Hardware Installation Manual

AudioCodes Mediant™ Family of Session Border Controllers (SBC)

Mediant 9000 SBC

Version 7.0

HD VoIP Sounds Better

AudioCodes

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Notice

This Installation Manual describes the hardware installation of AudioCodes Mediant 9000 Session Border Controller (SBC).

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Date Published: August-16-2016

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WEEE EU Directive

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Customer Support

Customer technical support and services are provided by AudioCodes or by an authorized AudioCodes Service Partner. For more information on how to buy technical support for AudioCodes products and for contact information, please visit our Web site at www.audiocodes.com/support.

Abbreviations and Terminology

Each abbreviation, unless widely used, is spelled out in full when first used.

Throughout this manual and unless otherwise specified, the term *device* refers to the Mediant 9000 SBC.

Related Documentation

Manual Name
SIP Release Notes
Mediant 9000 SBC User's Manual

Document Revision Record

LTRT	Description
41654	Initial document release for Version 7.0.
41656	Management names of Ethernet ports added.
41659	AC power cable warning (Japanese).

Documentation Feedback

AudioCodes continually strives to produce high quality documentation. If you have any comments (suggestions or errors) regarding this document, please fill out the Documentation Feedback form on our Web site at http://www.audiocodes.com/downloads.

1 Introduction

This document provides a hardware description and step-by-step cabling procedures for AudioCodes' carrier-grade Mediant 9000 SBC.

1.1 Specifications

The table below shows the Mediant 9000 SBC specifications.

Table 1-1: Mediant 9000 SBC Specifications

Resource	Specification
Chassis Type	1RU system
CPU	2 x 10 cores, 2.8 GHz, 25M Cache
Memory	64 GB, DDR3-1866/PC3-14900
Network	12 x 1 GbE ports
Disk	Mechanical hard drive, SAS 300 GB
CD/DVD	SATA CD/DVD R/W
Installation Interface	VGA Monitor and Keyboard

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2 Physical Description

This section provides a physical description of the device.

2.1 Physical Dimensions

The device's physical dimensions are listed in the table below.

Table 2-1: Physical Dimensions

Item	Description
Physical Dimensions	43.45 x 62.23 x 2.97 cm (17.11 x 27.5 x 1.7 in)
Weight	17.4 kg (38.4 lb)
Environmental	Operational: 10 to 35°C

2.2 Front Panel

The Mediant 9000 features an 8-SFF (Small Form Factor) cage for standard internal storage hard drives. The device's front panel is shown in the figures below and described in the subsequent table.

Figure 2-1: Front Panel

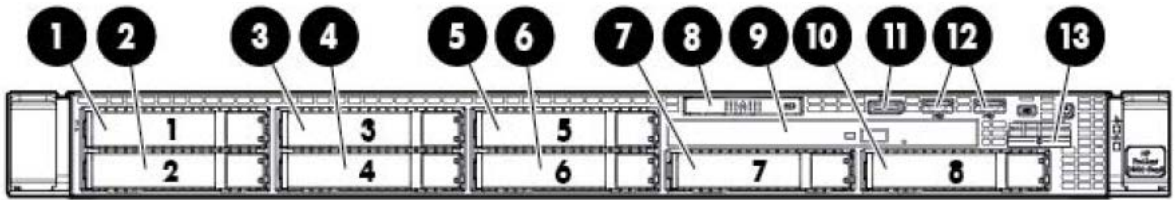


Table 2-2: Front Panel

Item #	Description
1	SAS/SATA/SSD drive bay 1
2	SAS/SATA/SSD drive bay 2
3	SAS/SATA/SSD drive bay 3
4	SAS/SATA/SSD drive bay 4
5	SAS/SATA/SSD drive bay 5
6	SAS/SATA/SSD drive bay 6
7	SAS/SATA/SSD drive bay 7
8	Systems Insight Display
9	DVD-ROM drive (optional)
10	SAS/SATA/SSD drive bay 8 (optional)
11	Front video connector (front video port adapter required)
12	USB connectors (2)
13	Serial number tab

2.2.1 Front Panel LEDs

The front panel LEDs are shown in the figure below and described in the subsequent table.

Figure 2-2: Front Panel LEDs

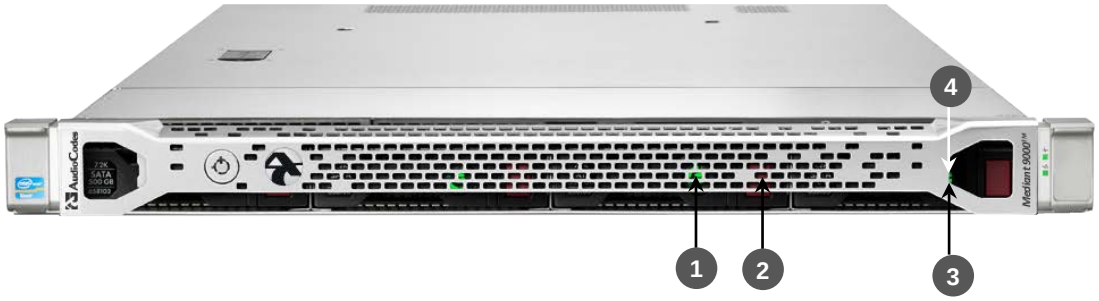


Table 2-3: Front-Panel LEDs

Item #	Description	Status
1	UID LED/button	• Solid blue = Identification is activated. • Flashing blue = System is being managed remotely. • Off = Identification is deactivated.
2	Power On/Standby button/LED	• Solid green = System is On. • Flashing green = Waiting for server power sequence. • Solid amber = System is in standby, but power is still applied. • Off = Power cord is not attached, power supply failure has occurred, no power supplies are installed, facility power is not available, or the power button cable is disconnected
3	Health LED	• Solid green = System health is normal. • Flashing amber = System health is degraded. • Flashing red = System health is critical. • Fast flashing red = Power fault (check system and devices).
4	Aggregate network LED	• Solid green = Link to network. • Flashing green = Network activity. • Off = No network connection.

2.3 Rear Panel

The rear panel is displayed in the figure below and described in the subsequent table.

Figure 2-3: Rear Panel

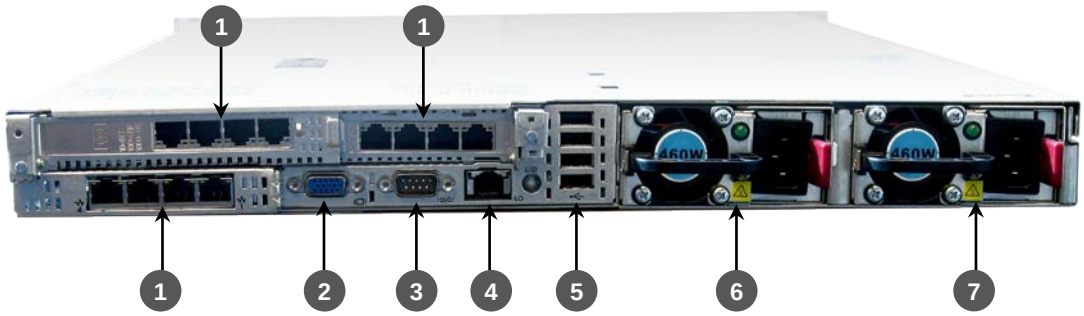


Table 2-4: Rear Panel

Item #	Description
1	12 GbE ports
2	Video connector
3	Serial connector
4	HP iLO port (see http://www8.hp.com/us/en/products/servers/ilo/)
5	USB connectors (4)
6	Power supply bay 1 (primary and redundant power supply supported)
7	Power supply bay 2 (primary and redundant power supply supported)

2.3.1 Rear Panel LEDs

The rear panel LEDs are shown in the figure below and described in the subsequent table.

Figure 2-4: Rear Panel LEDs

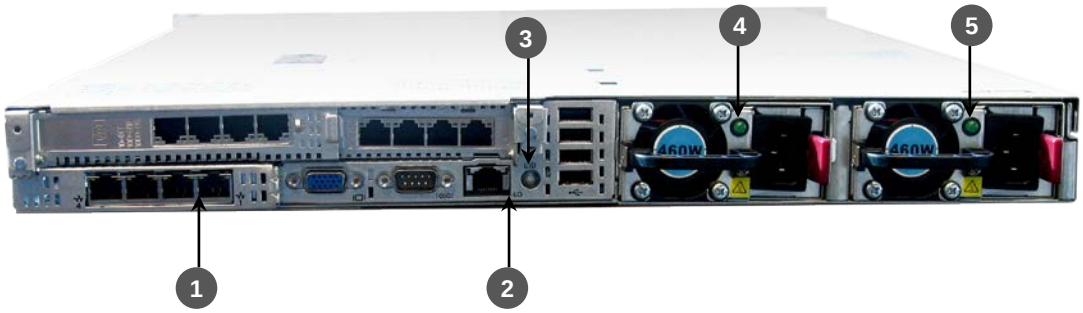


Table 2-5: Rear Panel LEDs

Item #	Description	Status
1	Standard NIC activity LED	• Solid green = Activity exists. • Flashing green = Activity exists. • Off = No activity exists.
2	iLO NIC link LED	• Solid green = Link exists. • Off = No link exists.
3	UID button/LED	• Solid blue = Identification is activated. • Flashing blue = System is being managed remotely. • Off = Identification is deactivated.
4	Power Supply 2 LED	• Solid green = Normal. • Off = One or more of the following conditions exists: ✓ AC power unavailable. ✓ Power supply failed. ✓ Power supply in standby mode. ✓ Power supply exceeded current limit.
5	Power Supply 1 LED	• Solid green = Normal. • Off = One or more of the following conditions exists: ✓ AC power unavailable. ✓ Power supply failed. ✓ Power supply in standby mode. ✓ Power supply exceeded current limit.

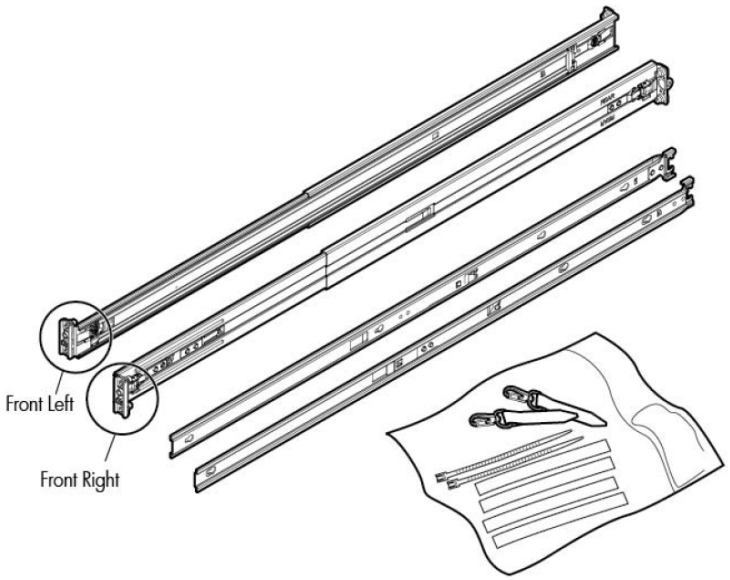
3 Deploying the Device

This section shows how to deploy the device in a commercial rack mount kit.

