

Telestra Server Operations & Maintenance Manual

Product Name: Telestra

Telestra Server Operations & Maintenance Manual

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Revision history

Date	Revision	Version	Comments
6/9/2022	A	0	Converted original to XML and edited for grammar and style.
6/23/2022	A	1	Updated the 2U chassis diagram to include the Power and Hard Drive LEDs.
8/17/2022	A	2	Fixed error causing wrong guide to display.
10/17/2022	A	3	Updated the 2U chassis diagram to move the Eth1 card to the third slot.
3/8/2023	A	4	Added the Red Hat Enterprise Linux and export statement to the front matter.
12/8/2023	B	0	Changed all "Remote Management System" and "RMS" references to "Telestra web interface;" changed all "Target" references to "Telestra server," including the manual title. Updated the number of USB references in "Keyboard, monitor, and mouse."
12/12/2023	B	1	Removed Studio from the required equipment list in "Telestra server network setup."
3/11/2024	B	2	Added the ASTI-SRV chassis diagram to "Chassis" and added ASTI-SRV MTBF rates to "Reliability." Added the ASTI-SRV VGA port and connector to "Set up the Telestra server."
3/12/2024	B	3	Fixed blurry image of the ASTI-SRV 2U chassis in "Chassis."

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1.0 Introduction

The Telestra server is an embedded, real-time platform that delivers high-fidelity radio, communications, and environmental cue modeling. The Telestra server connects to ASTi's flexible Audio Communications Environment Network (ACENet) architecture, which provides a wide range of low-latency, scalable, digital 48 kilohertz (kHz) audio and input/output (I/O) peripherals. This product uses the latest multicore processing technology with real-time performance and reliability. It supports a variety of additional software services and packages that meet even the highest of communications simulation requirements.

1.1 Theory of operation

- 1 The Telestra server is an embedded server that processes audio and communications. The Telestra server runs the Red Hat Enterprise Linux operating system and a suite of custom software applications that ASTi develops and maintains.

- 2 Remote audio distribution devices (e.g., ACE-RIUs, ACU2s) process audio. Headsets, press-to-talk (PTT) devices, speakers, and microphones plug into the devices. Audio digitally transmits over the ACENet to and from the Telestra server. Amplifiers also connect to the ACENet and process audio from the Telestra server. The ACENet runs over Ethernet but is different from a typical local area network between computers. The ACENet should be isolated from any other network, and each remote unit receives a name instead of an IP address.

- 3 The Telestra server runs a custom project that processes the audio and simulates radios, intercom systems, or sounds (e.g., airplane engines, the rotors of a helicopter). This project is a software load that customizes the Telestra server to a particular application (e.g., a flight simulator). Many times, a host computer sends commands to the project. In most cases, User Datagram Protocol (UDP) packets transmit back and forth between the Telestra server and the host. These commands control how audio is routed, how radios behave, or how the sound effects are processed.

- 4 The primary tool for maintenance and troubleshooting tasks is called the Telestra web interface, a web server that runs on the Telestra server. Simply point a web browser at the IP address of the Telestra server to access the Telestra web interface. You can manage the health system, ACENet statistics, and custom projects in the Telestra web interface.

Figure 1, "Theory of operation" below shows a typical Telestra hardware setup:

