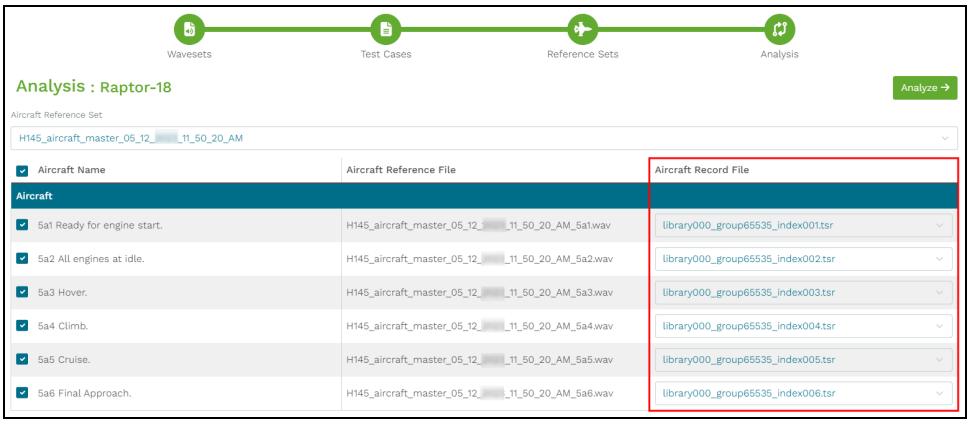

Figure 280: Review Aircraft Record File mappings

Verify **Aircraft Record File** is correct, and make adjustments if needed.

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4. If this is the first time you're analyzing a waveset, **Simulator Reference Set** shows no selection because you haven't created any simulator reference sets yet. Proceed to the next step.

   If you're recertifying a waveset, confirm **Simulator Reference Set** displays the correct subdirectory. By default, this field populates the speaker reference set you selected in Section 14.2.3, "Map reference sets to test cases on Aircraft Baseline" on page 150. Telestra will compare this reference set against the new simulator recordings.

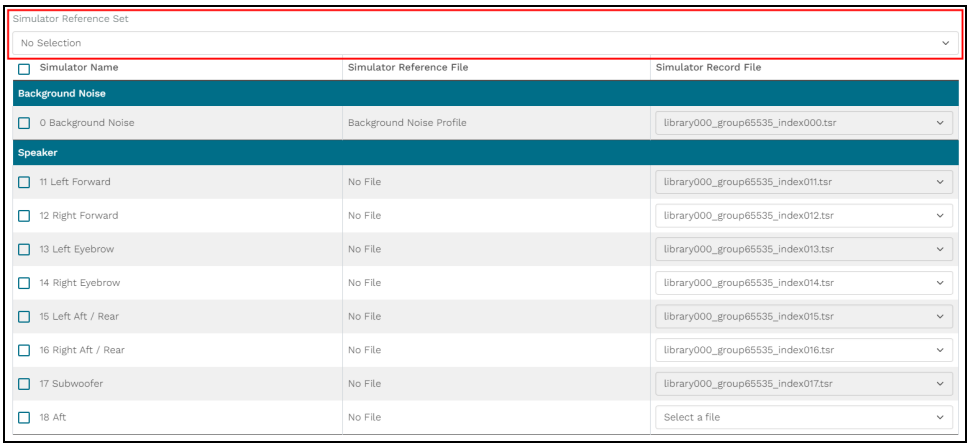

Figure 281: Verify Simulator Reference Set

5. Review the list of test cases, **Simulator Reference Files** (i.e., original simulator speaker recordings), and **Simulator Record Files** (i.e., synthetic Telestra recordings), and select any mappings you want to analyze.