3.1 Hardware Kit Contents

Warning: To reduce the risk of personal injury or damage to the equipment, at least two people are required to lift the server during installation or removal.

Note: When installing the rack rails, be sure they are oriented Front Left and Front Right, as indicated on the rails.



You must provide:

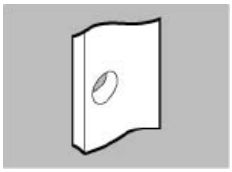
- Screws to secure the slide mounting bracket assemblies in a threaded-hole rack
- Cage nuts for a round-hole rack
- Screws that fit a threaded-hole rack
- The appropriate screwdriver for the screws

3.2 Overview

This rack hardware kit supports a variety of products in round-, square-, or threaded-hole racks. Use the legend to identify installation steps appropriate to the type of rack.

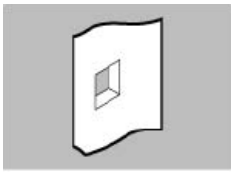
Note: If you are shipping the server installed in a rack, see the additional instructions located in "Preparing the product for integrated shipping in a rack" before proceeding.

3.3 Rack Identification Legend



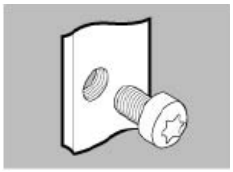
Round-hole racks

No tools required



Square-hole racks

No tools required



Threaded-hole racks

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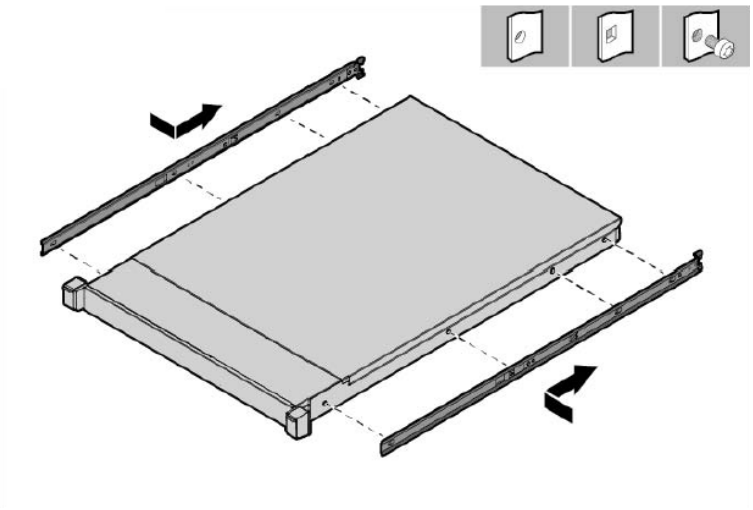
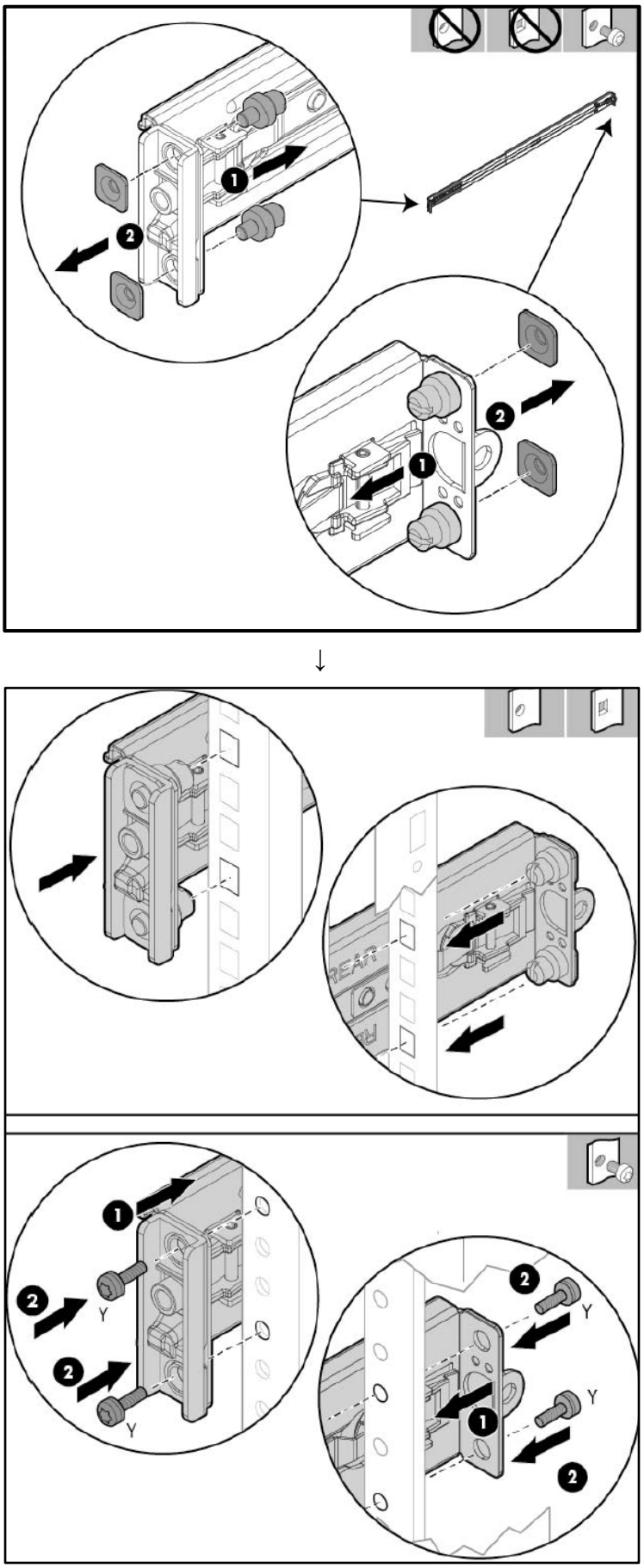
3.4 Installing the Rail Kit into a Rack



Warning: To avoid risk of personal injury or damage to the equipment, do not stack anything on top of rail-mounted equipment or use it as a work surface when extended from the rack.

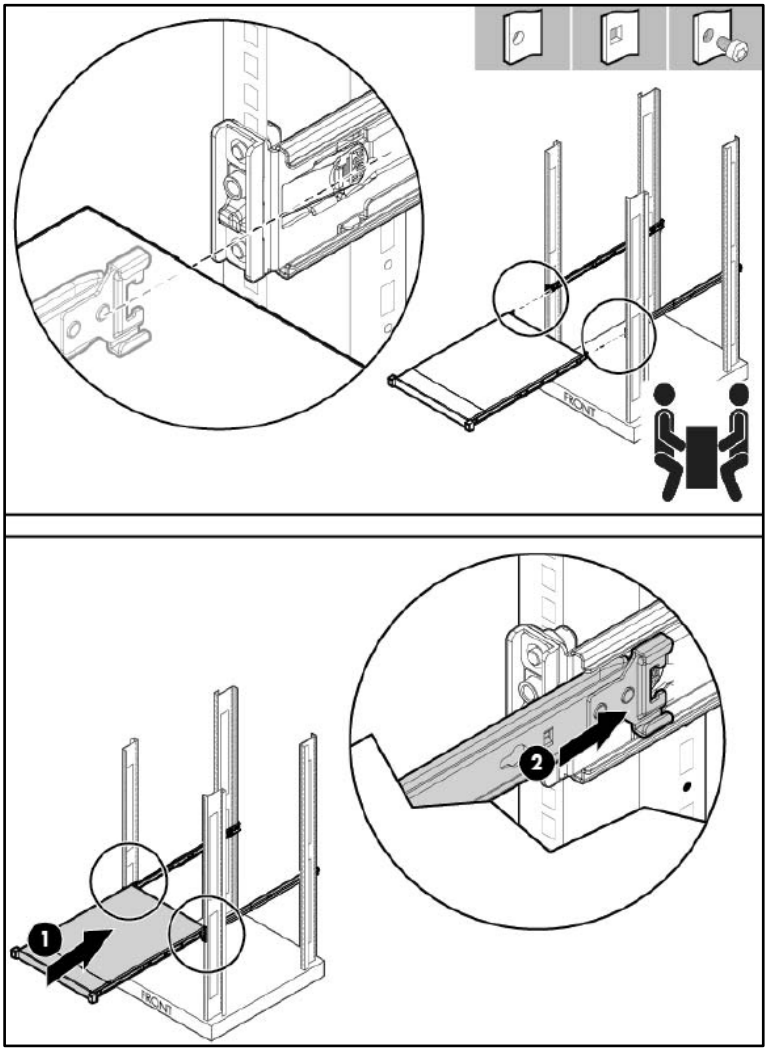
Caution: Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first, and continue to populate the rack from the bottom to the top.



Warning: To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before sliding the inner slides into the slide mounting bracket assemblies.

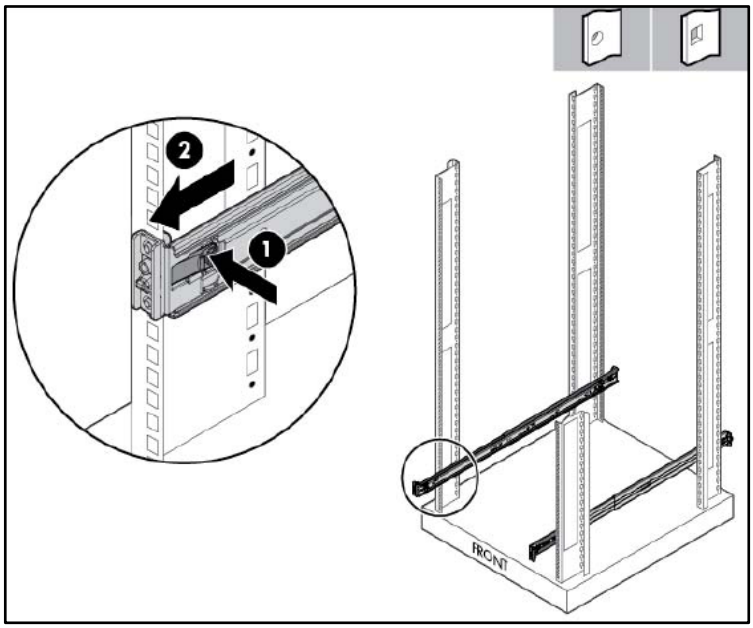
Warning: To reduce the risk of personal injury or damage to the equipment, at least two people are required to lift the server during installation or removal.

Caution: Be sure to keep the product parallel to the floor when sliding the inner slides into the slide mounting bracket. Tilting the product up or down could result in damage to the slides.