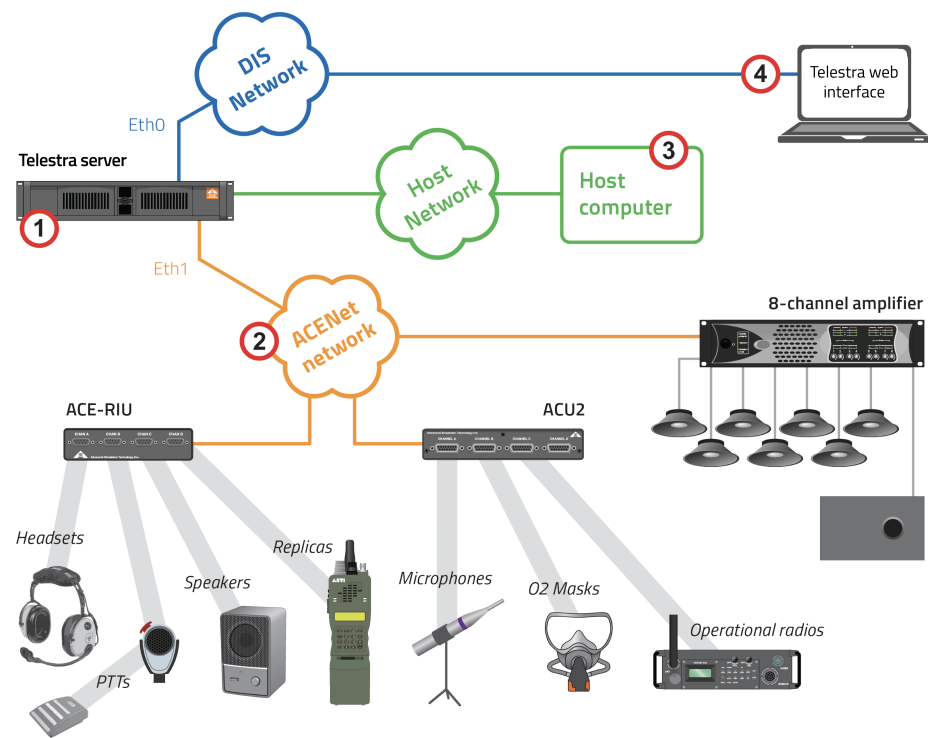


Figure 1: Theory of operation

2.0 Hardware components and specifications

The Telestra server consists of a number of hardware components. Many configurations are available, depending on your particular application requirements. Engineering drawings accompany each server, identifying the overall system configuration.

The current configuration includes a removable hard drive and CD/DVD drive, four network ports (expansion to six is available at additional cost), and six USB interfaces. No digital signal processor (DSP) cards are installed or required.

2.1 Hardware components

This section discusses the following Telestra server hardware components:

- Chassis
- Power supply
- CPU type
- Solid-state drive
- Optical drive
- Keyboard, monitor, and mouse
- Network ports
- ACENet devices
- Cabling

2.1.1 Chassis

Table 1, "Chassis dimensions" below lists available chassis dimensions:

Chassis Type	Depth	Width	Height	Weight
Standard 2U with front rackmount	21.375"	19"	3.5"	31 lbs.
2U without rackmount		17.5"		
1U	25.5"	19"	1.75"	24.5 lbs.

Table 1: Chassis dimensions

Figure 2, "Telestra server (P/N: TL-AT) 2U chassis" below shows the TL-AT 2U chassis's front and rear panel:

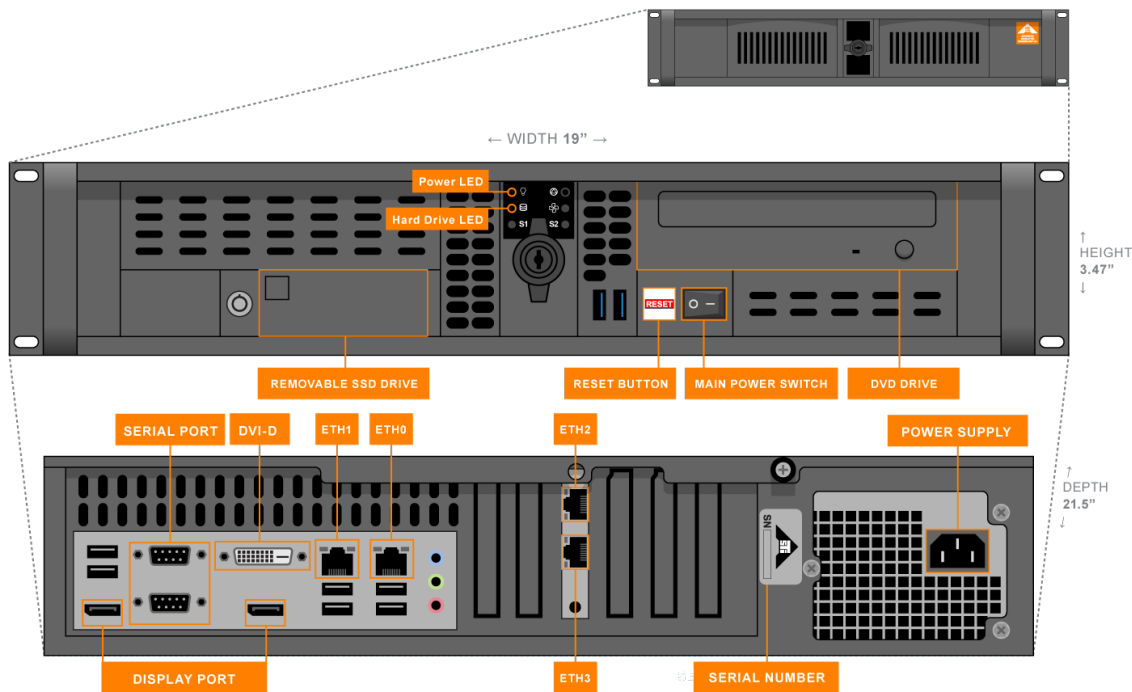


Figure 2: Telestra server (P/N: TL-AT) 2U chassis

Figure 3, "Telestra server (P/N: ASTI-SRV) chassis" below shows the ASTI-SRV 2U chassis's front and rear panel:

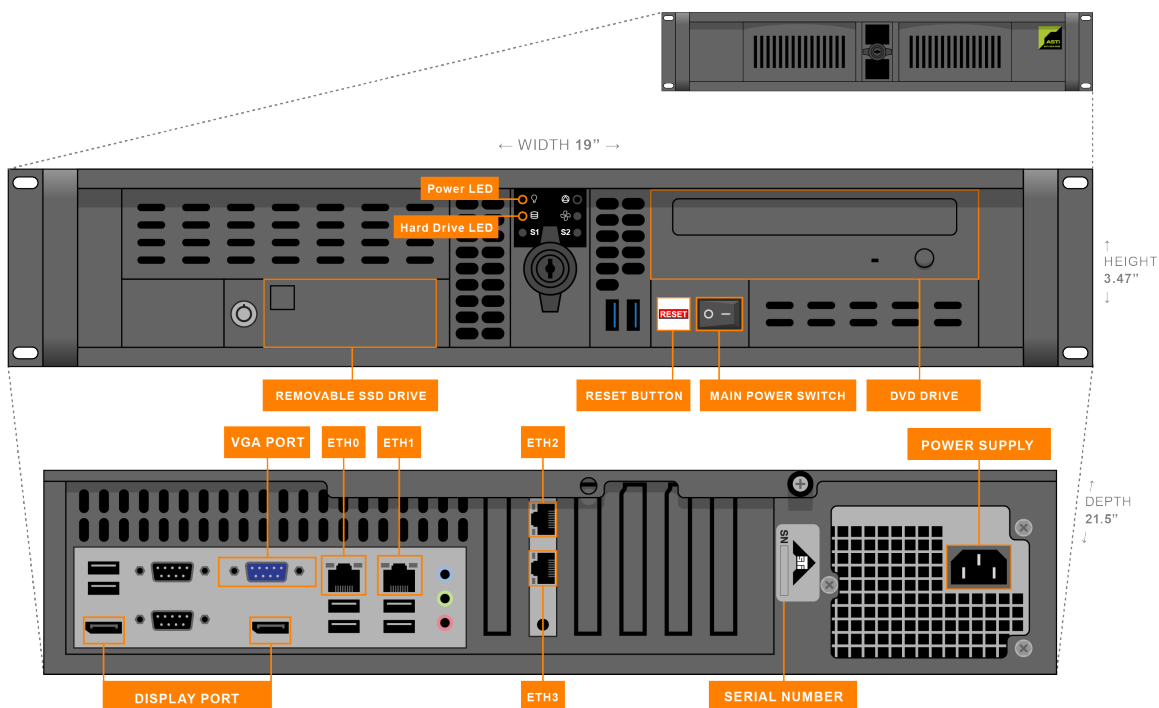


Figure 3: Telestra server (P/N: ASTI-SRV) chassis

There are many ways to mount a chassis (e.g., slide rails, mounting brackets, shelving, racks). Because so many options exist, ASTi cannot test every configuration; instead, we allow you to choose the mounting method best suited to your application. When choosing a method, consider the chassis weight, the location of existing mounting holes, and the type of hardware you will use to mount the equipment. The hardware type and mounting screw length impact the installation's safety. For detailed chassis dimensions and mounting hole locations, contact ASTi at support@asti-usa.com.

For more information about the Telestra server, go to the *Telestra Server Operations & Maintenance Manual*.

2.1.2 Power supply

The power supply is a standard 2U 400 watt or greater power supply. It is auto-sensing and accepts 100–240 volts with 50–60 hertz (Hz). The input power of the device is 100–240 volts alternating current (VAC), 8–4 ampere (A), 50–60 Hz.

The power cord attachment is located on the rear panel, while the power switch is on the front of the chassis.

ASTi servers come with U.S. power cords. Any other power cord that a customer requires must meet or exceed all Underwriters Laboratories (UL) safety requirements. To learn more about a cord's specific requirements, contact support@asti-usa.com for the applicable data sheet.

2.1.3 CPU type

The system's central processing unit (CPU) type depends on the time of purchase and any CPU upgrades. The typical CPU is an Intel® multicore processor.

2.1.4 Solid-state drive

The Telestra server's solid-state drive (SSD) is a Serial Advanced Technology Attachment (SATA) removable drive. The platform includes a removable drive docking bay as part of the chassis. The bay accommodates a 2.5" removable-drive cartridge.

2.1.5 Optical drive

The Telestra server has a SATA DVD/CD drive for installing system software.

2.1.6 Keyboard, monitor, and mouse

The Telestra server includes six USB connections on the rear of the chassis. The motherboard supports Digital Visual Interface–Digital (DVI-D) and DisplayPort connections. Some older Telestra configurations only support Visual Graphics Array (VGA). On all systems, the Telestra server boots and operates properly with or without the keyboard connected.

2.1.7 Network ports

Ethernet operation conforms to IEEE 802.3 User Datagram Protocol (UDP). It supports IP addresses along with some multicast capabilities. Table 2, "Network features" below describes individual network features:

Network Feature	Description
Host simulation	<p>A simulation application on another network computer generates and transmits simulation state and sound model control parameters to the Telestra server.</p> <p>Parameters include the following state data:</p> <ul style="list-style-type: none"> • Engine revolutions per minute (RPM) • Radio frequency • Communications panel switch settings • Radio position • Exercise number <p>Special input control objects in the modeling environment bring these parameters into the local audio models. The Telestra server can pass model information and equipment health status back to another computer via the same link. The Telestra server can receive information from other computers on the network by specifying different UDP port numbers for data originating from the different machines. The Telestra web interface provides status and monitor screens showing network activity and data that the Telestra server receives or transmits. You can also set network configuration parameters (e.g., port numbers and source and destination IP addresses).</p>
DIS	<p>The Telestra server connects to the Distributed Interactive Simulation (DIS) network. It transmits and receives signal, transmitter, and entity state messages relieving the host or other network devices from processor-intensive protocol data units (PDUs). The Telestra web interface provides status and monitor screens, enabling you to monitor network activity and DIS radio traffic. Set DIS options and network parameters in the Telestra web interface.</p>
ACENet	<p>The Audio Communications Environment Network (ACENet) provides low-latency, network-based audio and I/O distribution architecture for ASTi's communications and sound modeling equipment and software. This flexible architecture provides highly scalable distribution network of model processing systems and remote audio and I/O interface devices to address widely distributed and complex multiuser sound and communications applications.</p>

Table 2: Network features

Each Telestra server has two or more Ethernet network ports, depending on the system configuration. The physical location and function of these connections vary based on the hardware installed by ASTi prior to shipment.