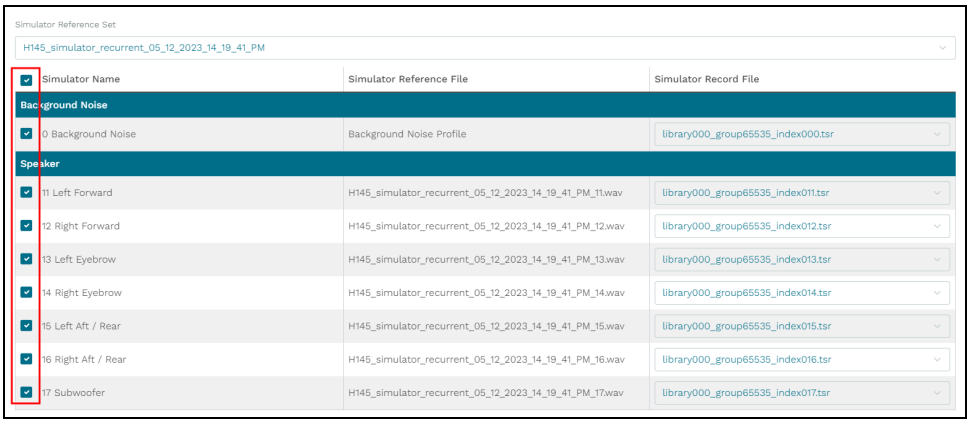

Figure 282: Choose simulator speaker mappings to analyze

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6. Telestra automatically matches the last digit in the .tsr file name to the last digit of the **Simulator Reference File** name (e.g., **H145_simulator_recurrent...11.wav** matches **library000_group65535_index0011.tsr**). Verify each mapping is correct, and make adjustments as needed.

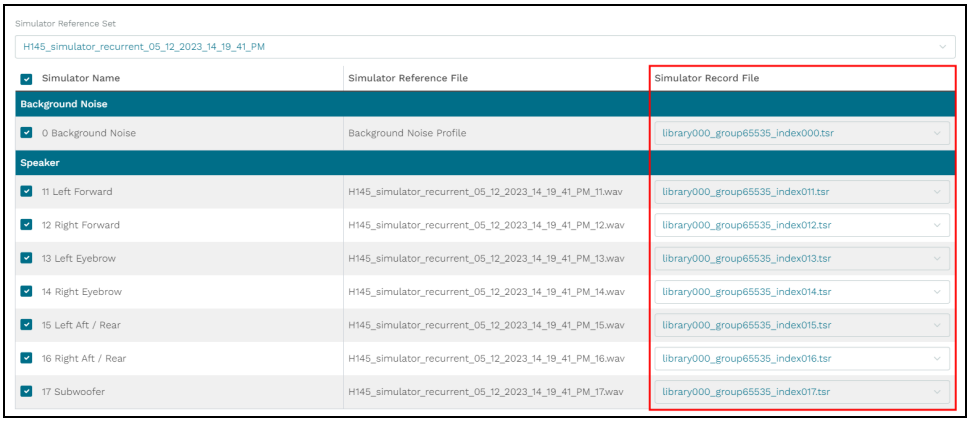

Figure 283: Review Simulator Record File mappings

7. To view spectral analysis results, select Analyze →.

14.2.5 Compare spectral analysis absolute and difference results

After analyzing the reference sets and simulator recordings, Telestra brings you to **Spectral Analysis Results**. This page displays performance plots for each test case, visually assessing how closely the Telestra recordings match the reference sets. The performance plots depicted here identify specific frequencies or ranges where improvements may be needed to achieve a more accurate and realistic simulation.

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On the left, **Spectral Analysis Results** lists all of the aircraft and simulator speaker test cases that you previously defined. Select the name of each test case to view a graph of its performance plots:

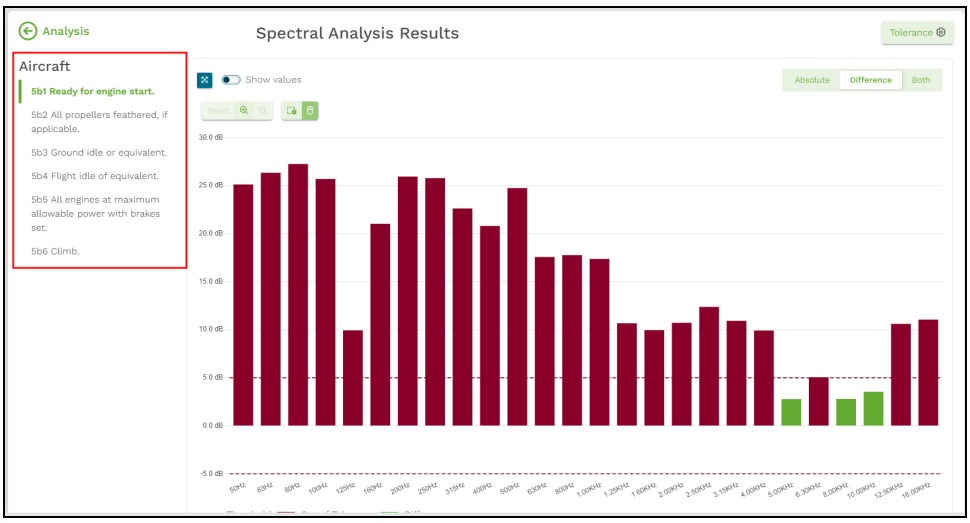

Figure 284: Test case performance plots

The X-axis represents the frequency range, typically measured in Hertz (Hz). It covers the audible spectrum from low frequencies (e.g., 50 Hz) to high frequencies (e.g., 16.00 kHz). The Y-axis, on the other hand, represents the amplitude or intensity of the audio signal, measured in decibels (dB). It indicates the strength or loudness of the sound at each frequency.