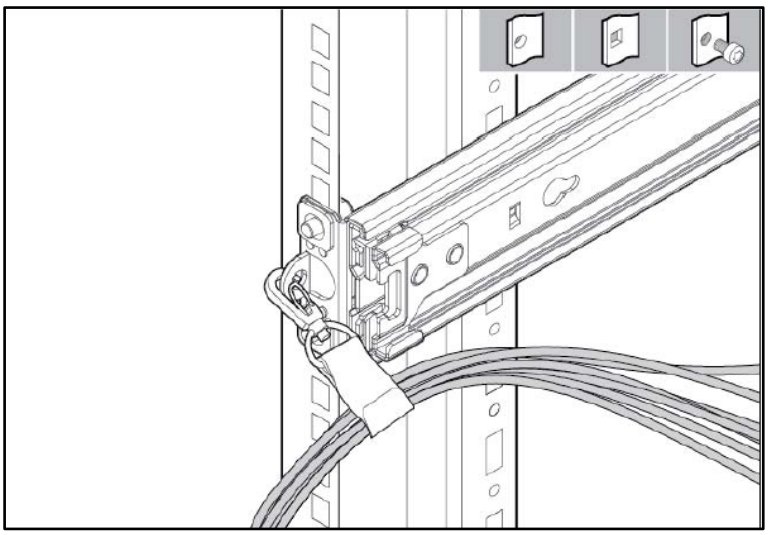


3.5 Removing the Rail

When removing the rail from the rack, always remove the front of the rail first.



3.6 Securing the Cables



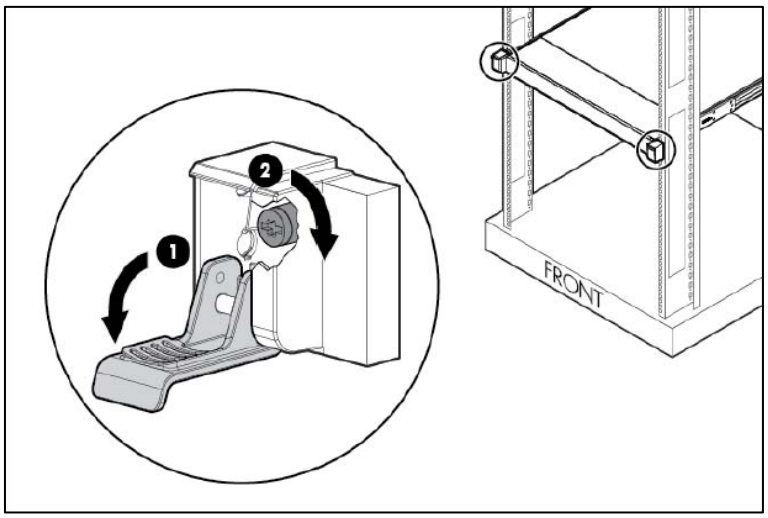
3.7 Connecting the Power Cords

After completing all installation and cable management procedures, you can connect the power cords to the facility power source. See Section 4.2 on page 22 for detailed information. The installation is complete.

3.8 Preparing the Product for Integrated Shipping in a Rack

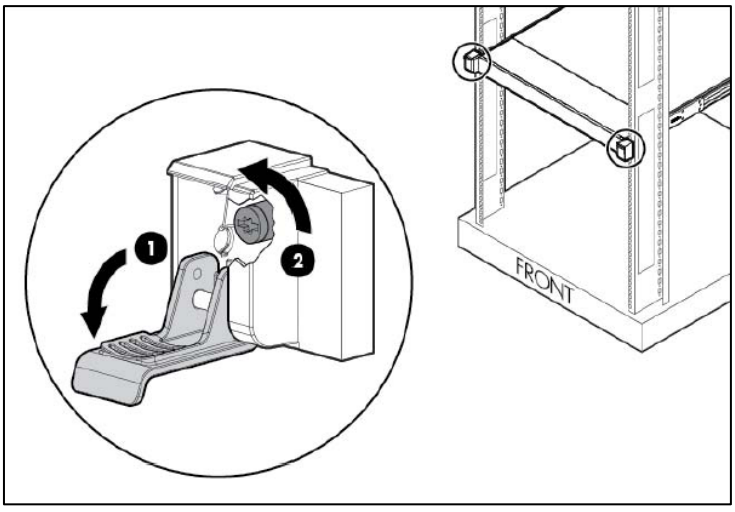
Note: You must provide screws to secure the slide mounting bracket assemblies in a threaded-hole rack.

Note: Use the integrated shipping hardware included with this kit to prepare a square-hole rack for integrated shipping.



3.9 Loosening the Shipping Screws

To slide the server out of the rack, open the latches and loosen the shipping screws.



4 Cabling

This section shows how to cable the device. Intra-building connections of the device require the use of shielded cables grounded at both ends.

Caution: The intra-building ports of the equipment are suitable for connection to intra-building or unexposed wiring or cabling only. The intra-building ports of the equipment must not be metallically connected to interfaces that connect to the Outside Plant (OSP) or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports, as described in GR-1089–CORE, Issue 4) and requires isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.

4.1 Grounding

The device is intended for use in both common bonding networks and isolated bonding networks. Grounding must comply with local, national, and other applicable government codes and regulations. Dedicated safety grounds are implemented on both the AC and DC versions of the product. The AC product uses a standard three wire cord that includes a safety ground for each power supply. The DC product has a dedicated ground screw on each power supply.

Warning: To ensure the safety ground, at least one power supply with an appropriately terminated ground lead must be installed at all times.

Tip: To ensure the safety ground, at least one power supply with an appropriately terminated ground lead must be installed at all times.

4.2 Connecting to Power

This section shows how to connect the device to the power supply. The device can be connected to an AC or DC power source.

You can connect both Power Supply modules (1 and 2), for 1+1 power load-sharing and redundancy. Each module provides a power socket on the device's rear panel. If both power modules are used, make sure that you connect each one to a different power supply socket.

Note: When connecting both Power Supply modules, the two AC power sources must have the same ground potential.

Warning: The device must be connected (by service personnel) to a socket-outlet with a protective earthing connection.

4.2.1 Connecting to AC Power Source

The AC power supply specifications are listed in the table below.

Table 4-1: AC Power Supply Specifications

Specification	Value
Input requirements	-
Rated input voltage	100 V AC–240 V AC
Rated input frequency	50 Hz or 60 Hz
Rated input current	3.5 - 8.5A
Rated input power	▪ 843 W at 100 V AC input ▪ 811 W at 200 V AC input
Btus per hour	▪ 2878 at 100 V AC input ▪ 2769 at 200 V AC input
Power supply output	-
Rated steady-state power	▪ 750 W at 100 V to 120 V AC input ▪ 750W at 200 V to 240 V AC input
Maximum peak power	▪ 750W at 100 V to 120 V AC input ▪ 750W at 200 V to 240 V AC input

Warning: Use only the AC power cord supplied with the device.

ご注意

本製品に添付の電源ケーブルは、Mediant 9000 に専用設計されているため、汎用性がありません. 本電源ケーブルを他の機器に使用されないよう、ご注意ください.

Caution: To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cord from the power supply to disconnect power to the equipment.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.

Note:

- This equipment is intended for installation where the NEC (National Electrical Code) applies.
- The safety ground of the AC power cord must terminate the chassis to the interior equipment grounding system.

➢ **To connect the device to the AC power supply:**

1. Connect the AC power cord (supplied) to one of the power sockets located on the rear panel.

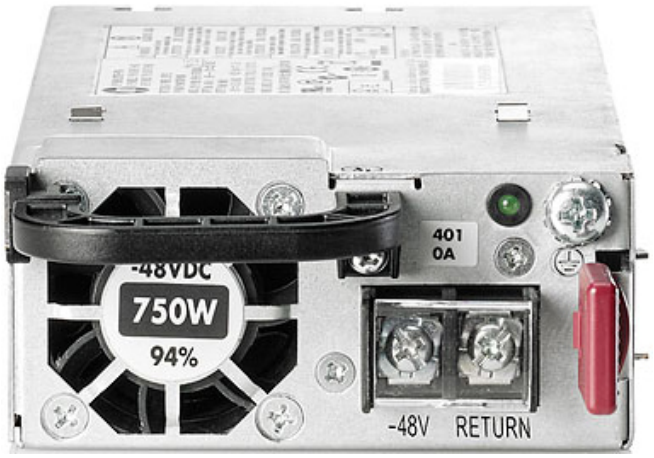
Figure 4-1: Connecting AC Power Cords to AC Electrical Outlets

2. Connect the other end of the power cord to a standard AC electrical outlet (100-240V~50-60 Hz).
3. For load sharing and power redundancy, repeat steps 1 through 2, but using the power socket of the second Power Supply module and connecting this to a different supply circuit.
4. Turn on the power at the power source (if required).
5. Check that the **POWER** LED on each Power Supply module (front panel) is lit green. This indicates that the device is receiving power.

4.2.2 Connecting to DC Power Source

The DC power supply module is shown below:

Figure 4-2: DC Power Supply Module



The DC power supply specifications are listed in the table below.

Table 4-2: DC Power Supply Specifications

Specification	Value
Input requirements	-
Rated input voltage	▪ -36 V DC to -72 V DC ▪ -48 V DC nominal input
Rated input current	▪ 23 A at -36 V DC input ▪ 17 A at -48 V DC input, nominal input ▪ 12 A at -72 V DC input
Rated input power (W)	▪ 840 W at -36 V DC input ▪ 820 W at -48 V DC input, nominal input ▪ 830 W at -72 V DC input
Rated input power (Btus per hour)	▪ 2865 at -36 V DC input ▪ 2796 at -48 V DC input, nominal input ▪ 2830 at -72 V DC input
Power supply output	-
Rated steady-state power (W)	750 W
Maximum peak power (W)	750 W

Caution:

This equipment is designed to permit the connection of the earthed conductor of the DC supply circuit to the earthing conductor at the equipment. If this connection is made, all of the following must be met:

- This equipment must be connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.
- This equipment must be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system must be earthed elsewhere.
- The DC supply source is to be located within the same premises as the equipment.
- Switching or disconnecting devices must not be in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.

Caution:

To reduce the risk of electric shock or energy hazards:

- This equipment must be installed by trained service personnel, as defined by the NEC and IEC 60950-1, Second Edition, the standard for Safety of Information Technology Equipment.
- Connect the equipment to a reliably grounded SELV source. An SELV source is a secondary circuit that is designed so normal and single fault conditions do not cause the voltages to exceed a safe level (60 V DC).
- The branch circuit overcurrent protection must be rated 24 A.

Caution:

- When installing a DC power supply, the ground wire must be connected before the positive or negative leads.
- Remove power from the power supply before performing any installation steps or maintenance on the power supply.

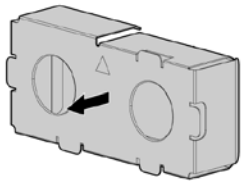
Notes:

- The DC power cord is not supplied.
- If you are not using an HP input cable, use an HP-approved 10 or 12 AWG green and yellow ground cable, no shorter than 150 cm (59.06 in), and 10 or 12 AWG power cables.

➢ **To connect the device to the DC power supply:**

1. Make sure that the power supply module is partially extracted from the chassis slot. This facilitates cable attachment described hereafter.
2. Remove the blank cover protecting the DC power inlet on the rear panel.

Figure 4-3: Removing Blank Cover

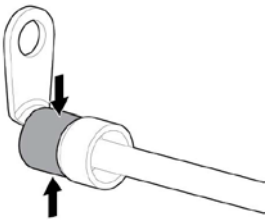


3. Make sure that the cable is disconnected from the 48V DC power source.
4. Cut the DC power cord wire ends no shorter than 150 cm (59.06 in), and then crimp (using a crimping tool) ring tongues to the power and ground wires from the 48V power source.