Figure 4, "TL-AT network ports (optional shown)" below shows TL-AT network ports:

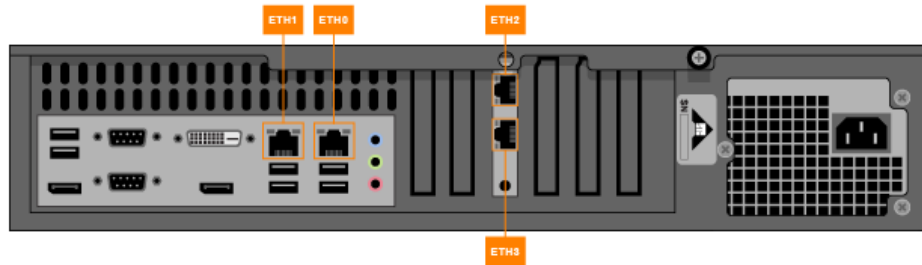


Figure 4: TL-AT network ports (optional shown)

Figure 5, "ASTI-SRV network ports (optional shown)" below shows ASTI-SRV network ports:

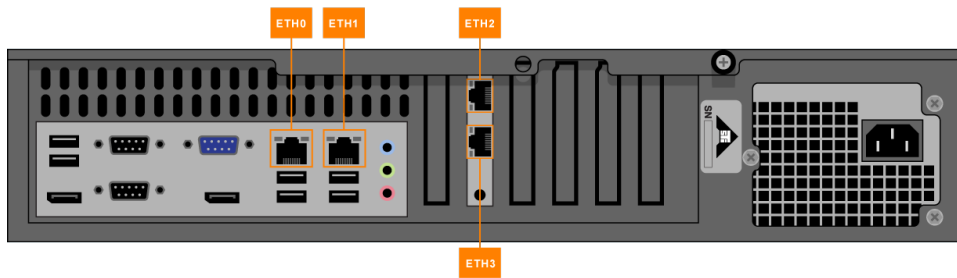


Figure 5: ASTI-SRV network ports (optional shown)



Important: Verify Ethernet connection(s) via the chassis labels. Ethernet labels will be *Eth0*, *Eth1*, *Eth2*, etc.

The multiple network ports provide convenient, independent connection to the following networks:

- DIS or HLA
- Host simulation
- Diskless
- ACENet

2.1.8 ACENet devices

ASTi digitally distributes audio and input/output (I/O) among Audio Communications Environment Network (ACENet) devices and Telestra modeling platforms for maximum noise rejection and reliability. The audio features 48 kilohertz (kHz) digital distribution and balanced, pro audio interfaces for high-fidelity audio.

External audio and I/O equipment (e.g., headsets, microphones, amplifiers, preamplifiers, VCR audio in/out, press-to-talk devices) connect directly to ACENet audio devices. An Ethernet port on the rear panel of the chassis connects ACENet devices to the Telestra server.

2.1.9 Cabling

For minimum noise, use individually shielded, twisted-pair cable for all audio lines. Tie shields at a single point to a good Earth ground. In general, do not connect shields to audio ground.

The microphone line is the most important use of a shielded, twisted pair. Microphone lines carry a very small signal and run next to the headset line, which has a much larger, higher current signal. The potential for additional noise and crosstalk greatly increases if you do not use proper cabling techniques.