By default, the graph shows the **Difference** between the reference set and Telestra recording. **Difference** displays one bar representing the reference and recording data's difference in magnitude (e.g., a 1 dB bar at 50 Hz). Hover over a band to view its individual difference in Hz.

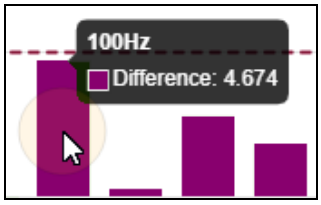

Figure 285: Individual band difference

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To simultaneously display the differences of all bands, turn on **Show values**. Likewise, turn off **Hide values** to remove them.

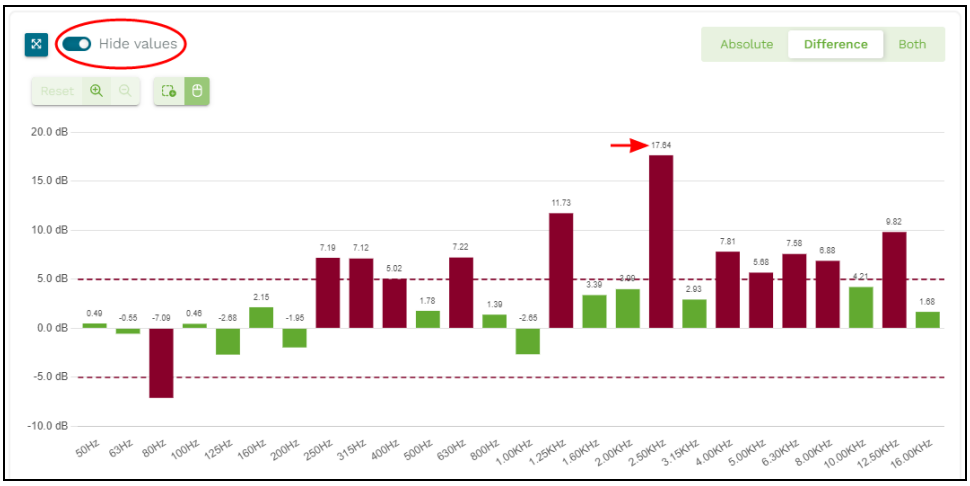

Figure 286: Show/hide band values

To view a band-by-band comparison of the reference file and Telestra recording, select **Absolute** (

).

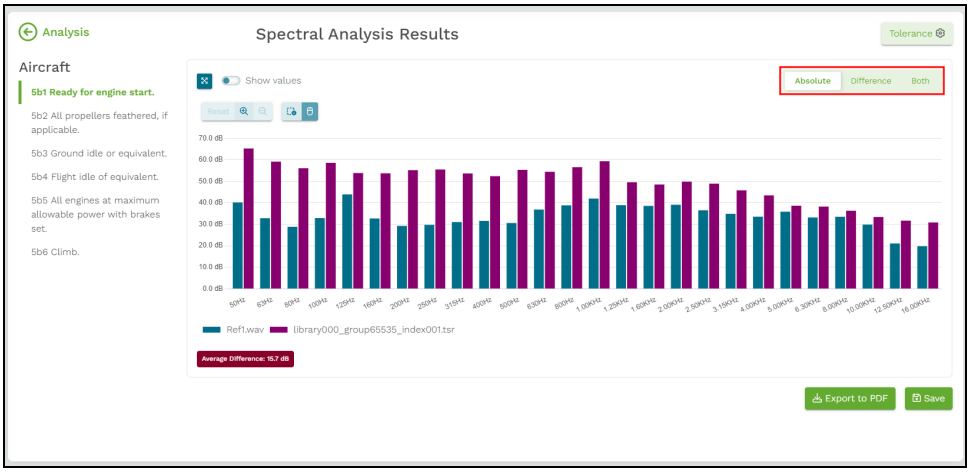

Figure 287: Absolute view of Spectral Analysis Results

Absolute displays a graph with both reference and recorded data (e.g., reference data of 90 dB at 50 Hz and recorded data of 91 dB at 50 Hz). Blue bands represent reference data, whereas purple bands represent recorded data (i.e., Telestra recordings).

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To view **Absolute** and **Difference** plots side by side, select **Both** (

).

Figure 288: BothAbsolute and Difference view

The **Absolute** view appears on the left, while the **Difference** view appears on the right.

14.2.6 Expand or zoom in on spectral analysis results

To collapse the vertical sidebar and view spectral analysis results full screen, select **Enlarge View** (). Likewise, select **Minimize View** () to expand the sidebar and revert to the graph's default size.