Notes:

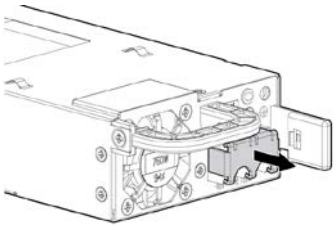
- The power supply uses two power ring tongues and one ground ring tongue; they are not interchangeable.
- The ring tongues must be UL approved and accommodate 12 gauge wires.

Figure 4-4: Wire Crimped on Ring Tongue



5. Remove the safety cover from the terminal block on the front of the power supply module.

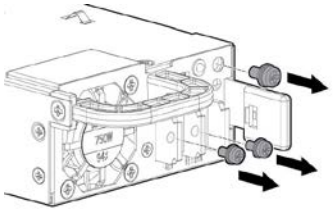
Figure 4-5: Removing Safety Cover



6. Remove the screws from the terminal block.

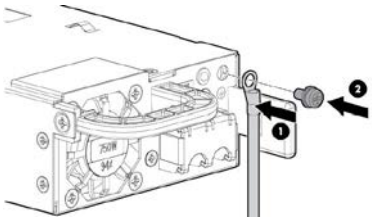
Note: The minimum nominal thread diameter of a pillar or stud type terminal must be 3.5 mm (0.138 in); the diameter of a screw type terminal must be 4.0 mm (0.157 in).

Figure 4-6: Removing Terminal Block Screws



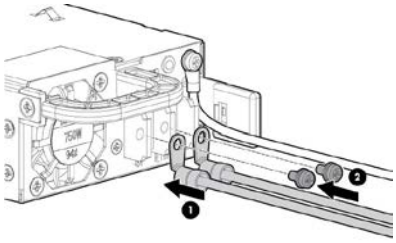
7. Attach the ground (earthed) wire to the ground screw and washer, and tighten to 1.47 N m (13 lb-in) of torque. The ground wire must be connected before the positive or negative lead wires.

Figure 4-7: Attaching Ground Wire



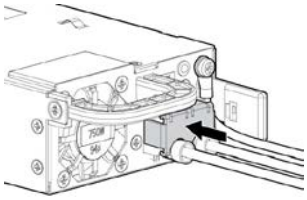
8. Attach the power ring tongues to the terminal block, following the polarity label below the terminal block, and then tighten the screws to 1.47 N m (13 lb-in) of torque.

Figure 4-8: Attaching Power Wires



9. Replace the safety cover.

Figure 4-9: Replacing Safety Cover



10. Insert the power supply module into the chassis' power supply bay (slot) until it clicks into place.
11. Route the power cord at your installation site, as required.
12. Make sure the 48V DC power source is off or the PDU breaker is in the off position, and then connect the power cord to the 48V DC power source or PDU.
13. Turn on the 48V power source or switch the PDU breaker to the on position to supply 48V to the power supply.
14. Verify that the green power supply LED is on.

4.3 Connecting Display and Keyboard

To perform initial configuration, display and keyboard are required.

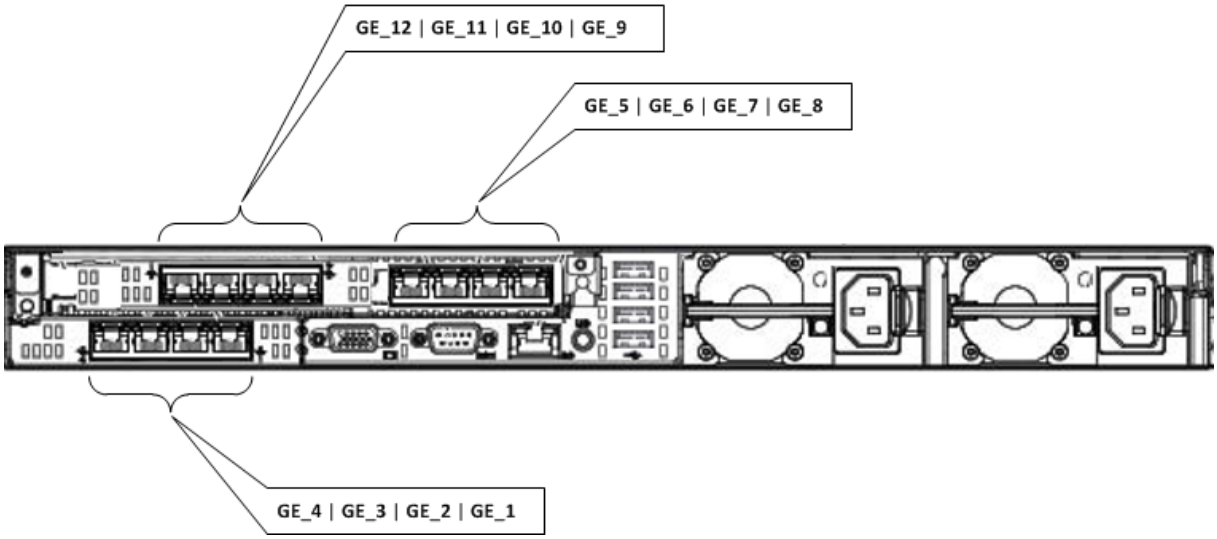
- Connect the display to the 15-pin HD D-Sub (HD-15) VGA port on the Mediant 9000.
- Connect the keyboard to the USB port.

4.4 Connecting the Device to the IP Network

This section shows how to connect the device to the IP network.

The device's management interface uses special string names to represent the Ethernet ports, as shown in the figure below:

Figure 4-10: Management String Name per Physical Ethernet Port



➢ **To connect the device to the IP network:**

- Use an Ethernet cable to connect an RJ-45 network port on the server's rear panel to the LAN.

Figure 4-11: Connecting the Device to the IP Network

Notes:

1. Port GE_1 is used for OAM&P.
2. The HP iLO port is not used for management of the SBC application; it's used only for hardware management. See http://www8.hp.com/us/en/products/servers/ilo/ for more information.

4.4.1 Viewing Network Port Status

Use the **show voip ports** CLI command to view network port status (up/down) and MAC address.

Figure 4-12: Viewing Network Port Status

```
# show voip ports

Port Num  Port Name  MAC Address  Speed Duplexity  Link Status  Native VLAN  Driver Info
--------  ---------  -----------  ----- ---------  -----------  -----------  -----------
1         GE_1   f4:ce:46:a5:3f:98                 UP           1             igb rx-zc
2         GE_2   f4:ce:46:a5:3f:99                 DOWN         1             igb rx-zc
3         GE_3   f4:ce:46:a5:3f:9a                 DOWN         1             igb rx-zc
4         GE_4   f4:ce:46:a5:3f:9b                 DOWN         1             igb rx-zc
5         GE_5   f4:ce:46:a5:4f:98                 DOWN         1             igb rx-zc
6         GE_6   f4:ce:46:a5:4f:99                 DOWN         1             igb rx-zc
7         GE_7   f4:ce:46:a5:4f:9a                 DOWN         1             igb rx-zc
8         GE_8   f4:ce:46:a5:4f:9b                 DOWN         1             igb rx-zc
9         GE_9   f4:ce:46:a5:a4:40                 DOWN         1             igb rx-zc
10        GE_10  f4:ce:46:a5:a4:41                 DOWN         1             igb rx-zc
11        GE_11  f4:ce:46:a5:a4:42                 DOWN         1             igb rx-zc
12        GE_12  f4:ce:46:a5:a4:43                 DOWN         1             igb rx-zc
```

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5 Initial Configuration

5.1 Reconfiguring Default IP Address to Match Customer Network Settings

The Mediant 9000 is supplied with software preinstalled. By default, the device is assigned with a default IP address that will most likely be inaccessible from the customer's network.

Table 5-1: Default IP Address

Parameter	Value
IP Address	192.168.0.1
Subnet Mask	255.255.255.0

Reconfigure the IP address in order to connect to the Mediant 9000's Web-based management tool (hereafter referred to as 'Web interface').

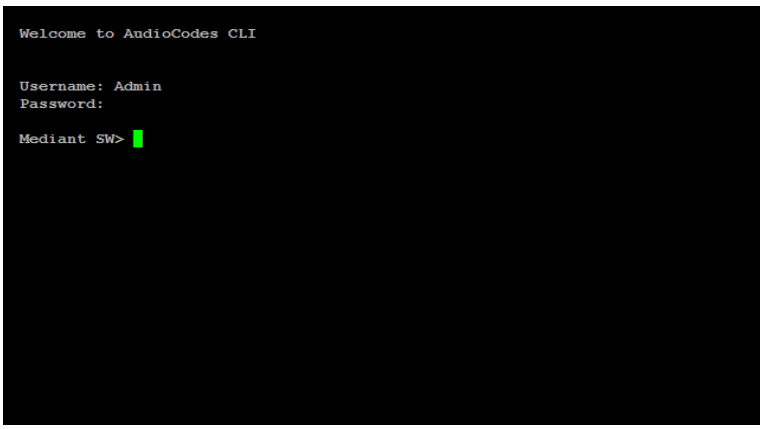
➢ **To reconfigure the IP address using CLI:**

1. Use the VGA monitor and keyboard to connect to the CLI management interface.
2. At the prompt, type the username (default is **Admin** - case sensitive), and then press ENTER:

   Username: **Admin**
3. At the prompt, type the password (default is **Admin** - case sensitive), and then press ENTER:

   Password: **Admin**

Figure 5-1: CLI Management Interface



4. At the prompt, type **enable** and press ENTER:

   > **enable**
5. At the prompt, type the password again and press ENTER:

   Password: **Admin**
6. At the prompt, type the following commands to access the network interface configuration:

   # **configure voip**
   (config-voip)# **interface network-if 0**
   (network-if-0)#

Note: Use the Tab key to auto-complete partially entered commands.