2.2 System specifications

This chapter discusses the following system specifications:

- Temperature and humidity requirements
- Reliability

2.2.1 Temperature and humidity requirements

The Telestra server has the following temperature and humidity requirements:

Environment	Degrees (Fahrenheit)	Degrees (Celsius)	Humidity	Altitude
Operation	50–90°	10–32.2°	20–95 percent	0–8,000 ft. (2,483 meters)
Storage	32–135°	-10–55°	10–95 percent	

Table 3: Temperature and humidity requirements

2.2.2 Reliability

Telestra servers use the minimal complexity of electronic hardware and the highest quality components. ASTi has paid special attention to the selection of traditionally less reliable elements, such as the solid-state drive (SSD). The following Mean Time Between Failure (MTBF) rates are based on predicted values:

Device	MTBF Hours
TL-AT	
Server	100,000 hours
Solid-state drive (SSD)	2,000,000 hours
ASTI-SRV	
Server	67,523 hours
SSD	1,500,000 hours

Table 4: Telestra MTBF

3.0 Software packages and licensing

Software on the Telestra server includes a Linux operating system (OS) and Telestra software for the sound and communications model run-time environment. The Telestra web interface provides remote management, configuration, and debug of ASTi systems over a local area network or wide area network from any standard computer with a web browser.

All Telestra server configurations include Linux OS software. Do not install third-party packages. User-installed software may affect the Telestra server's performance or operation.

Software included with the Telestra server is ASTi-proprietary and subject to the terms of the software license agreement. To view ASTi's software license agreement, go to www.asti-usa.com/license.html.

4.0 Telestra server setup

After unpacking your ASTi system, you must complete several tasks to install the Telestra server:

1. Unpack, set up, and turn on the Telestra server. For setup instructions, go to Section 4.2, "Receive, unpack, and inventory equipment" on the facing page and Section 4.3, "Set up the Telestra server" on the facing page.
2. *(Optional)* Cold-start the Telestra server to test functionality or update to the latest software version. To complete the cold-start procedure, go to the [Telestra Cold Start Guide](#).
3. If you didn't complete this step during the cold-start procedure, set up the Telestra server's network options (i.e., IP address, subnet mask). For network setup, go to Section 4.5, "Telestra server network setup" on page 15.

4.1 Safety precautions

When performing operation and maintenance tasks pertaining to the Telestra server, observe the following safety precautions. These precautions prevent injury to personnel or damage to equipment.



Caution: Potentially fatal voltages are present in the Telestra server. Before removing, handling, or replacing any Telestra components, turn off all electrical supplies and disconnect all electrical power cords from the Telestra server. This equipment contains hazardous energy.



Caution: When replacing batteries, make sure to use the correct type to avoid risk of explosion. Dispose of used batteries according to the instructions.

The Telestra server is a sound production device. Excessive audio levels can cause permanent hearing impairment. Set up all equipment, including hardware and software, to achieve safe operating sound pressure levels under all conditions.

All Telestra server circuits and modules are sensitive to electrostatic discharge (ESD). To avoid damage to the equipment, follow proper ESD procedures. Perform all work at a properly grounded ESD work station. In addition, ground all personnel handling Telestra equipment. When transporting or shipping the Telestra server, ensure equipment is properly grounded.

When transporting or shipping individual modules, package equipment in an antistatic bag. ASTi is not responsible for equipment damage due to improper handling.

4.2 Receive, unpack, and inventory equipment

Upon receipt of the Telestra server, ensure packages match the shipping manifest and there is no apparent damage. If a package is damaged, consult with the carrying authority.

Unpack and carefully remove Telestra components from their packaging in accordance with procedures common to industry standard. Observe all notes, cautions, or warning labels on the shipping packages. Remove all plastic packaging from the Telestra server.












After removing all equipment from the packaging, verify equipment received against the shipping invoice. Notify ASTi immediately of any discrepancies. All Telestra servers are shipped with engineering drawings that identify the system. Packing lists also provide detailed information about the shipment.

4.3 Set up the Telestra server

To set up the Telestra server, follow these steps:

1. Insert the USB License Key into the Telestra server.
2. Plug the Telestra server into a power outlet. Allow two inches of space to the rear of the server for connections. The Telestra server automatically boots per your BIOS configuration.
3. Connect the Telestra server to a monitor and keyboard, which are only necessary for initial software configuration.
4. Connect the Telestra server's Ethernet interface to your local area network with a CAT5e cable or better.