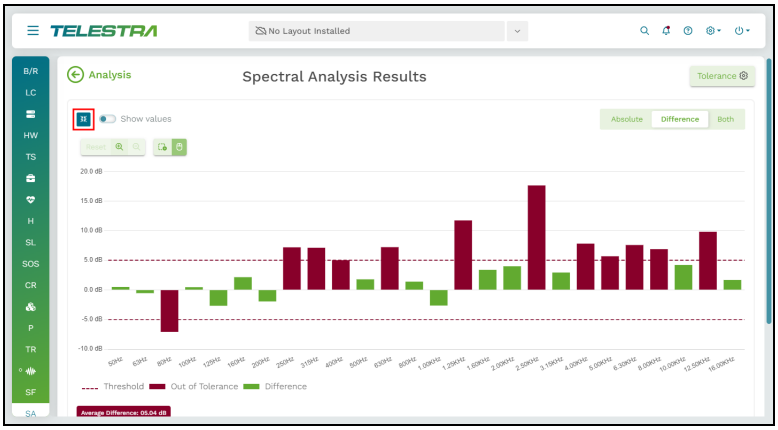

Figure 289: Minimize spectral analysis results

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To zoom in on spectral analysis results, select **Zoom in** ( ) until you have reached the desired level of detail. Likewise, select **Zoom out** ( ) to view less detail.

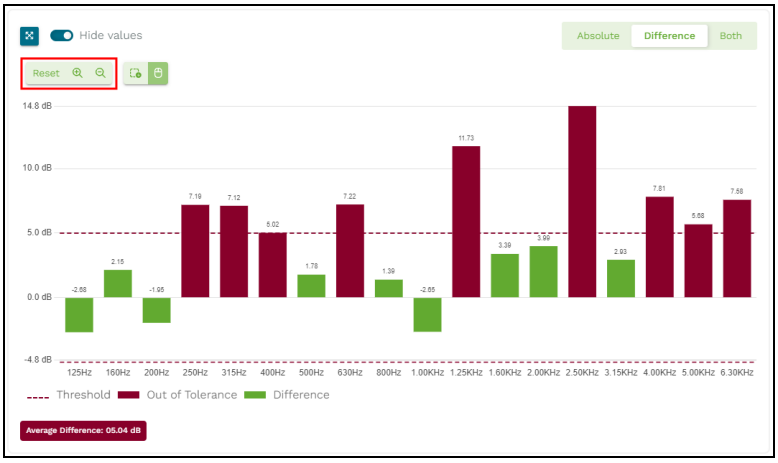

Figure 290: Zoom in on spectral analysis results

To zoom in on a particular section, select **Enable Drag to Zoom** ( ), and select and drag a box over the graph. Select the bidirectional arrows (, , ,) to move forward, backward, up, or down along the graph.

Figure 291: Enable Drag to Zoom

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Select Reset to revert the graph to its default view.

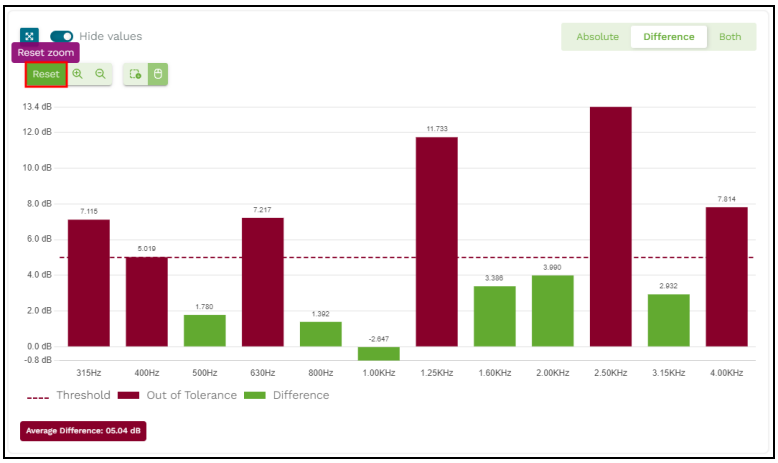

Figure 292: Reset the spectral analysis graph

14.2.7 Adjust spectral analysis tolerance settings

To flag out-of-tolerance bands, in the top right, go to Tolerance, and turn on **Check Tolerance**. Green bands are within tolerance, whereas red bands are not. This setting is enabled by default.