7. At the prompt, type the following commands to configure the IP address, prefix length and default gateway:

```
(network-if-0)# ip-address 10.4.212.155
(network-if-0)# prefix-length 16
(network-if-0)# gateway 10.4.0.1
(network-if-0)# exit
(config-voip)#
```

8. At the prompt, type **`exit`** to complete the **`network-if`** configuration:

```
(network-if-0)# exit
```

9. If Mediant 9000 is connected to the IP network that uses VLAN ID (for example, VLAN ID 10), type the following commands to configure it (otherwise skip to step 10):

```
(config-voip)# interface network-dev 0
(network-dev-0)# vlan-id 10
(network-dev-0)# tagging tagged
(network-dev-0)# exit
```

10. At the prompt, type **`exit`** to complete the configuration:

```
(config-voip)# exit
```

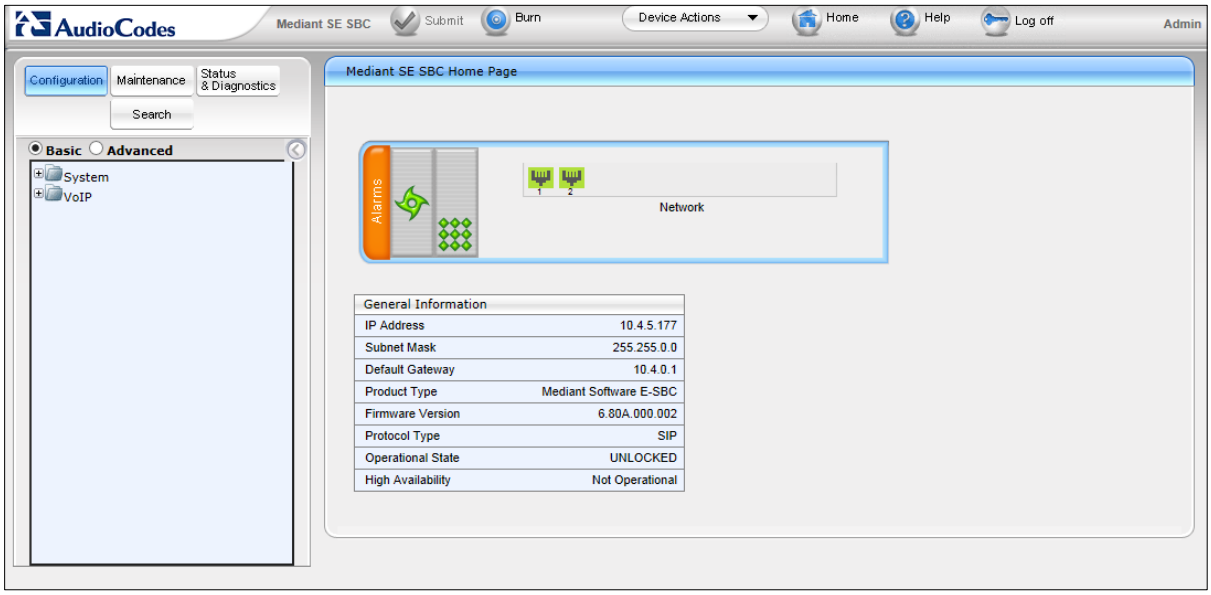
11. At the prompt, make sure that port #1 is connected (Link is UP) using the **`show voip ports`** CLI command as described in Section 4.4.1 on page 29.
Port #1 is mapped to network-if-0 by default.

12. At the prompt, type **`reload now`** to reset the product and activate the new configuration:

```
# reload now
```

After the Mediant 9000 restarts, connect to its Web interface to continue the provisioning. See the *Mediant 9000 User's Manual* for details.

Figure 5-2: Web Interface



5.2 Licensing the Mediant 9000

The Mediant 9000 is supplied with software and Software License Key preinstalled. Use the preinstalled Software License Key to enable the call capacity and features that you ordered.

5.2.1 Upgrading your Software License Key

The procedure below describes how to upgrade your Software License Key.

➢ **To upgrade your Software License Key:**

1. Make a note of the product's serial number:
   a. In the Web interface open the Device Information page (**Status & Diagnostics** tab > **System Status** menu > **Device Information**).
   b. The serial number is displayed in the 'Serial Number' field.
2. Send the serial number to your AudioCodes representative when requesting the upgraded Software License Key.
3. When you receive the new Software License Key file, check it as follows:
   a. Open the file with any text-based program such as Notepad.
   b. Verify that the first line displays "[LicenseKeys]".
   c. Verify that the file contains a line in the following format:
   "S/N<serial number of the device> = <Software Upgrade Key string>".

Figure 5-3: Software License Key File with S/N Line

d. Verify that the "S/N" value reflects the serial number of your product.

Warning: Do not modify the contents of the Software License Key file.

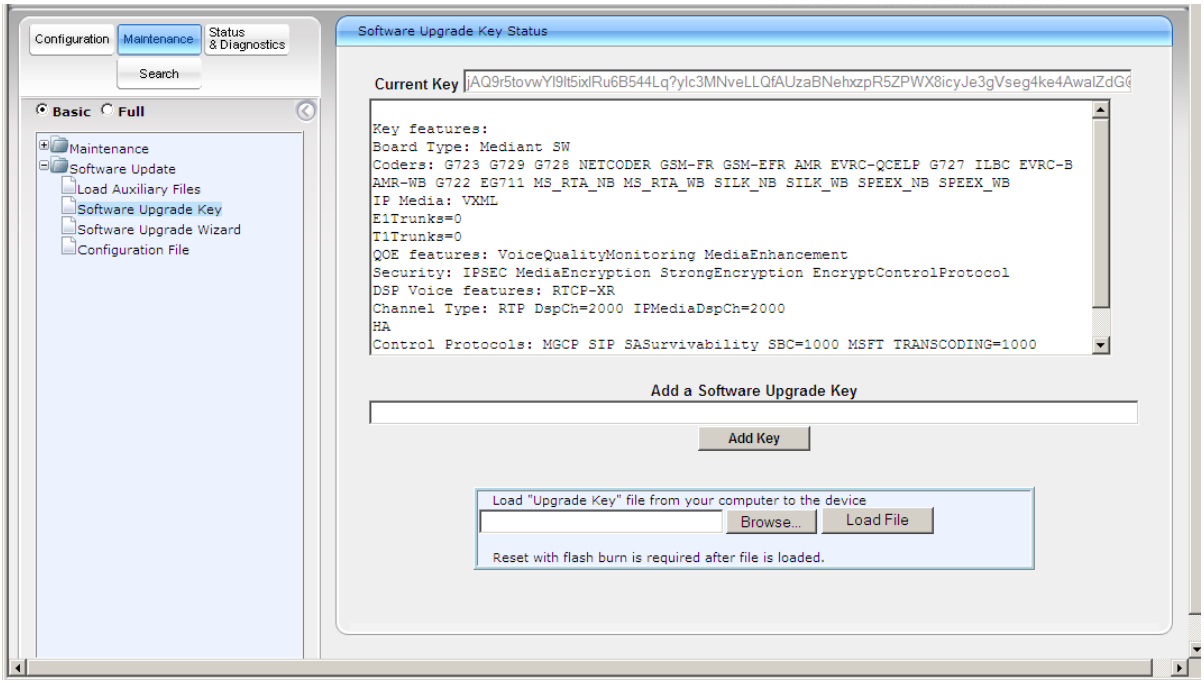
5.2.2 Installing your Upgraded Software License Key

The procedure below describes how to install the newly obtained upgraded Software License Key.

➢ **To install the Software License Key:**

1. Open the Software Upgrade Key Status page (**Maintenance** tab > **Software Update** menu > **Software Upgrade Key**):

Figure 5-4: Software Upgrade Key Status Page



2. Back up the Software License Key currently installed on the product, as a precaution. You can reload this backup to restore the product's original capabilities if the key does not comply with your requirements.
   a. In the 'Current Key' field, select the entire text string and copy it to any standard text file (e.g., Notepad).
   b. Save the text file with any file name and file extension (e.g., key.txt) to a folder on your computer.
3. Open the Software License Key file using a text-based program such as Notepad.
4. Copy-and-paste the string from the file to the 'Add a Software Upgrade Key' field.
5. Click the **Add Key** button; the key is installed on the product and displayed in the 'Current Key' field.
6. Verify that the key was successfully installed:
   - In the Software Upgrade Key Status page, check that the listed features and capabilities activated by the installed key match those that were ordered.
7. Reset the product; the new capabilities and resources enabled by the key are activated.

5.3 Installing an HA System

Users can configure two Mediant 9000 devices to work in a High Availability (HA) configuration.

➢ **To configure an HA system:**

- Reconfigure a temporary IP address for each, as described in Section 4.2.
- Follow the instructions described under the section 'High Availability System' in the *User's Manual* document to set network topology correctly, and configure each accordingly using the Web interface.

5.4 Upgrading

Users can update the Mediant 9000 in order to (for example) implement software fixes. For detailed information, see the *User's Manual*.

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6 Hardware Maintenance

The device is designed as a modular chassis and allows you to order any module as a Field Replacement Unit (FRU). This section describes the procedures for installing or replacing modules.

Warning: Maintenance service of this device must be made only by qualified service personnel in restricted access locations and connected to an earthed power socket.

Note: Ensure that all unoccupied module chassis slots are covered with blank panels. This allows optimal internal airflow pressure within the chassis.

6.1 Prerequisites

Before performing any maintenance procedures, read this section.

6.1.1 Grounding the Device

Before performing any maintenance procedures, ensure that your device is properly grounded.

6.1.2 Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) due to improper handling of the device's modules and components can cause irreversible damage to the equipment. Adhere to the following guidelines for preventing ESD:

- When handling modules, always wear a grounded ESD wrist strap or ankle strap at a grounded work area to prevent ESD. Connect the equipment end of the strap to a grounded workstation or computer chassis.
- To prevent static electrical damage to the module, do not touch the electrical components of the module. Instead, hold the module only on the edges where no electrical components are located.
- Ensure that the modules are securely installed in the chassis.

➢ **To attach an ESD wrist strap to the chassis:**

1. Attach the ESD wrist strap to your body (typically, the wrist) so that it is in direct contact with your skin.
2. Attach the other end of the wrist strap (e.g., an alligator clip) to a grounded workstation or computer chassis.

6.2 Replacing Power Supply Modules

This section shows how to replace the power supply modules.

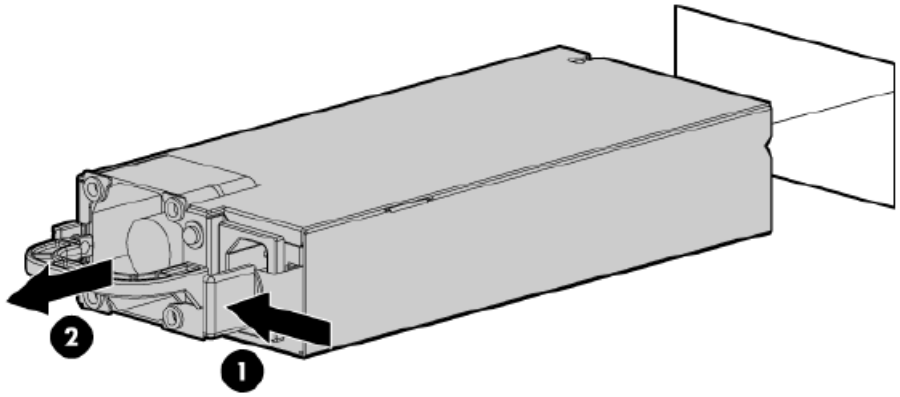
6.2.1 Replacing AC Power Supply

Caution: To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

➢ **To remove the component:**

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Access the product rear panel.
4. Remove the power supply.

Warning: To reduce the risk of personal injury from hot surfaces, allow the power supply or power supply blank to cool before touching it.



To replace the component, reverse the removal procedure.