The following table identifies the main connectors, switches, and cables you will need to set up an Telestra server:

Connector/Switch	Name	Cable
	Power cord in	 <i>To chassis</i> <i>To wall</i>
	Video output (TL-AT)	Not included. Connects to the monitor's DVI-D port. 
	Video output (ASTI-SRV)	Not included. Connects to the monitor's Video Graphics Array (VGA) port. 
	USB	Connects to the keyboard. 
	Ethernet jacks	Each system includes four labeled jacks.  <i>RJ-45 connection</i> <i>To network</i>
	Main power switch	Located on the front of the chassis; some systems may include an additional switch on the rear.

4.4 (Optional) Cold-start the Telestra server

ASTi cold-starts the Telestra server prior to shipment, so you do not need to do so again during setup. However, you may wish to repeat the cold-start procedure to verify your equipment and software is functioning correctly or install upgraded software. In this case, go to the [Telestra Cold Start Guide](#) to perform the Telestra cold-start procedure.

4.5 Telestra server network setup

To complete Telestra server network setup, you will need the following hardware:

- Monitor
- Keyboard
- Category 5e cable or better
- Telestra server

To set up the Telestra server and assign an IP address, follow these steps:

1. Connect the monitor and keyboard to the Telestra server.
2. Using a Category 5e cable, connect the Telestra server to the local network using Eth0.
3. Turn on the Telestra server.
4. Log into the system using the following default credentials:

Username	Password
root	abcd1234

5. *(Optional)* To set the IP address and subnet mask, run one of the following:
 - *Telestra 8.X and later:* **astikli netcfg -a xxx.xxx.xxx.xxx -n yyy.yyy.yyy.yyy,**
 - *Telestra 7.X and earlier:* **ace-net-config -a xxx.xxx.xxx.xxx -n yyy.yyy.yyy.yyy,**

where xxx.xxx.xxx.xxx is the IP address and yyy.yyy.yyy.yyy is the netmask. This configuration sets the IP address and netmask for Eth0, which you can use to access the Telestra web interface via a browser to complete the network setup.

6. *(Optional)* For more network settings, run one of the following:
 - *For Telestra 8.X:* **astikli netcfg -h**
 - *For Telestra 7.X:* **ace-net-config -h**
7. Open a web browser on a computer sharing a network with the Telestra server.
8. In the address bar, enter the Telestra server's IP address.
9. Log in with the following default credentials:

Username	Password
admin	astirules

10. On the left, under **Setup**, go to **Network > Configuration**.

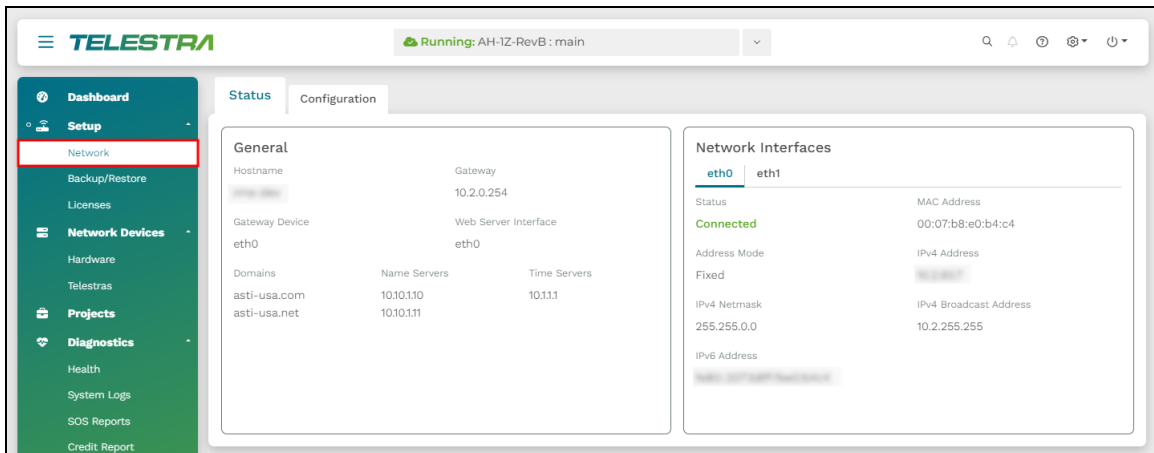


Figure 6: Network > Configuration navigation

11. In **General**, verify the following settings are configured:

- **Gateway**
- (Optional) **Domains**
- **Routing Method**
- **Hostname**
- (Optional) **Name Servers**

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

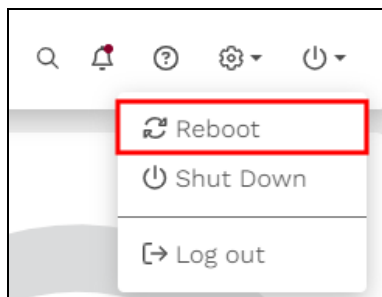


Figure 7: Reboot the Telestra server

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.

Appendix A: Customer support

Customer support is a major part of ASTi's audio simulation solution. If you have any questions about our product, how it can be used for your application, or suggestions for future enhancements, you can contact ASTi in the following ways:

- *Email:* send an email at any time to support@asti-usa.com.
- *Website:* contact us through the ASTi website at support@asti-usa.com.
- *Phone:* call the technical support line from 9:00 am to 5:00 pm (EST) weekdays at (703) 471-2104.
- *Fax:* include your name, company, fax number, phone number, and specific question. The fax number for ASTi is (703) 471-2108.

Appendix B: Warranty information

To view ASTi's warranty, go to “Standard Terms and Conditions” at www.asti-usa.com/legal/terms.html.



Important: *This device does not contain any user-serviceable components. Opening the Telestra server chassis voids the warranty. ASTi does not support board-level repair; therefore fuses in the device are not user replaceable.*

B-1 Repairs and returns

To return equipment to ASTi, observe the following procedures:

1. Request a Return Material Authorization (RMA) number through the form on the RMA User Account at rma.asti-usa.com/rma. ASTi's Production department cannot receive a repair without an RMA number. The shipping label must also include the RMA number. Any items received from customers without RMA numbers or appropriate contact information will not be tested. After 60 days, ASTi reserves the right to scrap all hardware received in this condition.
2. When packaging the equipment in question, make sure it is well-protected. Failure to properly package the equipment during shipping could void the warranty.
 - Always double-box the device.
 - The inner container should employ some semi-rigid, contour-fitting foam, while the exterior container should use a more pliant, shock-absorbing material, such as styro-foam peanuts.
 - To prevent possible Electrostatic Discharge (ESD) damage, properly enclose the device in an antistatic bag.
3. Do not send accessory pieces, such as rack mount kits, power supplies, or software. Only include items that do not work.
4. Describe the problem, noting the following information:
 - Serial number for the unit in question
 - Point of contact information (i.e., name, telephone number, and equipment return address)

Failure to include this information could extensively delay the return of equipment.

5. If you are an international customer, include the correct product value on all shipping documents. For proper harmonized tariff codes, contact ASTi. The customer is responsible for duties, taxes, and fees incurred during shipment.

ASTi evaluates equipment free of charge and will not start work without prior customer approval.

You are responsible for shipping charges to ASTi for warranty and non-warranty repairs. If equipment is not under warranty, a purchase order is required to cover any repairs. ASTi will provide a quote for all nonwarranty items, including return shipping. The customer is responsible for return shipping charges on nonwarranty equipment. ASTi ships equipment still under warranty back to the customer via FedEx, unless otherwise directed. ASTi is responsible for return shipping charges on domestic items under warranty.

If ASTi does not receive the equipment 30 days after the RMA was issued, ASTi closes the RMA and designates it as unused.