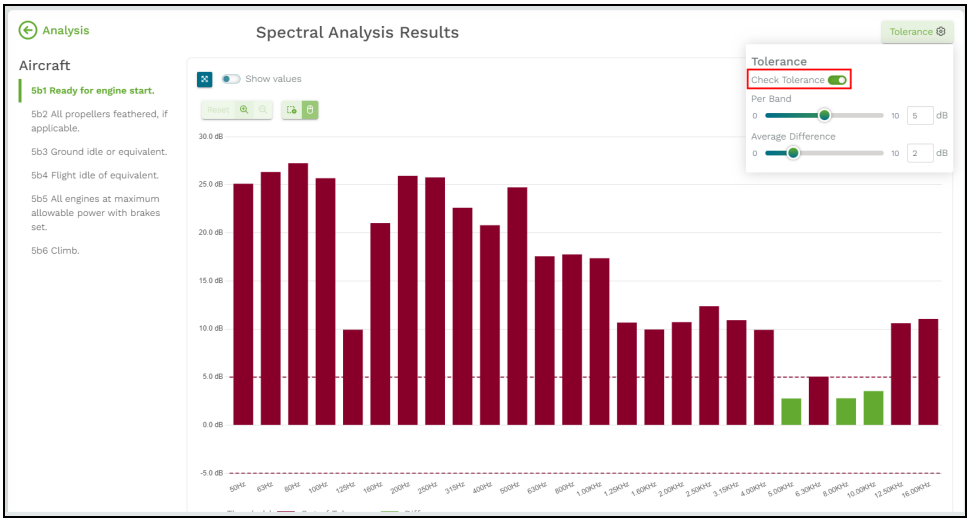

Figure 293: Out-of-tolerance bands

***Note**: Exported PDF results do not display out-of-tolerance bands.*

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Two dotted lines identify the tolerance threshold. By default, the tolerance threshold is +5 dB to -5 dB.

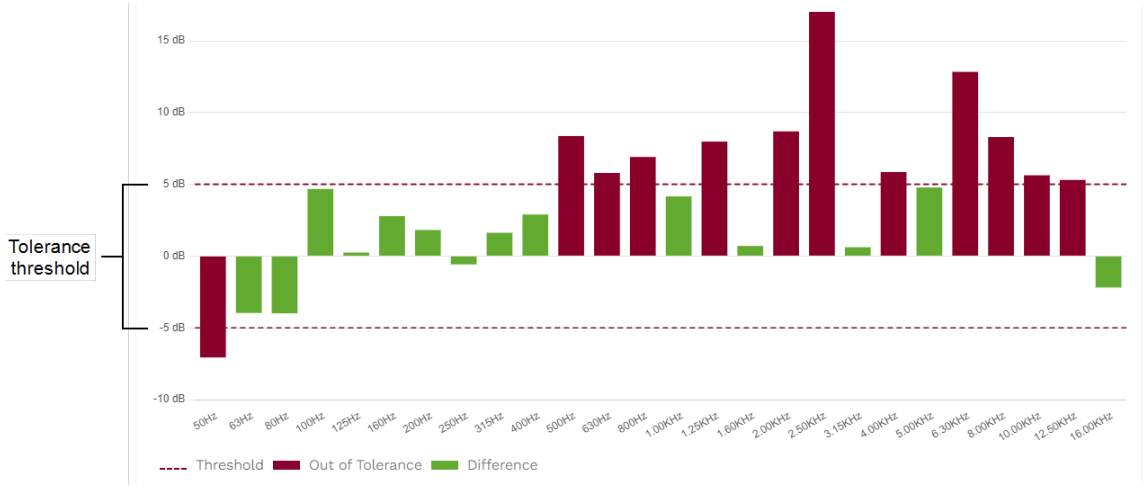

Figure 294: Tolerance threshold

To adjust the threshold at which Telestra marks the data as "out of tolerance," move the **Per Band** slider. For example, if **Per Band** is the default value of 5 decibels (dB), and the band's value is 10 dB, the data is out of tolerance.

In the bottom left, the **Average Difference** displays in dB. The default **Average Difference** tolerance is 2 dB.