6.2.2 Replacing 48V DC Power Supply

One of the following optional HP input cables with pre-fastened ring tongues may be purchased from HP or an authorized reseller:

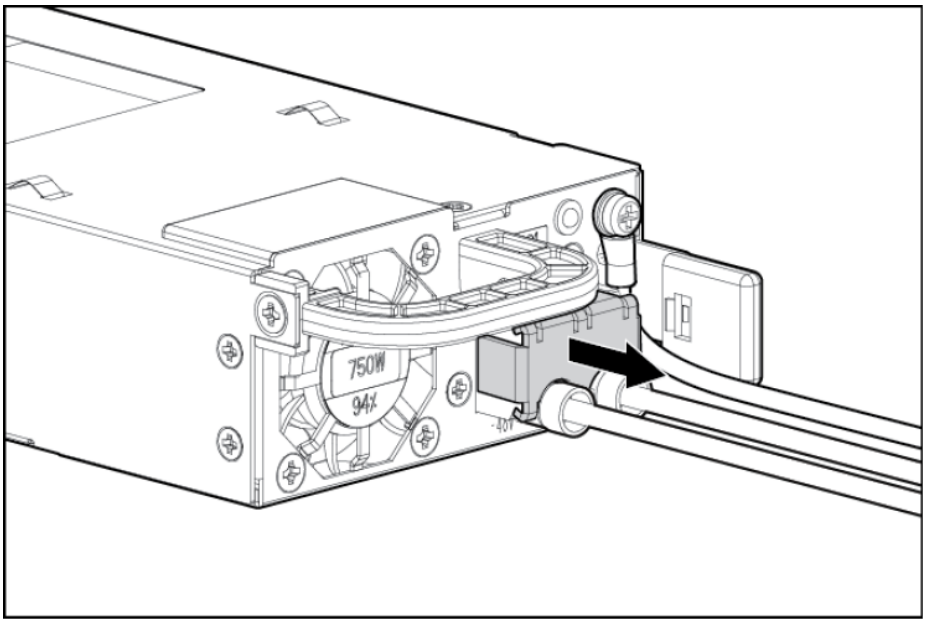
- A5S97A—1.3-m (7.55-ft) 48V DC Power Cable Kit
- A5S98A—2.5-m (3.94-ft) 48V DC Power Cable Kit

If you are not using an optional HP input cable, use an HP-approved 10 or 12 AWG green and yellow ground cable, no shorter than 150 cm (59.06 in), and 10 or 12 AWG power cables.

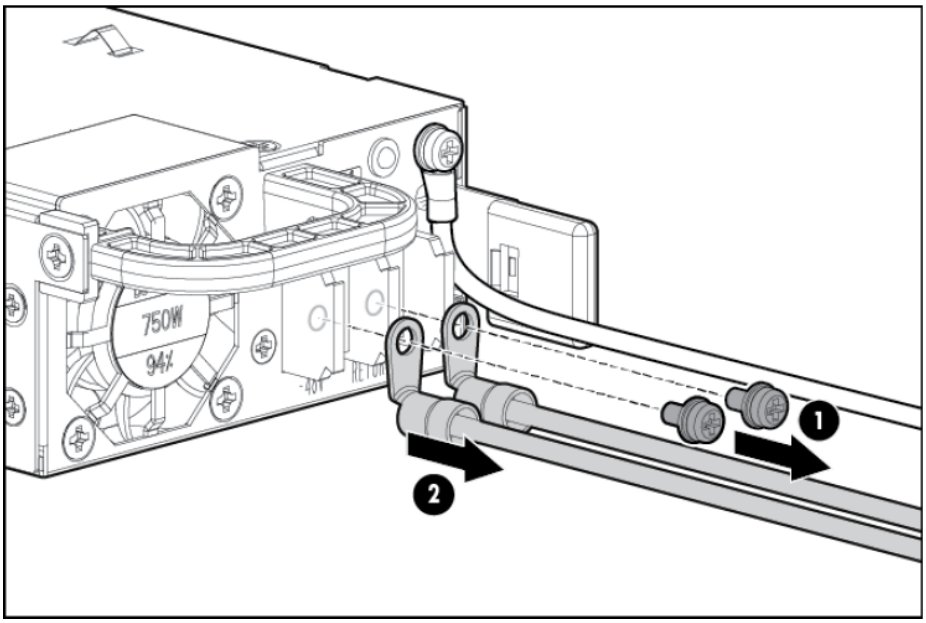
Caution: Use only the ring terminals provided with the power supply for customer-built power connections. Be sure no wire protrudes from the bottom of the ring terminal barrels.

➢ **To remove the component:**

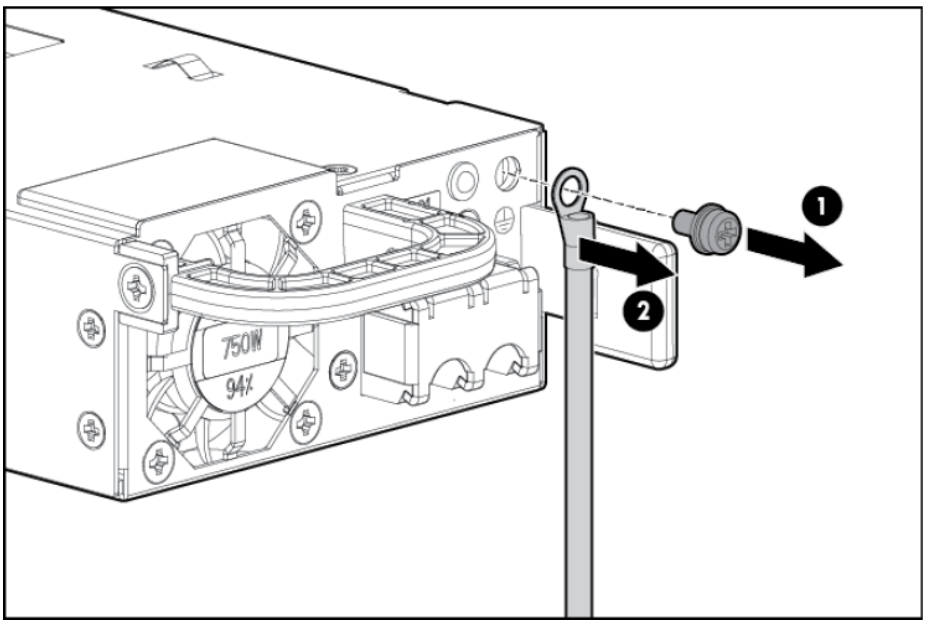
1. Make sure the 48V DC power source is off or the PDU breaker is in the off position, and then disconnect the power cord from the 48V DC power source or PDU.
2. Remove the power cord from the cable management arm, if installed.
3. Remove the safety cover.



4. Remove the power ring tongues from the terminal block.

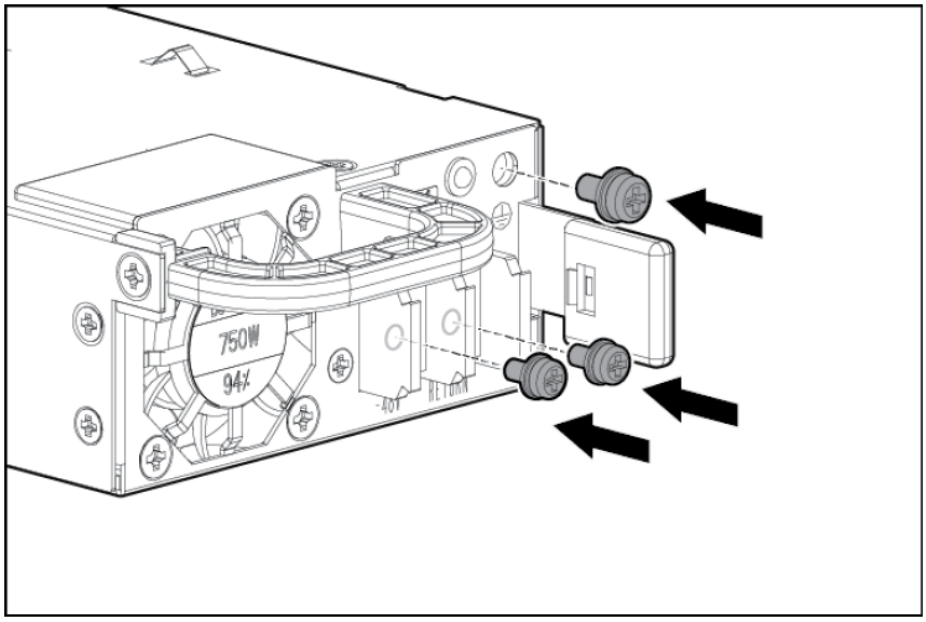


5. Remove the ground (earthed) wire from the ground screw and washer.



6. Attach the screws to the terminal block.

Note: The minimum nominal thread diameter of a pillar or stud type terminal must be 3.5 mm (0.138 in); the diameter of a screw type terminal must be 4.0 mm (0.157 in).

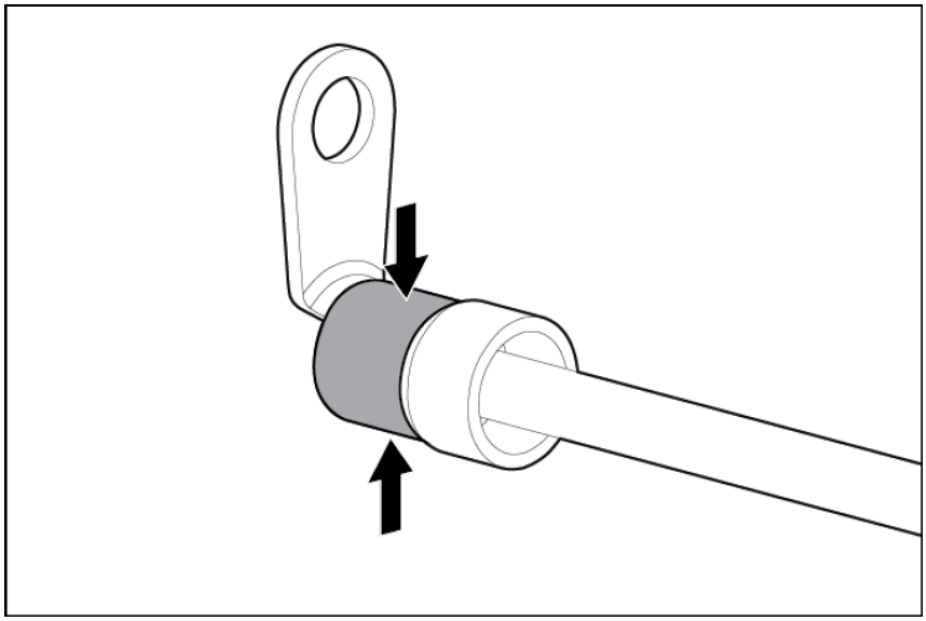


7. Remove the power supply from the power supply bay.
8. If you are not immediately replacing the power supply, install the safety cover.