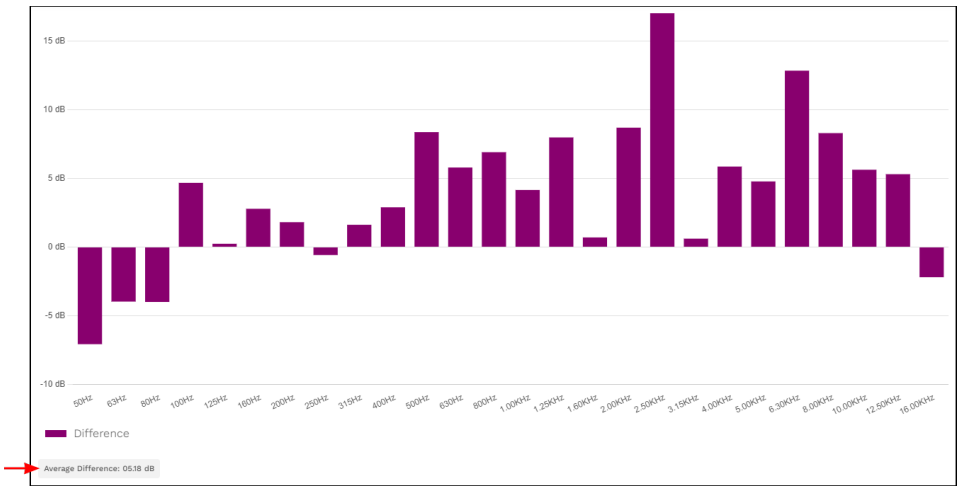

Figure 295: Average Difference

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To adjust the threshold at which Telestra considers the **Average Difference** out of tolerance, move the **Average Difference** slider. For example, if **Average Difference** is the default value of 2 decibels (dB), and the recording's **Average Difference** is 10 dB, the recording is out of tolerance.

Figure 296: Per Band and Average Difference

14.2.8 Save spectral analysis results

To archive spectral analysis results in the Telestra web interface, follow these steps:

1. On **Spectral Analysis Results**, select Save.

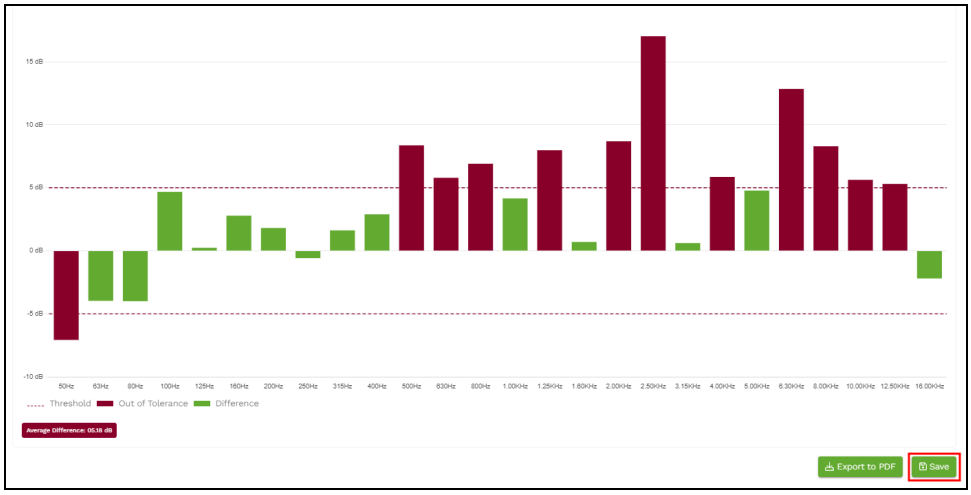

Figure 297: Save spectral analysis results

2. When **Save Reference Sets** opens, select **Aircraft** (Aircraft Simulator Both) to save only aircraft results, **Simulator** (Aircraft Simulator Both) to save only simulator speaker results, or **Both** (Aircraft Simulator Both) to save separate copies of aircraft and simulator speaker results.

***Note**: These options show up based on available results. For example, if you analyze aircraft results but not speaker results, the slider buttons won't display, permitting you to save only aircraft results.*

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3. In **Name**, enter unique names for the aircraft and/or simulator speaker results.
4. Under **Aircraft** and/or **Simulator**, select **Kind**, and choose one of the following result types:
   - ***Master**:* Telestra creates a "master" copy and archives it on **Reference Sets** > **Master**. Choose this option if you plan to send these results to the FAA or another regulatory agency for the simulator's original certification.
   - ***Recurrent**:* Telestra archives a copy of the results on **Reference Sets** > **Recurrent**. Choose this option if the simulator is already certified and you plan to use these results for recertification.
   - ***Engineering**:* Telestra archives a copy of the results on **Reference Sets** > **Engineering**. Choose this option to create a snapshot of intermediate, unofficial results for future reference.

   To save **Aircraft** or **Simulator** results as **Master** or **Recurrent**, you must analyze all corresponding test cases on **Analysis**. Otherwise, **Master** and **Recurrent** are unavailable, and you can only save as **Engineering**. For example, to save **Aircraft** results as **Master** or **Engineering**, go to **Analysis**, select all **Aircraft** test cases, and verify that each test case maps to a Telestra Sound Recording (.tsr) file.