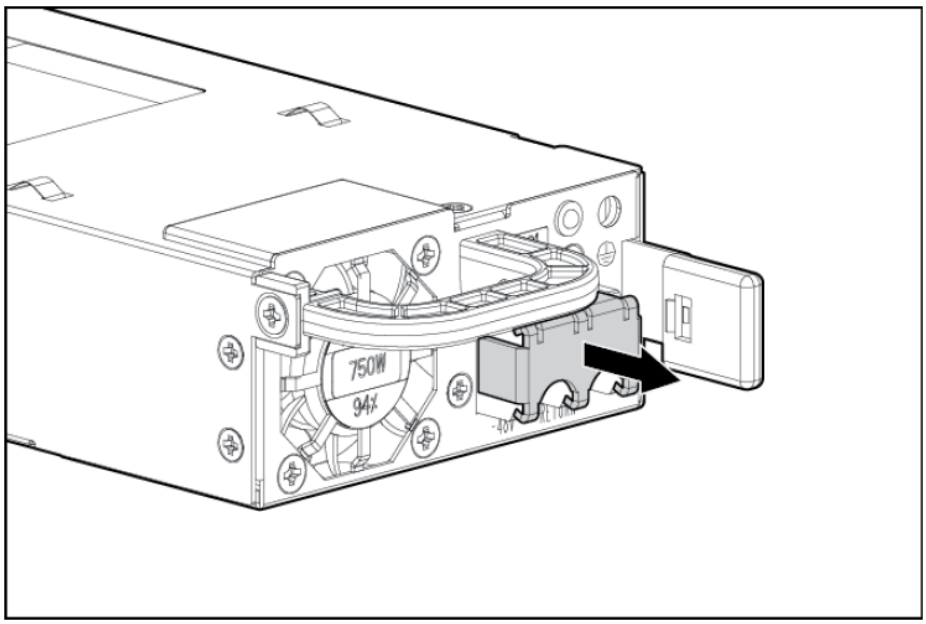
➢ **To replace the component:**

1. If you are not using an optional HP input cable or the ring tongues you crimped previously, with the ground cable disconnected from the 48V power source, crimp the ring tongues to the power and ground cables coming from the 48V source.

Note: The power supply uses two power ring tongues and one ground ring tongue. They are not interchangeable.

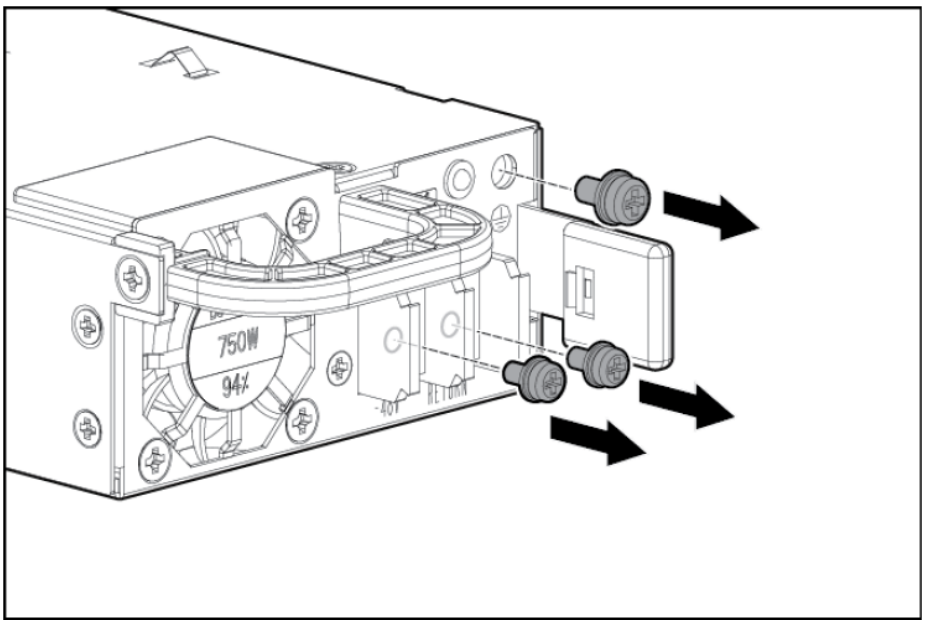


2. Remove the safety cover from the terminal block on the front of the power supply.

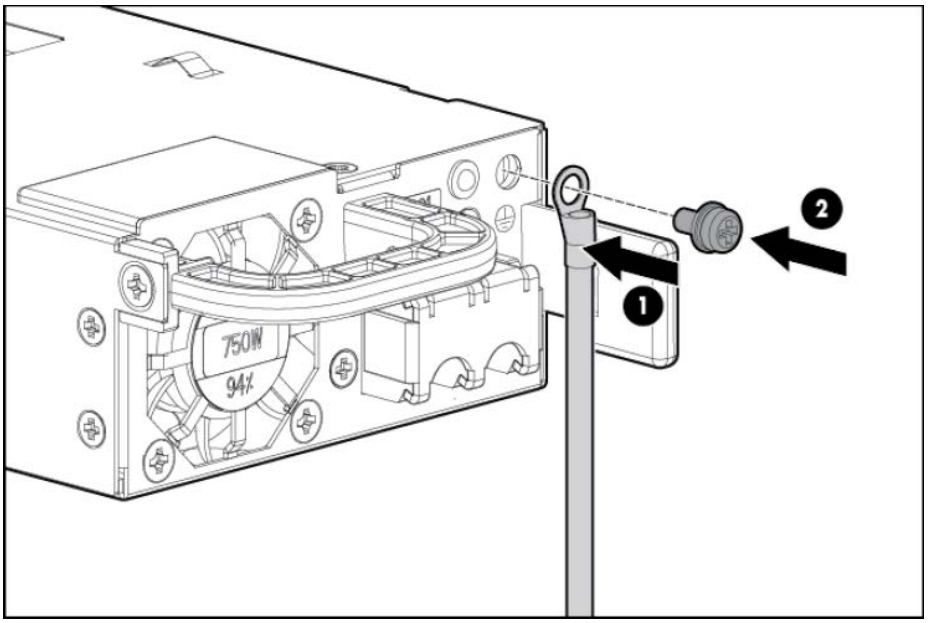


3. Remove the screws from the terminal block.

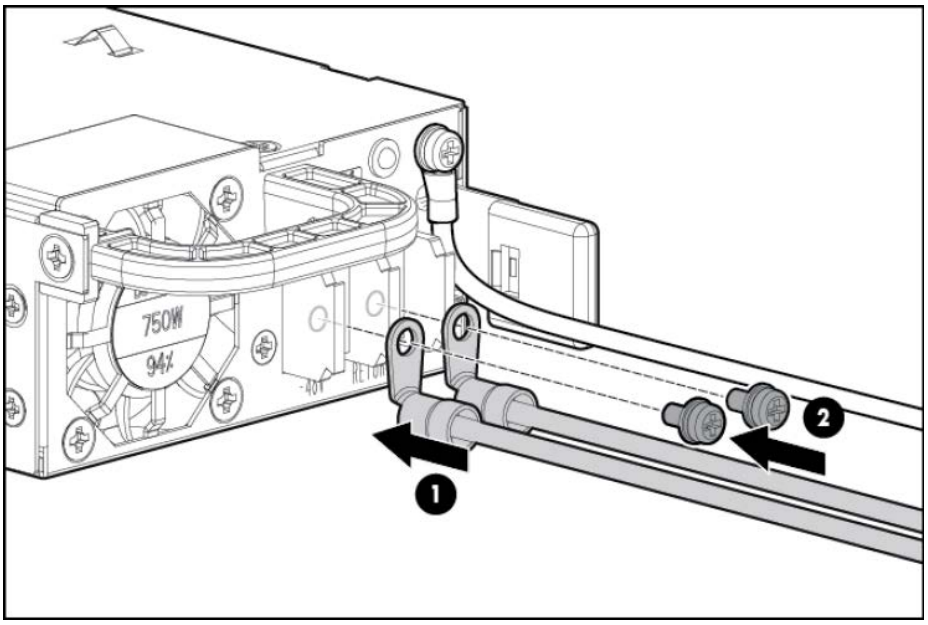
Note: The minimum nominal thread diameter of a pillar or stud type terminal must be 3.5 mm (0.138 in); the diameter of a screw type terminal must be 4.0 mm (0.157 in).



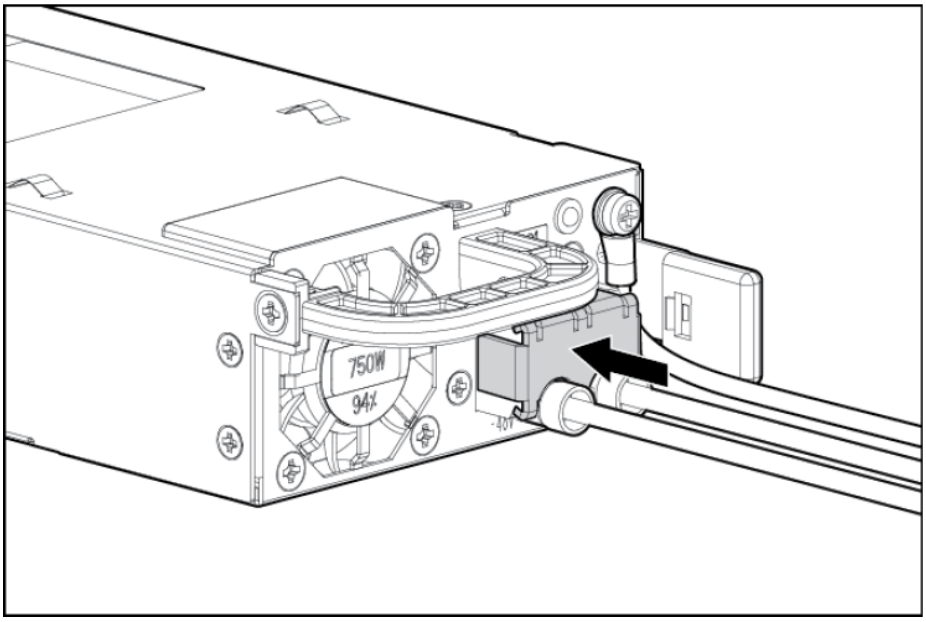
4. Attach the ground (earthed) wire to the ground screw and washer and tighten to 1.47 N m (13 lb-in) of torque. The ground wire must be connected before the positive or negative lead wires.



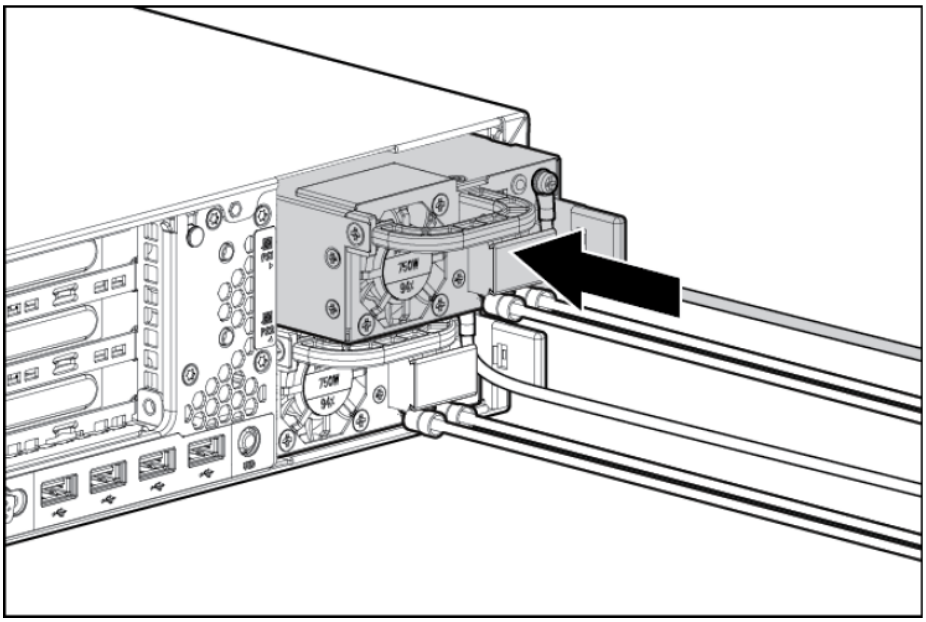
5. Attach the power ring tongues to the terminal block, following the polarity label below the terminal block, and then tighten the screws to 1.47 N m (13 lb-in) of torque.



6. Replace the safety cover.



7. Insert the power supply into the power supply bay until it clicks into place.



8. Route the power cord. Use best practices when routing power cords and other cables. A cable management arm is available to help with routing. To obtain a cable management arm, contact an HP authorized reseller.
9. Make sure the 48V DC power source is off or the PDU breaker is in the off position, and then connect the power cord to the 48V DC power source or PDU.
10. Turn on the 48V power source or switch the PDU breaker to the on position to supply 48V to the power supply.
11. Be sure that the green power supply LED is on.

6.3 Troubleshooting Device Failures

Contact AudioCodes RMA at www.audiocodes.com/support to troubleshoot device failures (such as fan alarms).

A Rescue Options

The Mediant 9000 SBC features a System Snapshots mechanism that provides the capability of returning the system to a previous state. The mechanism may be used as a rescue option if a system malfunction occurs.

A.1 Taking a Snapshot

Taking a System Snapshot captures a complete state of the Mediant 9000 SBC, including:

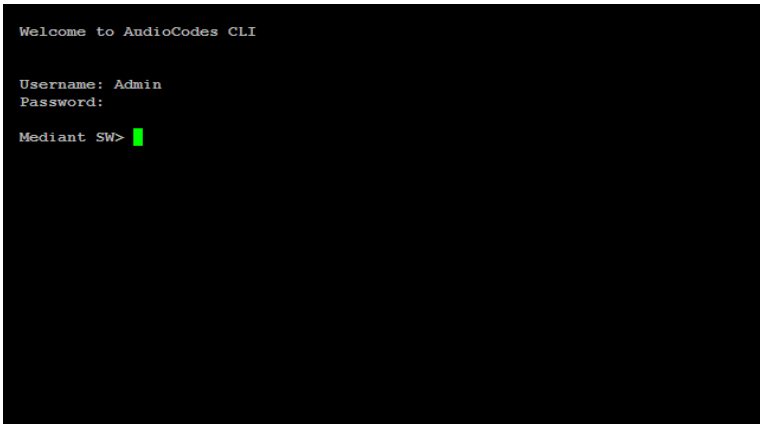
- installed Mediant 9000 SBC software
- the current configuration
- auxiliary files
- the Software License Key

The first 'factory' snapshot is automatically taken when initial installation is performed. Additional snapshots (up to 10) may be taken. The Mediant 9000 SBC can be returned to a snapshot, as described below.

➢ **To take a snapshot using the CLI:**

1. Connect to the CLI interface as described under Section 4.2.

Figure A-1: CLI Management Interface



2. At the prompt, type **enable** and press ENTER:

```
Mediant SW> enable
```

3. At the prompt, type the password and press ENTER:

```
Password: Admin
```

4. At the prompt, save the current configuration (burn) before creating a snapshot:

```
Mediant SW# write
```

5. Type the following commands to take a snapshot:

```
Mediant SW# configure system
Mediant SW# startup-n-recovery
Mediant SW (startup-n-recovery)# create-system-snapshot <name>
```

A.2 Viewing Available Snapshots

Currently available system snapshots can be viewed by using the **show-system-snapshots** command. The 'default' snapshot is indicated by asterisk.

```
Mediant SW(startup-n-recovery)# show-system-snapshots
first-install-2010-01-01_03-18-29
pre-production-6.70.037.010-2010-01-08_00-39-58
*production-6.70.037.010-2010-01-08_00-41-30
```

A.3 Changing the Default Snapshot

The 'default' snapshot indicates a restore point that is used by Automatic Recovery in the case of software malfunction (see Section A.6) and/or Manual Recovery (see Section A.5). The last user-created snapshot is automatically set as 'default' though it can be changed using the **set-default-snapshot** command.

```
Mediant SW(startup-n-recovery)# set-default-snapshot pre-
production-6.70.037.010-2010-01-08_00-40-27
```

A.4 Deleting a Snapshot

To delete a snapshot, use the **delete-system-snapshot** command:

```
Mediant SW(startup-n-recovery)# delete-system-snapshot pre-
production-6.70.037.010-2010-01-08_00-39-58
```

A.5 Manual Recovery

Manual recovery is performed on user request. When the Mediant 9000 SBC reboots, a GRUB menu is displayed that allows users to select one of the following rescue options:

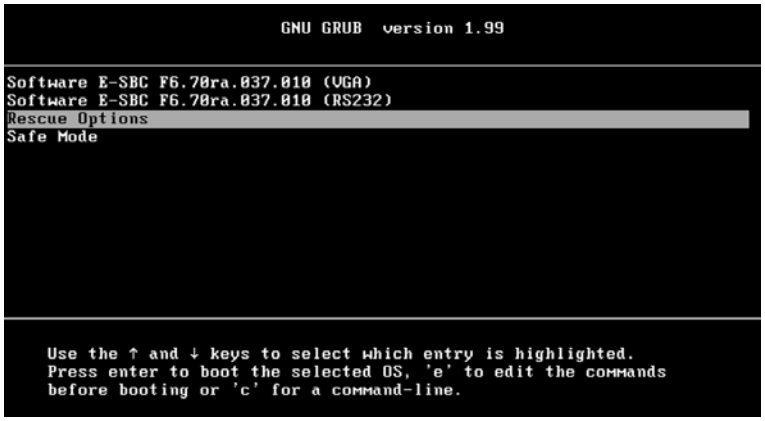
- Return to default snapshot
- Fix current installation
- Browse available system snapshots
- Return to factory snapshot (after install from CD)

A.5.1 Returning to the Default Snapshot

➢ **To return to the default snapshot:**

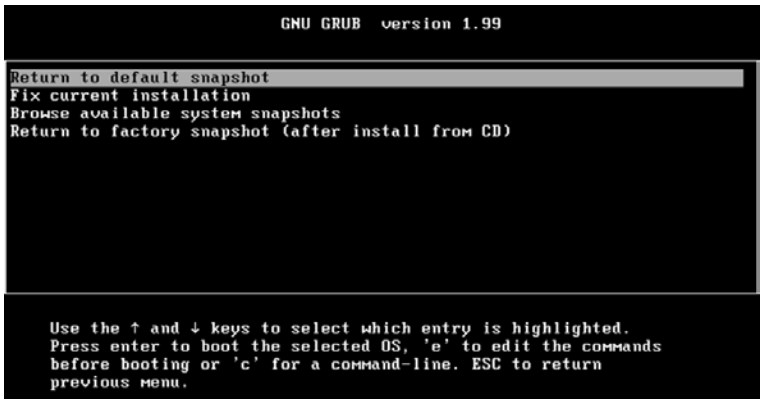
1. Reboot the server.
2. In the GRUB menu that's displayed for 5 seconds during the server start-up, press the Down ↓ key, select **Rescue option**, and press **Enter**.

Figure A-2: Main GRUB Menu



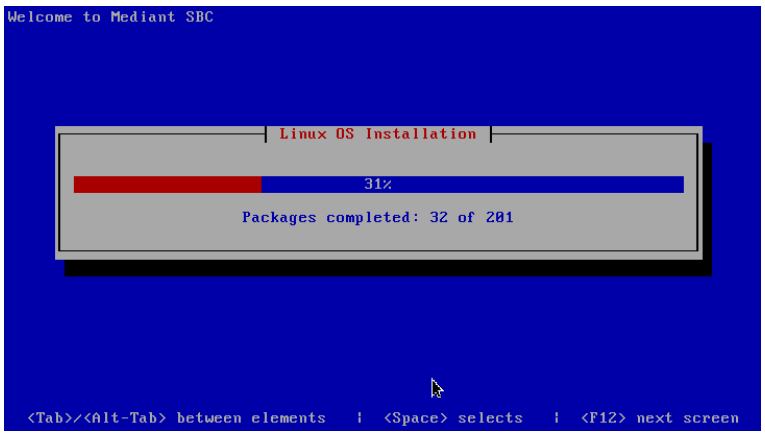
3. In the Rescue Options menu, select **Return to default snapshot** and press **Enter**.

Figure A-3: Rescue Options Menu



The system returns to the default snapshot, restoring the software version and the full configuration (see Section A.3). The process can take up to 10 minutes to complete.

Figure A-4: **System Returning to Snapshot State**



A.5.2 Fixing the Current Installation

➢ **To fix the current installation:**

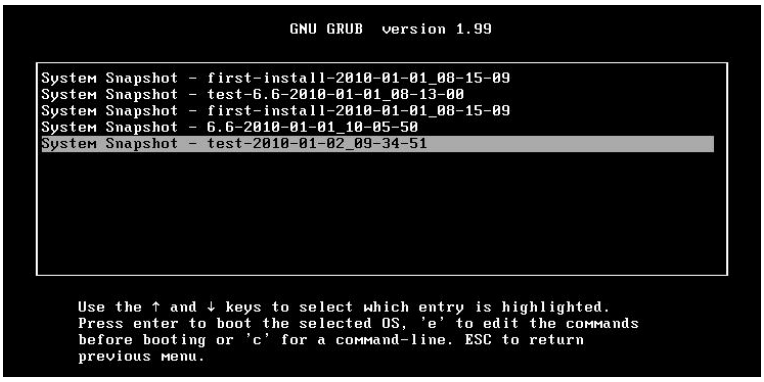
- In the GRUB menu, select **Fix current installation** and press **Enter**; the system is repaired while the currently installed software version and its configuration are preserved. The process can take up to 10 minutes to complete.

A.5.3 Returning to an Arbitrary Snapshot

➢ **To return to an arbitrary (non-default) system snapshot:**

1. In the GRUB menu, select **Browse available system snapshots** and press **Enter**; you're prompted to select a snapshot.

Figure A-5: Selecting a Snapshot



2. Select a snapshot and press **Enter**; the system returns to the selected snapshot, restores the software version and the full configuration. The process may take up to 10 minutes to complete.

A.5.4 Returning to a Factory Snapshot

➢ **To return to a factory snapshot (after install from CD):**

- In the GRUB menu, select **Return to factory snapshot (after install from CD)** and press **Enter**; the system returns to the first snapshot automatically taken when initial installation from CD was performed. The process can take up to 10 minutes to complete.

A.6 Automatic Recovery

The Mediant 9000 SBC activates Automatic Recovery when it encounters a severe software malfunction that prevents it from successfully booting for three subsequent attempts. Automatic Recovery returns the system to the 'default' snapshot and may take up to 10 minutes to complete.

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