   Figure 298, "Save Reference Sets" below shows aircraft and simulator speaker options to **Save Reference Sets**:

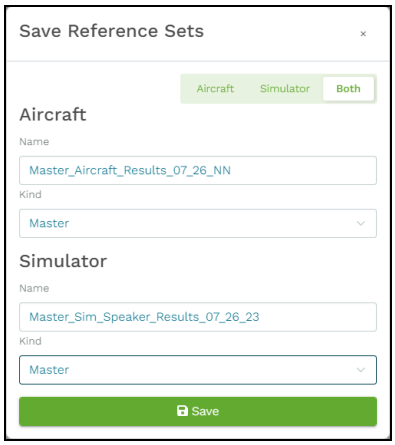

Figure 298: Save Reference Sets

5. Select Save.

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14.2.9 Download spectral analysis results

To download spectral analysis results, follow these steps:

1. On **Spectral Analysis Results**, select Export to PDF.

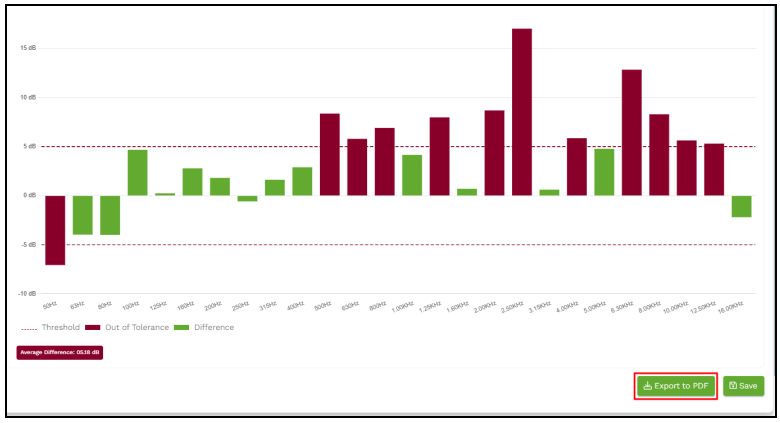

Figure 299: Export spectral analysis results as a PDF

2. In **Export to PDF**, clear the **Aircraft** and **Simulator** speaker test cases that you don't want to include.

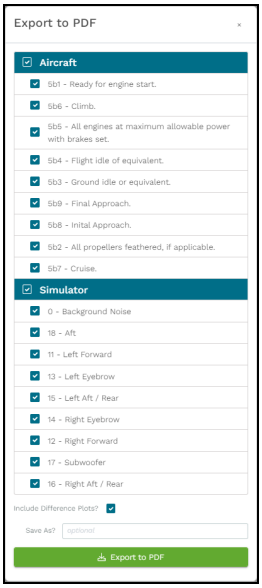

Figure 300: Spectral analysis export options

3. To remove difference plots from the PDF, clear **Include Difference Plots?**
4. In **Save As?**, enter a unique name for the PDF.
5. Select Export to PDF, and the PDF downloads to your local system.

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14.3 Text to Speech

Telestra includes its own built-in text-to-speech (TTS) capability. To take advantage of this feature, make sure the TTS option is enabled on your USB License Key. To learn more about licensing options, go to Section 9.3, "Licenses" on page 45. To purchase a TTS licensing option, contact sales@asti-usa.com.

To preview ASTi's selection of TTS voices, follow these steps:

1. On the left, go to **Audio** > **Text to Speech**.

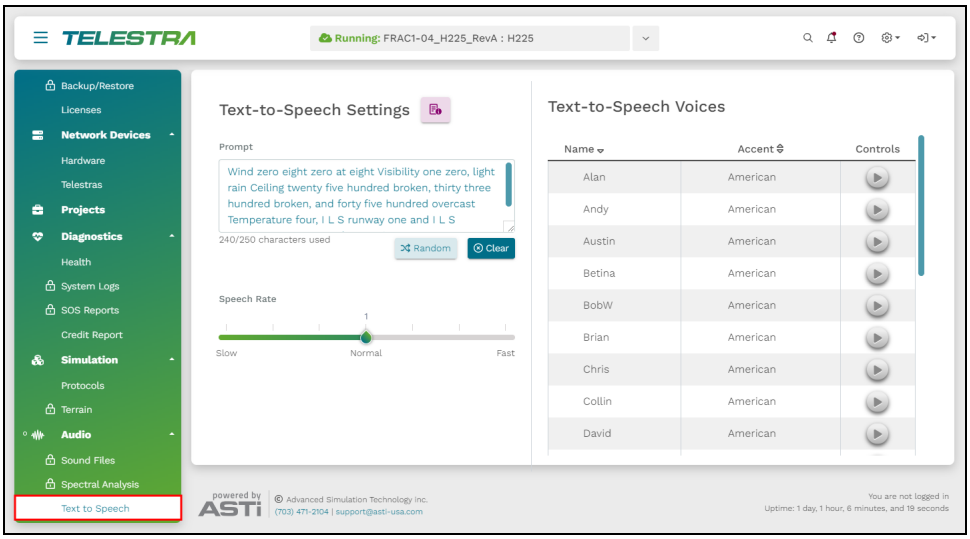

Figure 301: Text to Speech navigation

2. To generate a sample prompt, under **Text-to-Speech Settings**, select Random. Alternatively, in **Prompt**, enter your own custom message of up to 250 characters.

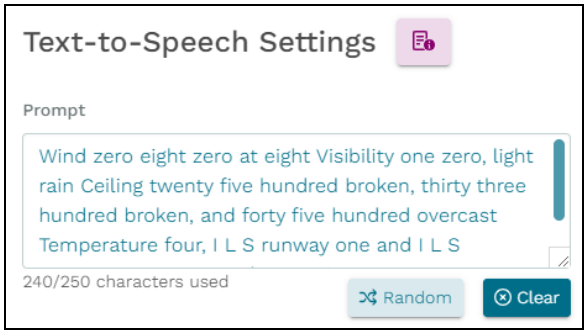

Figure 302: Sample TTS prompt

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3. Custom prompts require you to spell out numbers and acronyms and avoid special characters. To see examples of these rules, select the memo information icon ( ).

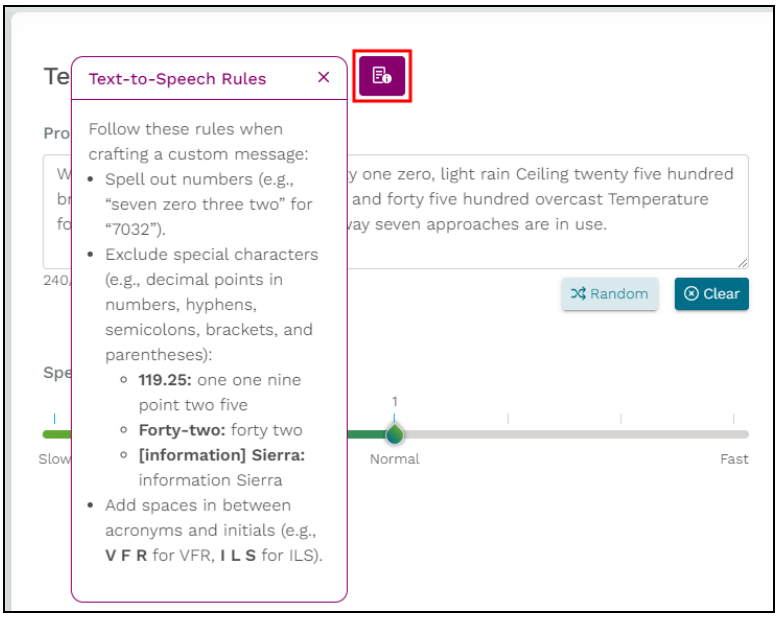

Figure 303: TTS rules

4. *(Optional)* To remove the current prompt, select Clear.

5. To adjust the speed of the TTS voice, under **Speech Rate**, move the slider ( ) to **Slow** (**0.7**) or **Fast** (**1.3**). By default, the **Speech Rate** is **Normal** (**1**).

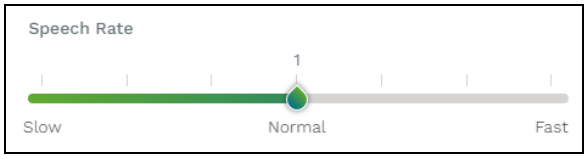

Figure 304: Speech Rate slider

6. Under **Text-to-Speech Voices**, choose a voice from the table.

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7. To preview the voice, under **Controls**, select the play button ( ). When the TTS voice loads, audio plays from your system's speaker.

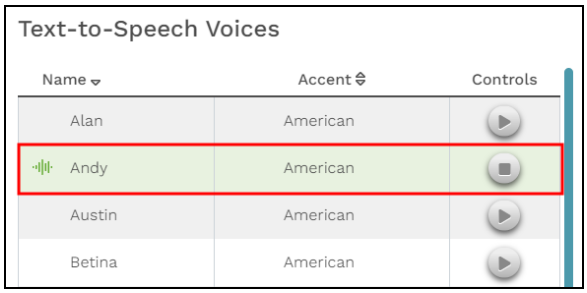

Figure 305: Playing a TTS voice

8. To stop the voice, select the stop button ( ).

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